

ACTSC 200s

ACTSC 221 LEC 0.50

Course ID: 003290

Introductory Financial Mathematics (Non-Specialist Level)

The theory of rates of interest and discount; annuities and sinking funds with practical applications to mortgage and bond questions. Yield rates. [Offered: F,W,S]

Prereq: Level at least 2A; Not open to Actuarial Science students.

Antireq: ACTSC 231; (For Mathematics students only - CIVE 292/392)

Also offered Online

ACTSC 231 LEC,TST,TUT 0.50

Course ID: 003293

Introductory Financial Mathematics

The theory of rates of interest and discount including the theoretical continuous case of forces of interest and discount. Annuities and sinking funds, including the continuous case. Practical and theoretical applications primarily to mortgages and bonds. Yield rates. [Offered: F,W,S]

Prereq: MATH 137 or 147 and (STAT 220 with a grade of at least 70% or a corequisite of STAT 230 or 240); Level at least 2A; Not open to students who have received credit for ACTSC 232.

Antireq: ACTSC 221

Also offered Online

ACTSC 232 LEC,TST,TUT 0.50

Course ID: 003294

Life Contingencies 1

The future lifetime random variable: Probability and survival functions; force of mortality; complete and curtate expectation of life; Makeham and Gompertz mortality laws. Life tables: Characteristics of population and insurance life tables; selection; fractional age assumptions. Life insurance payments and annuity payments: Present value random variables; expected present values; higher moments; actuarial notation. Annual, 1/mthly and continuous cases. Relationships between insurance and annuity functions. Premiums: Expense loadings. Present value of future loss random variables and distribution, net and gross cases. Equivalence principle. Portfolio percentile principle. Extra risks.

[Note: Students who have met the ELPE requirement must contact their ACTSC advisor. Offered: F,W,S]

Prereq: At least 60% in ACTSC 231, STAT 230 or 240; ELPE passed with "Good" or "Excellent" or ENGL 119 taken w '15 or before, or at least 60% in MTHEL 131. Not open to students who received credit for ACTSC 331.

Also offered Online

ACTSC 291 LEC,TST,TUT 0.50

Course ID: 011750

Corporate Finance 1

This is the first in a two-course sequence that deals with corporate financial decision-making. Topics may include time value of money, capital budgeting, cost of capital, security issuance, capital structure, payout policy and dividends, short term finance, and risk management. Where suitable, topics are treated from a mathematical and quantitative perspective.

Prereq: MATH 136 or 146, 138 or 148; Accounting & Financial Management, Computing & Financial Management, Mathematics/ CPA or Science Biotechnology/Chartered Accountancy students.

Coreq: STAT 231 or 241.

Antireq: AFM 273, ACTSC 371, ECON 371

(Cross-listed with AFM 272)

ACTSC 300s

ACTSC 331 LEC,TUT 0.50

Course ID: 003295

Life Contingencies 2

Policy Values: Annual, 1/mthly and continuous cases. Thiele's equation. Policy alterations. Modified policies. Multiple State Models: Applications in life contingencies; assumptions; Kolmogorov equations; premiums, policy values, multiple decrement models. Joint Life Models: Valuation of insurance benefits on joint lives, dependent and independent cases.

[Note: Some of the material covered in STAT 333 reinforces some of the concepts covered in this course. Therefore students might find it beneficial to take STAT 333 and ACTSC 331 at the same time. Offered: F,W,S]

Prereq: ACTSC 232 with a grade of at least 60%; Actuarial Science students only

ACTSC 371 LEC,TST,TUT 0.50

Course ID: 011438

Introduction to Investments

Introduction to capital markets. Analysis of equity and fixed income investments. Introduction to derivative securities including futures, forwards, swaps and options. [Offered: F,W,S]

Coreq: STAT 231 or 241

ACTSC 372 LEC,TUT 0.50

Course ID: 012044

Corporate Finance

Capital budgeting. Real Options. Investment decision using Markowitz and utility theory. Capital Asset Pricing Model. Arbitrage Pricing Theory. Market efficiency. Capital structure and dividend policy. Advanced topics. [Offered: F,W,S]

Prereq: ACTSC 371 and MATH 207 or 237 or 247.

Antireq: AFM 271/273, AFM 272/ACTSC 291, AFM 274/371, AFM 372/ACTSC 391, BUS 393W, ECON 371

ACTSC 391 LEC,TST,TUT 0.50

Course ID: 011751

Corporate Finance 2

This course is a continuation of AFM 272/ACTSC 291. Topics to be explored are covered under the listing for AFM 272/ACTSC 291.

Prereq: AFM 272/ACTSC 291; Computing and Financial Management, Mathematics/CPA students only.

Antireq: AFM 274, ACTSC 372, ECON 371

(Cross-listed with AFM 372)

ACTSC 400s

ACTSC 431 LEC,TUT 0.50

Course ID: 003300

Loss Models 1

Models for loss severity: parametric models, effect of policy modifications, tail behaviour. Models for loss frequency: (a, b, 0), (a, b, 1), mixed Poisson models; compound Poisson models, Aggregate claims models: moments and moment generating function: recursion. Classical ruin theory. [Offered: F,S]

Prereq: STAT 330, 333; Actuarial Science or Mathematical Finance students only

ACTSC 432 LEC,TUT 0.50

Course ID: 003301

Loss Models 2

Credibility theory: limited fluctuation; Bayesian; Buhlmann; Buhlmann-Straub; empirical Bayes parameter estimation; statistical inference for loss models; maximum likelihood estimation; effect of policy modifications; model selection. [Offered: F,S]

Prereq: STAT 330, 333; Actuarial Science or Mathematical Finance students only.

Coreq: ACTSC 431

ACTSC 433 LEC 0.50

Course ID: 003302

Analysis of Survival Data

The Mathematics of Survival Models, some examples of parametric survival models. Tabular survival models, estimates from complete and incomplete data samples. Parametric survival models, determining the optimal parameters. Maximum likelihood estimators, derivation and properties. Product limit estimators, Kaplan-Meier and Nelson-Aalen. Practical aspects. [Offered: W]

Prereq: ACTSC 331, STAT 330; Actuarial Science or Mathematical Finance students only

ACTSC 445 LEC,TUT 0.50

Course ID: 009492

Quantitative Enterprise Risk Management

This course introduces enterprise risk management, with a focus on quantitative analysis and economic capital. Risk classification is first discussed with an emphasis on the types of risk most suited to quantitative methods. Risk measures, such as Value-at-Risk (VaR) and Conditional Tail Expectation (CTE or TVaR), are then introduced and their use by firms and regulators to determine risk capital requirements is further highlighted. Different approaches are considered for developing loss distributions, including frequency/severity analysis and extreme value theory. Copulas and economic scenario generators are used to aggregate dependent risks. Different strategies for mitigating or transferring risk are reviewed. Additional topics that may be covered include credit risk, capital allocation and regulation of financial institutions. [Offered: F,S]

Prereq: (AFM 372/ACTSC 391 or (ACTSC 231, 371) or (ACTSC 231, BUS 393W)), ((STAT 330,333) or STAT 334); ACTSC, Math/FARM, Math Fin students only.

Antireq: AFM 422, MATBUS 472, BUS 433W, BUS 439W

ACTSC 446 LEC,TUT 0.50

Course ID: 003305

Mathematics of Financial Markets

This course covers mathematical techniques for no-arbitrage pricing and hedging financial derivatives. Topics to be covered can be classified into three broad areas: derivatives markets (options; forwards and futures; other derivatives; put-call parity), discrete-time financial models (binomial models; general multi-period models; Fundamental Theorems of Asset Pricing; risk-neutral probability), and continuous-time financial models (basic stochastic calculus and Itô's lemma; Black-Scholes model; interest rate models and bond pricing). [Offered: F,W]

Prereq: (AFM 372/ACTSC 391 or (ACTSC 231&371) or (ACTSC 231&BUS 393W)), (STAT 333 or 334); ACTSC, Math/FARM, Math Fin, STAT students only.

Antireq: AFM 322/474, BUS 423W, ECON 372, MATBUS 470

ACTSC 453 LEC 0.50

Course ID: 003308

Basic Pension Mathematics

Theory and practice of pension plan funding. Assumptions, basic actuarial functions and population theory applied to private pensions. Concepts of normal costs, supplemental liability, unfunded liability arising from individual accrued benefit and projected benefit cost methods.

Prereq: ACTSC 331; Actuarial Science or Mathematical Finance students only

ACTSC 455 LEC 0.50

Course ID: 013318

Advanced Life Insurance Practice

Cash flow projection methods for pricing, reserving and profit testing; deterministic, stochastic and stress testing; pricing and risk management of embedded options in insurance products; mortality and maturity guarantees for equity-linked life insurance.

Prereq: ACTSC 331 with a grade of at least 60%; Actuarial Science or Mathematical Finance students only.

Coreq: ACTSC 446

ACTSC 462 LEC 0.50

Course ID: 003312

Introduction to Property and Casualty Pricing

An introduction to property/casualty rate making. The economics of insurance. The ratemaking process. Individual risk rating. Reinsurance, expense issues. Pricing for deductibles and increased limits.

Prereq: AFM 272/ACTSC 291 or ACTSC 231; Actuarial Science or Mathematical Finance students only.

Antireq: ACTSC 363

ACTSC 463 LEC 0.50

Course ID: 003299

Introduction to Property and Casualty Loss Reserving

An introduction to property/casualty loss reserving techniques. Claim payment process. Chain-ladder methods. Stochastic models.

Prereq: (AFM 272/ACTSC 291 or ACTSC 231), (STAT 331 or 371 or 373); Actuarial Science or Mathematical Finance students only.

Coreq: ACTSC 431.

Antireq: ACTSC 363

ACTSC 468 RDG 0.50

Course ID: 014534

Readings in Actuarial Science 1

Reading course as announced by the department.

Prereq: Actuarial Science or Mathematical Finance students only

ACTSC 469 RDG 0.50

Course ID: 014535

Readings in Actuarial Science 2

Reading course as announced by the department.

Prereq: Actuarial Science or Mathematical Finance students only

ACTSC 471 LEC,TST,TUT 0.50

Course ID: 011760

Advanced Corporate Finance

This course covers various advanced topics in corporate finance, with emphasis on theories of corporate incentives and asymmetric information. Illustrative applications using cases are provided.

Prereq: AFM 372/ACTSC 391 or ACTSC 372; Comp & Financial Management, Actuarial Science, Math/CPA, Math/Financial Analysis & Risk Mgmt Chartered Financial Analyst or Mathematical Finance.

Antireq: AFM 373

(Cross-listed with AFM 476)

ARCHITECTURAL ENGINEERING

AE 100s

AE 100 LEC,STU,TUT 0.50

Course ID: 015319

Concepts Studio

An introduction to the fundamental engineering methods, principles and skills, design and communication in Architectural Engineering. Scale models of historically significant buildings, bridges, and towers will be hand built and hand drawn. Simple design projects will be used to develop and understand the design process and construction drawings and specifications. Introduction to computer analysis tools (Excel, Matlab) and the profession. [Offered: F]

Prereq: 1A Architectural Engineering

AE 101 LEC,STU,TST 0.50

Course ID: 015320

History of the Built Environment

A complementary studies course that provides a broad history of technology as it relates to buildings, towers, bridges, etc. Social, cultural, and economic influences on technological products will be discussed while surveying icons of architectural engineering. [Offered: F]

Prereq: 1A Architectural Engineering

AE 104 LEC,TST,TUT 0.25

Course ID: 015321

Mechanics 1

Newtonian mechanics. Force systems; vectors, forces and moments; equilibrium and free body diagrams. Mechanics of simple structures. [Offered: F]

Prereq: 1A Architectural, Civil, Environmental, or Geological Engineering.

Antireq: CIVE 104, PHYS 115

AE 105 LEC,TST,TUT 0.75

Course ID: 015322

Mechanics 2

Distributed forces, centroids and moment of inertia. Introduction to foundations and fluid statics. Basic structural analysis. Plane trusses. Beam diagrams. Stress-strain-temperature relationships. Behaviour of members in tension, compression and bending. Thin-walled pressure vessels. Friction. [Offered: S]

Prereq: AE 104; Level at least 1B Architectural, Civil, Environmental, or Geological Engineering.

Antireq: CIVE 105

AE 115 LEC,TST,TUT 0.25

Course ID: 015323

Linear Algebra

Linear systems of equations, matrices and determinants. Introduction to the eigenvalue problem. Applications. [Offered: F]

Prereq: 1A Architectural, Civil, Environmental, or Geological Engineering.

Antireq: CIVE 115, MATH 114, 115, 125, 136, 146

AE 121 LAB,LEC,TST 0.50

Course ID: 015324

Computational Methods

Introduction to computer programming, examples of efficient numerical algorithms for basic scientific computations. Programming and problem-solving concepts introduced in the course will be incorporated into projects involving Architectural Engineering applications. The language of instruction will be Matlab. [Offered: S]

Prereq: Level at least 1B Architectural, Civil, Environmental, or Geological Engineering.

Antireq: BME 121, CHE 121, CIVE 121, ECE 150, GENE 121, SYDE 121

AE 125 LEC,STU,TUT 0.50

Course ID: 015325

Architectural Graphics Studio

Basic hand- and computer-sketching techniques, perspective, isometrics, presentation graphics, working drawings, and contract documents. Exposure to computer-based drafting, rendering, and solid modelling tools. Drawing as a design and analysis (sun shading, structural forces) tool. [Offered: S]

Prereq: AE 100; Level at least 1B Architectural Engineering

AE 200s**AE 200 LEC,STU,TUT 0.50**

Course ID: 015326

Structural Design Studio

Development of design and communication skills through application in projects involving various building/bridge types. Emphasis placed upon issues of materiality and technology in structural and building design. Form finding, model building. [Offered: W, first offered Winter 2020]

Prereq: AE 125; Level at least 2A Architectural Engineering

AE 204 LEC,TST,TUT 0.50

Course ID: 015327

Solid Mechanics 1

Three-dimensional force systems, moments, couples, and resultants. Three-dimensional equilibrium problems. Shear stresses in beams. Plastic bending. Beam deflection. Torsion of shafts and thin-walled closed sections. Shear, bending moment, and deflection diagrams for beams. Compound stress and stress transformations. Design concepts. [Offered: W, first offered Winter 2020]

Prereq: AE 105; Level at least 2A Architectural or Civil Engineering, or Level at least 2B Geological Engineering.

Antireq: CIVE 204

AE 205 LEC,TST,TUT 0.50

Course ID: 015328

Solid Mechanics 2

Frames, arches and suspended structures. Stress and strain transformations. Strain energy. Energy methods. Virtual work. Buckling of columns. [Offered: F, first offered Fall 2020]

Prereq: AE 204, 221; Level at least 2B Architectural or Civil Engineering, or Level at least 3A Geological Engineering.

Antireq: CIVE 205

AE 221 LEC,TST,TUT 0.50

Course ID: 015329

Advanced Calculus

Calculus of functions of several variables. Differentiation: partial derivatives of implicit and explicit functions, applications including optimizations. Integration: multiple integrals in various co-ordinate systems with applications; Vector calculus: vector fields, line integrals, surface integrals, and applications. Numerical integration and differentiation. [Offered: W, first offered Winter 2020]

Prereq: MATH 118; Level at least 2A Architectural, Civil, or Geological Engineering.

Antireq: CIVE 221, ENVE 221, MATH 217

AE 223 LEC,TST,TUT 0.50

Course ID: 015330

Differential Equations and Balance Laws

An introduction to ordinary differential equations with applications to mass and energy balance problems in engineering. Standard methods of solution of first and second order linear equations with constant coefficients. Numerical methods for solving ordinary differential equations. Partial differential equations. [Offered: F, first offered Fall 2020]

Prereq: AE 221; Level at least 2A Architectural, Environmental, or Geological Engineering.

Antireq: CIVE 222, MATH 218

AE 224 LEC,TST,TUT 0.50

Course ID: 015331

Probability and Statistics

Role of probability in Architectural Engineering and decision making under uncertainty. Basic probability concepts. Probability distributions. Functions of random variables. Data analysis. Confidence intervals and hypothesis testing. Introduction to regression analysis. Introduction to design of experiments and statistical quality control. [Offered: W, first offered Winter 2020]

Prereq: MATH 116; Level at least 2A Architectural or Civil Engineering.

Antireq: CIVE 224, ENVE 224

AE 225 LEC,STU,TUT 0.50

Course ID: 015332

Environmental Building Studio

Environmental performance of buildings studied via physical investigations, demonstrations, case studies, design exercises. Relative roles of structure, enclosure, mechanical systems, embodied energy, life-cycle implications investigated. [Offered: F, first offered Fall 2020]

Prereq: AE 200; Level at least 2B Architectural Engineering

AE 265 LAB,LEC,TST,TUT 0.50

Course ID: 015333

Structure and Properties of Materials

A basic course in structure, behaviour and uses of engineering materials. Topics include: monotonic and cyclic stress-strain behaviour of metals, and the mechanical properties of irons, steels, copper, and aluminum. Structure and mechanical properties of wood, masonry, cements, concrete, polymers and fiber-reinforced polymers. Fracture, fatigue, corrosion, decay, moisture and radiation damage functions. Three lab sessions. [Offered: F, first offered Fall 2020]

Prereq: Level at least 2A Civil, Environmental, or Geological Engineering, or level at least 2B Architectural Engineering.

Antireq: CIVE 265

AE 279 LEC,TST,TUT 0.50

Course ID: 015334

Energy and the Environment

Conservation of energy, energy balances on closed systems. Steady-state and transient heat transfer via convection, radiation, and conduction. Mechanical and electrical work. Internal energy, enthalpy, and specific heats of solids, liquids and gases. Phase change in natural environmental systems; the basics of heat engines, refrigerators, and heat pumps. Function, evaluation, and design of energy resource technology: wind and hydroelectric turbines, photovoltaics, geothermal energy, biomass and biofuel, natural gas and petroleum extraction, and tidal energy. Renewable energy policy and implications.

[Offered: S, first offered Spring 2021]

Prereq: Level at least 2B Architectural, Civil, Environmental, or Geological Engineering.

Antireq: BME 384, CHE 330, ECE 309/MTE 309, ENVE 279, ME 250, SYDE 381

AE 280 LAB,LEC,TST,TUT 0.50

Course ID: 015335

Fluid Mechanics and Thermal Sciences

An introduction to fluid mechanics and thermal sciences. Fluid properties. Fluid statics. Bernoulli equation. The momentum equation and applications. Laminar and turbulent flow. Dimensionless numbers. Closed conduit flow. Pipe network analysis. Steady flow in pipes. First and second laws of thermodynamics will be introduced, enthalpy, entropy, exergy, and forms of energy. Heat storage and transfer. Four lab sessions. [Offered: W, first offered Winter 2020]

Prereq: CIVE 105, 221; Level at least 2A Architectural or Civil Engineering.

Antireq: CIVE 280, ENVE 280

AE 300s

AE 300 LEC,PRJ,STU,TUT 1.00

Course ID: 015336

Architectural Engineering Studio

Comprehensive design project of building or bridge in collaboration with the School of Architecture. Integration of structure, systems, and architecture explored with case studies. Preparation of construction drawings and specifications. [Offered: S, first offered Spring 2021]

Prereq: AE 225; Level at least 3A Architectural Engineering

AE 301 LEC,TST,TUT 0.50

Course ID: 015337

Building Enclosure Systems

A review of the functions of the building enclosure, and materials, systems and sub-systems used in modern building construction of new and retrofit of existing buildings. Interaction of the enclosure, mechanical systems, and structure, the importance of construction process and quality control, as well as the implications to sustainability will be considered. [Offered: W, first offered Winter 2022]

Prereq: AE 300

AE 303 LEC,TST,TUT 0.50

Course ID: 015338

Structural Analysis 1

Analysis of statically indeterminate structures using force and displacement methods. Influence lines for determinate and indeterminate structures. Introduction to the matrix stiffness method. Computer applications using commercial structural analysis software. [Offered: S, first offered Spring 2021]

Prereq: AE 205; Level at least 3A Architectural, Civil, or Geological Engineering.

Antireq: CIVE 303

AE 310 LEC,TST,TUT 0.75

Course ID: 015339

Introduction to Structural Design

Introduction to structural systems. Systems for carrying gravity and lateral loads in buildings. Structural design concepts. Analysis and design of concrete beams and one-way slabs. Design of steel beams and tension members. Comparison of steel and concrete framing systems. [Offered: W, first offered Winter 2022]

Prereq: AE 303; Level at least 3B Architectural, Civil, or Geological Engineering.

Antireq: CIVE 310

AE 315 LEC,TST,TUT 0.50

Course ID: 015340

Building Structural Systems

A review of different structural systems and materials with a focus on constructability, sustainability, economy, and performance. Concrete, steel, wood, masonry, and polymer materials, as well as framed, hybrid, shear wall, cable stayed, tension, and inflatable systems will be covered. The selection of systems as a function of occupancy, scale, labour, economy, geography, and climate will be introduced. [Offered: W, first offered Winter 2022]

Prereq: AE 200

AE 325 LEC,PRJ 0.50

Course ID: 015341

Project 1 Studio

Students undertake a group Architectural Engineering design project over two terms of their program. The purpose of the project is to demonstrate students' abilities to practise in their chosen area of expertise, using knowledge gained from their academic and employment experiences. Projects integrate all relevant aspects (e.g., structure, constructability, mechanical and enclosure) within appropriate defined social, economic, environmental, political, and technical constraints. [Offered: W, first offered Winter 2022]

Prereq: AE 300; Level at least 3B Architectural Engineering

AE 353 LEC,TST,TUT 0.50

Course ID: 015342

Soil Mechanics and Foundations

An introduction to soil mechanics principles including state of stress, ground water flow, consolidation and shear strength. An introduction to design of shallow and deep foundations. Earth pressure theories and design of retaining walls. [Offered: S, first offered Spring 2021]

Prereq: Level at least 3A Architectural Engineering

AE 392 LEC,TST,TUT 0.50

Course ID: 015343

Economics and Life Cycle Analysis

Project financing, life-cycle analysis, time value of money, sensitivity analyses, tax, financial implications of infrastructure projects, quantitative decision making, and financial aspects of a business plan. [Offered: W, first offered Winter 2022]

Prereq: MATH 116; Level at least 2B Civil Engineering, 3A Environmental or Geological Engineering, or 3B Architectural Engineering.

Antireq: CIVE 392, MSCI 261

AE 400s

AE 400 PRJ 0.50

Course ID: 015344

Project 2 Studio

Completion of the project defined and initiated in AE 325. Complete oral presentation, written and graphics deliverables. [Offered: S, first offered Spring 2022]

Prereq: AE 325; Level at least 4A Architectural Engineering

AE 405 LAB,LEC,TST,TUT 0.50

Course ID: 015345

Building Performance Measurement Lab

Introduction to the techniques and utility of measuring building performance both during construction, during operation, and before retrofit. Stiffness, vibration, rain penetration, air leakage, heat flow, durability, solar control, acoustics, lighting, damage assessment and energy consumption. [Offered: S, first offered Spring 2022]

Prereq: AE 280

AE 425 PRJ 0.50

Course ID: 015346

Project 3 Studio

A comprehensive individual design project of building, bridge, tower, etc. with a defined focus on a specific building system: mechanical, structural, enclosure, architectural. Research of precedents and the state of technology will be part of this. Complete oral presentation, written report, and graphics deliverables. [Offered: W, first offered Winter 2023]

Prereq: AE 400; 4B Architectural Engineering

AE 450 LEC,TST,TUT 0.50

Course ID: 015347

Building Service Systems

Heating, ventilating, cooling, filtration, plumbing, lighting, transport, data transmission, security, control, and life safety systems in buildings will be studied, in terms of function, performance, economics, construction, renovation, regulation, and sustainability. The interaction of systems, especially the environmental control systems, with the enclosures and structural systems in design and construction will be specifically considered. [Offered: S, first offered Spring 2022]

Prereq: AE 279

AE 491 LEC,TST 0.50

Course ID: 015348

Engineering Law and Ethics

Background (Charter of Rights and Freedoms), Contracts, Torts (Negligent Malpractice), Forms of Carrying on Business, Professional Practice (Professional Engineers Act, Joint Practice Rules, Professional Misconduct and Sexual Harassment), Alternate Dispute Resolution, Construction Liens, Intellectual Property (Patents, Trade Marks, Copyrights and Industrial Designs), Labour Relations and Employment Law, Environmental Law. [Offered: S, first offered Spring 2022]

Prereq: Level at least 4A Architectural Engineering.

Antireq: CIVE 491

ACCOUNTING & FINANCIAL MANAGEMENT**Notes**

Students who fail to select their courses during normal course selection periods may be unable to take a particular course in their term of preference.

AFM 100s**AFM 100 SEM,TUT 0.00**

Course ID: 015679

Introduction to Experiential Learning

The objective of this non-credit course is to expose students to the expectations for experiential learning, helping them develop the skills and relationships needed to allocate their time and maintain balance across their academics, career, health and wellness, and community.

Prereq: First-year Accounting and Financial Management, Mathematics/Chartered Professional Accountancy, or Biotechnology/Chartered Accountancy students only

AFM 101 LEC,TST,TUT 0.50

Course ID: 011404

Introduction to Financial Accounting

This course is an introduction to financial accounting. The preparation and use of financial statements is examined. The accounting cycle, assets and liabilities reporting, is discussed.

Prereq: Not open to students in Arts and Business, Environment and Business, Science and Business or Human Resources Management.

Antireq: AFM 123/ARBUS 102, BUS 127W/227W, MSCI 262

AFM 102 LEC,TST,TUT 0.50

Course ID: 011700

Introduction to Managerial Accounting

This course is an introduction to the preparation and use of accounting information for management decision-making and reporting. Cost behaviour, cost accumulation systems and short and long-term decision models are discussed.

Prereq: AFM 101 or BUS 127W/227W.

Antireq: AFM 123/ARBUS 102, BUS 247W, MSCI 262

AFM 121 LEC,TST,TUT 0.50

Course ID: 013719

Introduction to Global Financial Markets

This course describes the role of finance in the modern global economy and introduces some basic principles of financial decision-making.

Prereq: Accounting and Financial Management or Computing and Financial Management students only

AFM 123 LEC,TST,TUT 0.50

Course ID: 003239

Accounting Information for Managers

This course is designed for non-accountants who will use accounting information for planning, control, and decision making.

Prereq: Arts & Business, Environment & Business, Sci & Business, Hon Rec & Leisure Studies, Hon Rec & Business, Hon Biotechnology/Economics, Human Resources Management, or Management Studies stdnts.

Antireq: AFM 101,102,121, BUS 127W/227W,247W, MSCI 262

(Cross-listed with ARBUS 102)

AFM 131 LEC,TST 0.50

Course ID: 003243

Introduction to Business in North America

The functional areas of business: finance, personnel administration, production, marketing, and accounting are examined within differing organizational structures. Coverage also includes study of the principles of effective management and the financial system as a source of corporate capital.

Prereq: Not open to Honours Arts and Business students.

Antireq: BUS 111W

(Cross-listed with ARBUS 101)

Also offered Online

AFM 200 SEM,TUT 0.00

Course ID: 015707

Continuation of Experiential Learning

The objective of this non-credit course is to continue to expose student to the expectations for experiential learning, and helping them to continue to develop the skills and relationships needed to allocate their time and maintain balance across their academics, career, health and wellness, and community.

Prereq: AFM 100; second-year Accounting and Financial Management, Mathematics/Chartered Professional Accountancy, or Biotechnology/Chartered Accountancy students only

AFM 201 LEC,OLN,TUT 0.50

Course ID: 011411

Introduction to Professional Practice

This course discusses auditing and taxation concepts as they relate to professional accounting and management.

Prereq: AFM 101; Accounting and Financial Management, Computing and Financial Management, Mathematics/Chartered Professional Accountancy or Biotechnology/Chartered Accountancy students only.

AFM 202 LEC,TST,TUT 0.50

Course ID: 013739

Introduction to Public Practice

This course focuses on the knowledge and skills that enhance experiential learning during a first co-op work term. Topic areas include professional ethics, assurance, taxation, and leveraging technology for assurance and taxation competencies.

Prereq: AFM 101; Level 2A or 3A; Accounting and Financial Management, Mathematics/Chartered Professional Accountancy, or Biotechnology/Chartered Professional Accountancy students only.

Antireq: AFM 201

AFM 203 LEC,TST,TUT 0.50

Course ID: 013740

Introduction to Decision Support

This course focuses on the knowledge and skills that enhance experiential learning during a first co-op work term while performing a decision support role within a public or private sector organization. Topic areas include professional ethics, performance analysis, corporate finance, and leveraging technology for performance analysis and corporate finance competencies.

Prereq: AFM 101; Level 2A or 3A; Accounting and Financial Management students, Mathematics/Chartered Professional Accountancy, or Biotechnology/Chartered Professional Accountancy students only.

Antireq: AFM 201, 204

AFM 204 LEC,TST,TUT 0.50

Course ID: 013741

Introduction to Applied Finance

This course focuses on the basic knowledge and skills required for employment in the finance area during the first co-op work term. The course covers topics such as an overview of the financial services industry, the role of treasury management within organizations, professional ethics, and problem-solving skills that are applicable to financial decisions.

Prereq: AFM 121; Level 2A or 3A; Accounting and Financial Management students.

Coreq: AFM 273.

Antireq: AFM 201, 203

AFM 211 LEC,SEM,TST,TUT 0.50

Course ID: 013742

Connections to Business Context

This course focuses on developing the qualities and transferable skills necessary for integration, continuous learning, and professional development. The course integrates an understanding of business, basic functional competencies, leadership, collaboration, and communication skills to address a range of business decisions.

Prereq: AFM 101, 131, SPCOM 111; Accounting and Financial Management, Mathematics/ Chartered Professional Accountancy, or Biotechnology/Chartered Professional Accountancy students only

AFM 231 LEC,TST 0.50

Course ID: 003247

Business Law

Particular attention is given to the law relating to contracts and business organizations. Other areas of study include sources of law, the judicial process, real and personal property, torts, agency, credit, and negotiable instruments.

*Antireq: MTHEL 100/COMM 231, BUS 231W, CIVE 491, GENE 411, ME 401; (Faculty of Mathematics) ENVS 201
(Cross-listed with LS 283)*

AFM 241 LEC,OLN,SEM,TST 0.50

Course ID: 010334

Introduction to Business Information Technology

This course considers various aspects of information from a business and problem-solving perspective. It is intended to provide a basic foundation for understanding the potential benefits and problems in utilizing information technology to improve business performance, and an appreciation for a wide range of technology choices available, rather than a detailed understanding of any particular hardware or software technology.

*Prereq: AFM 102; Accounting and Financial Management, Biotechnology/Chartered Professional Accountancy students only.
Antireq: CS 330, 480/490*

AFM 272 LEC,TST,TUT 0.50

Course ID: 011750

Corporate Finance 1

This is the first in a two-course sequence that deals with corporate financial decision-making. Topics may include time value of money, capital budgeting, cost of capital, security issuance, capital structure, payout policy and dividends, short term finance, and risk management. Where suitable, topics are treated from a mathematical and quantitative perspective.

Prereq: One of MATH 128,138,148; MATH 136 or 146; Accounting & Fin Mgmt, Computing & Fin Mgmt, Math/Chartered Professional Accountancy or Biotech/Chartered Professional Accountancy students only.

Coreq: STAT 231 or 241.

*Antireq: AFM 273, ACTSC 371, ECON 371
(Cross-listed with ACTSC 291)*

AFM 273 LEC,TST 0.50

Course ID: 003257

Managerial Finance 1

This is the first in a two-course sequence that introduces the theory of financial decision-making within firms. Topics include capital budgeting, cost of capital, security issuance, capital structure, payout policy and dividends, short term finance, and risk management, among others.

Prereq: STAT 211; Accounting and Financial Management or Biotechnology/Chartered Professional Accountancy students only.

Antireq: AFM 272/ACTSC 291, ECON 371

AFM 274 LEC,TST 0.50

Course ID: 003258

Managerial Finance 2

This course is a continuation of AFM 273. Topics to be explored are covered under the listing for AFM 273.

Prereq: AFM 273; Accounting and Financial Management, Biotechnology/Chartered Professional Accountancy or Mathematics/Chartered Professional Accountancy students only.

Antireq: ACTSC 372, ACTSC 391/AFM 372, ECON 371

AFM 280 LEC,TST,TUT 0.50

Course ID: 013743

Introduction to Organizational Behaviour

An introduction to the concepts concerning the behaviour of individuals and groups in organizations. Topics may include motivation, influence, communication, diversity, goal-setting and incentive compensation, culture and ethical systems, and decision-making.

Prereq: Accounting and Financial Management, Computing and Financial Management, or Mathematics/Chartered Professional Accountancy students only.

Antireq: MSCI 211, PSYCH 238/338

AFM 291 LEC,TST 0.50

Course ID: 003253

Intermediate Financial Accounting 1

A first course in intermediate accounting dealing with the theory and practice of financial statement preparation and reporting. The emphasis will be on asset valuation and the related impact on income measurement.

Prereq: AFM 101; Accounting and Financial Management, Computing and Financial Management, Mathematics/Chartered Professional Accountancy, or Biotechnology/Chartered Professional Accountancy only

AFM 300s**AFM 311 LEC,SEM,TST,TUT 0.50**

Course ID: 013744

Connections to Ethical Context

This course focuses on developing the qualities and transferable skills necessary for integration, continuous learning, and professional development. The course is oriented around the ethical and moral issues faced by accounting and finance professionals.

Prereq: AFM 211.

Antireq: AFM 431, PHIL 215/ARBUS202

AFM 321 LEC,TST 0.50

Course ID: 013726

Personal Financial Planning

This course covers financial planning for individual investors, with particular emphasis on taxation and other institutional aspects governing decisions such as retirement savings, education savings, and estate planning.

Coreq: One of AFM 274, AFM 372/ACTSC 391, ACTSC 372, ECON 371

AFM 322 LEC,TST 0.50

Course ID: 011702

Derivative Securities

Introduction to valuation and applications of financial derivatives such as options, futures, forwards, and swaps.

Prereq: AFM 274/371 or AFM 372/ACTSC 391.

Antireq: ACTSC 446, ECON 372, MATBUS 470, STAT 446

AFM 323 LEC,TST 0.50

Course ID: 013727

Quantitative Foundations for Finance

This course introduces analytical and statistical methods commonly used in finance, with applications to investment management and corporate finance.

Prereq: AFM 274/371.

Antireq: ECON 321, STAT 373

AFM 328 PRJ 0.25

Course ID: 014473

Investment Management - Junior Analyst

This course provides students hands-on training in equity valuation and enables students to follow one industry sector. As a Junior Analyst, a student will understand why funds management is broken into different sectors, monitor existing equity holdings in a particular sector, make new equity selections in the sector, prepare equity research reports, and present trading recommendations to an investment team in a student-run investment portfolio.

Instructor Consent Required

Prereq: Accounting and Financial Management, Computing and Financial Management, Mathematics/Chartered Professional Accountancy, and Biotechnology/Chartered Professional Accountancy students only.

Coreq: AFM 274 or AFM 372/ACTSC 391

AFM 329 PRJ 0.25

Course ID: 014474

Investment Management - Senior Analyst

This course provides students hands-on training in equity valuation and enables students to follow more than one industry sector. As a Senior Analyst, a student will monitor existing equity holdings in different sectors, make new equity selections in the sectors, prepare equity research reports, and present trading recommendations to an investment team in a student-run investment portfolio.

Instructor Consent Required

Prereq: AFM 274 or AFM 372/ACTSC 391; Accounting and Financial Management, Computing and Financial Management, Mathematics/Chartered Professional Accountancy, and Biotechnology/Chartered Professional Accountancy students only

AFM 332 LEC,TST,TUT 0.50

Course ID: 011974

Accounting, Assurance, and the Law

This course examines the inter-relationship between legal and accounting environments. Students will be introduced to concepts of corporate governance and malfeasance and will examine a range of issues including the relationship between accounting and internal control, the roles of internal and external audits, and the regulatory environment of business including the obligations of boards, officers, managers, and shareholders.

Prereq: (AFM 101, 102) or AFM 123; AFM 231/LS 283; Not open to students in Accounting and Financial Management, Mathematics/Chartered Professional Accountancy, Biotechnology/Chartered Professional Accountancy.

AFM 333 LEC,TST 0.50

Course ID: 012769

International Business

This course examines the opportunities, risks, and challenges faced by businesses in international markets, as well as the preparation required to operate them.

Prereq: AFM 131/ARBUS 101; Level at least 3A

(Cross-listed with ARBUS 301)

AFM 341 LEC,TST 0.50

Course ID: 003273

Accounting Information Systems

Examines the planning, requirements analysis, acquisition, and evaluation of information systems, with an emphasis on accounting information systems. Introduces information systems assurance concepts, and considers the role of information technology in the improvement of business performance.

Prereq: Accounting and Financial Management, Mathematics/Chartered Professional Accountancy, Biotechnology/Chartered Professional Accountancy students only.

Antireq: CS 432

AFM 344 LEC,TST,TUT 0.50

Course ID: 015466

Introduction to Business Analytics

This course introduces students to business analytics with a focus on problems that accounting and finance professionals face in the real world.

Prereq: One of ECON 221, STAT 211, 231, 241; AFM 241 or CS 330; Accounting and Financial Management, Mathematics CPA, or Science Biotechnology CPA students only.

Antireq: AFM 417 taken S14, S15, S16, W16

AFM 351 LEC,TST,TUT 0.50

Course ID: 003275

Audit Strategy

An examination of elements of audit strategy and their interrelationships, including financial assertions, types and sources of audit assurance, and evidence-gathering procedures within a framework of professional judgment.

Prereq: AFM 391; Accounting and Financial Management, Computing and Financial Management, Biotechnology/Chartered Professional Accountancy or Mathematics Chartered Professional Accountancy students only

AFM 352 LEC,TST 0.50

Course ID: 003278

Comprehensive/Operational Auditing

Examination of the value for money audit concept in the private and public sectors. This approach goes beyond the scope of the traditional financial audit and looks at all facets of the organization, including human resource management.

Prereq: AFM 391; Accounting and Financial Management, Computing and Financial Management, Biotechnology/Chartered Professional Accountancy or Mathematics Chartered Professional Accountancy students only

AFM 362 LEC,TST,TUT 0.50

Course ID: 013745

Taxation 1 - Foundations

This course is an introduction to the foundational concepts in the taxation of individuals and corporations.

Prereq: Level at least 3A; Accounting and Financial Management, Computing and Financial Management, Mathematics Chartered Professional Accountancy, or Biotechnology/Chartered Professional Accountancy students only

AFM 363 LEC,TST,TUT 0.50

Course ID: 013913

Taxation 2 - Integration

This course builds on the foundational concepts established in AFM 362 by exploring the taxation of individuals and corporations in more depth.

Prereq: AFM 362; Accounting and Financial Management, Computing and Financial Management, Biotechnology/Chartered Professional Accountancy or Mathematics Chartered Professional Accountancy students only

AFM 372 LEC,TST,TUT 0.50

Course ID: 011751

Corporate Finance 2

This course is a continuation of AFM 272/ACTSC 291. Topics to be explored are covered under the listing for AFM 272/ACTSC 291.

Prereq: AFM 272/ACTSC 291; Computing and Financial Management, Mathematics/CPA students only.

Antireq: AFM 274, ACTSC 372, ECON 371
(Cross-listed with ACTSC 391)

AFM 373 LEC,TST 0.50

Course ID: 011414

Cases and Applications in Corporate Finance

This course builds on the theory of financial management using cases to illustrate a variety of corporate financial decisions.

Prereq: AFM 274 or AFM 372/ACTSC 391; Accounting and Financial Management, Computing and Financial Management or Biotechnology/Chartered Professional Accountancy students only.

Antireq: AFM 476/ACTSC 471

AFM 377 LEC 0.50

Course ID: 015680

Private Equity and Venture Capital

This course explores the fundamentals of the private equity industry. Topics include raising capital, structuring deals, creating a leveraged buyout model (LBO), and unlocking value through various strategies.

Prereq: AFM 274 or AFM 371.

Antireq: AFM 416 taken Spring 2015, Spring 2016, or Spring 2017

AFM 391 LEC,TST 0.50

Course ID: 003261

Intermediate Financial Accounting 2

This is an intermediate financial accounting course that deals with problems related to the measurement of liabilities, measurement of income, and the reporting and measuring of corporate equities.

Prereq: AFM 291; Accounting and Financial Management, Biotechnology/Chartered Professional Accountancy, Computing and Financial Management, or Mathematics/Chartered Professional Accountancy students only

AFM 400s

AFM 401 LEC,TST,TUT 0.50

Course ID: 003262

Accounting Theory

A review of accounting theory as a background for applying underlying concepts to current accounting problems. Emphasis is on current literature, with a major term paper required.

Prereq: AFM 391 or AFM 491; Accounting and Financial Management, Biotechnology/Chartered Professional Accountancy, Computing and Financial Management, or Mathematics/Chartered Professional Accountancy students only

AFM 411 LEC,TST,TUT 0.50

Course ID: 013746

Connections Across Competencies for Accounting Professionals

This course focuses on developing the qualities and transferable skills necessary for integration, continuous learning, and professional development. The course adds the dimension of integration across the functional competencies required by students pursuing a professional accounting designation.

Prereq: AFM 311, 363, 382/482, 491

AFM 412 LEC,TST,TUT 0.50

Course ID: 013747

Connections Across Competencies for Finance Professionals

This course focuses on developing the qualities and transferable skills necessary for integration, continuous learning, and professional development. The course adds the dimension of integration across the functional competencies required by students pursuing a career as a finance professional.

Prereq: AFM 311; Accounting and Financial Management students only

AFM 415 LEC,TST 0.50

Course ID: 003265

Special Topics

A course offered from time to time on a significant accounting and financial management issue.

[Note: This is a repeatable course, subject to different content; it may be completed a total of two times.]

Instructor Consent Required

AFM 416 LEC,TST 0.50

Course ID: 013729

Special Topics in Finance

A course offered from time to time on a significant finance issue.

[Note: This is a repeatable course, subject to different content; it may be completed a total of two times.]

Instructor Consent Required

AFM 417 LEC,TST 0.50

Course ID: 013728

Special Topics in Accounting

A course offered from time to time on a significant accounting issue.

[Note: This is a repeatable course, subject to different content; it may be completed a total of two times.]

Instructor Consent Required

AFM 418 PRJ 0.25

Course ID: 014397

Special Topics in Finance or Accounting

A course offered from time to time in relation to a significant school-related accounting or finance project or activity.

[Note: Graded on a credit/no credit basis. This is a repeatable course, subject to different content; it may be completed a total of four times.]

Instructor Consent Required

Prereq: Accounting & Financial Management, Computing & Financial Management, Mathematics/Chartered Professional Accountancy or Biotechnology/Chartered Professional Accountancy students only

AFM 422 LEC,TUT 0.50

Course ID: 013732

Management of Financial Institutions

This course studies the measurement and control of market, credit, and operational risks faced by financial institutions, with particular emphasis on the international regulatory framework.

Prereq: AFM 322/474; AFM 323 or STAT 373.

Antireq: ACTSC 445, MATBUS 472

AFM 423 LEC 0.50

Course ID: 014855

Topics in Financial Econometrics

This course introduces the use of advanced econometric/statistical methods in studying financial market data, and in quantitatively assessing risks associated with financial investments. The methods presented in this course are tailored to

address specific issues of interest in finance, such as the quantification of the risk-return tradeoff, the modelling of time-varying stock/bond market volatility and, possibly, also the statistical analysis of financial derivatives such as options.

Prereq: AFM 323 or STAT 373.

Antireq: ECON 405 prior to Fall 2015

AFM 424 LEC,TST 0.50

Course ID: 003284

Equity Investments

This course addresses principles of equity investments, including risk and return relationships, fundamental analysis of equities based on macroeconomic, industry and company-specific factors, financial statement analysis, and technical analysis. Portfolio allocation, performance measurement, and ethical and professional standards in the investment profession are also covered.

Prereq: One of AFM 274, AFM 372/ACTSC 391, ACTSC 372, ECON 371.

Antireq: BUS 473W

AFM 425 LEC,TST 0.50

Course ID: 011703

Fixed Income Securities

Introduction to various aspects of fixed income investments, including valuation, risk management, portfolio management, interest rate models, interest rate derivatives, and institutional features of bond markets.

Prereq: AFM 274.

Antireq: MATBUS 471

AFM 428 PRJ 0.25

Course ID: 014475

Investment Management - Junior Portfolio Manager

This course provides students hands-on training in equity valuation and portfolio management. As a Junior Portfolio Manager, a student will make allocations in two sectors, monitor the performance of the existing equity holdings in these two sectors, mentor two analysts, make equity trading decisions for these two sectors, and present portfolio performance reports to the investment team and the Advisory Board.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Instructor Consent Required

Prereq: AFM 274 or AFM 372/ACTSC 391; Accounting and Financial Management, Computing and Financial Management, Mathematics/Chartered Professional Accountancy, and Biotechnology/Chartered Professional Accountancy students only

AFM 429 PRJ 0.25

Course ID: 014478

Investment Management - Senior Portfolio Manager

This course provides students hands-on training in equity valuation and portfolio management. As a Senior Portfolio Manager, a student will make allocations in different industry sectors, monitor the performance of the existing equity holdings in these sectors, mentor analysts, make equity trading decisions for these sectors, and present portfolio performance reports to the investment team and the Advisory Board.

Instructor Consent Required

Prereq: AFM 274 or AFM 372/ACTSC 391; Accounting and Financial Management, Computing and Financial Management, Mathematics/Chartered Professional Accountancy, and Biotechnology/Chartered Professional Accountancy students only

AFM 433 LEC,TST,TUT 0.50

Course ID: 003269

Business Strategy

This course focuses on strategic management of the total enterprise. Managers contribute to the organization through their analytical and leadership capabilities as well as their technical expertise. The course provides a framework for developing and implementing strategy that fits the firm's environment, managerial values, and organization.

Prereq: (AFM 274/371 or AFM 272/ACTSC 291) and AFM 291; Accounting and Financial Management, Biotechnology/Chartered Professional Accountancy, Computing and Financial Management, or Mathematics/Chartered Professional Accountancy students only

AFM 434 LEC,TST 0.50

Course ID: 013748

Governance and Enterprise Risk Management for Global Organizations

This course is an introduction to governance and enterprise risk management challenges faced by global organizations. Topic areas include governance; organization and management systems; and enterprise risk management approaches and techniques.

Prereq: AFM 331/433; Accounting and Financial Management, Biotechnology/Chartered Professional Accountancy or Mathematics/Chartered Professional Accountancy students only

AFM 442 LEC,TST 0.50

Course ID: 011178

E-business: Enterprise Systems

This course examines the role of integrated company-wide information systems in improving organizational performances. The course will focus on the selection, acquisition, and implementation of these systems, including consideration of business process alignment, change management, and development of business cases to support their acquisition. The role of enterprise systems in inter-organizational systems and e-commerce will also be considered. The course will make use of case studies as well as examine selected current enterprise software.

Prereq: One of AFM 241, CS 330 or 490; Accounting and Financial Management, Biotechnology/Chartered Professional Accountancy, Computing and Financial Management, or Mathematics/Chartered Professional Accountancy students only

AFM 443 LEC,TST 0.50

Course ID: 011179

E-business: Introduction to Electronic Commerce

This course examines key topics in electronic commerce such as the structure of the Internet, basic e-commerce processes and technologies (web site, catalogs, customer attraction, ordering processes, payment processes, and fulfilment processes), control issues (availability, security, integrity and maintainability), business-to-consumer models, business-to-business models, business-to-employee models, e-business strategies, integration of e-commerce activities into other business operations, performance measurement, legal and regulatory issues, and assurance services.

Prereq: One of AFM 241, CS 330 or 490; Accounting and Financial Management, Biotechnology/Chartered Professional Accountancy, Computing and Financial Management, or Mathematics/Chartered Professional Accountancy students only

AFM 444 LEC,TST,TUT 0.50

Course ID: 015467

Intermediate Business Analytics

This course is a continuation of the introductory course with focus on project management and implementation of business analytics initiatives.

Prereq: AFM 344; Accounting and Financial Management, Mathetaics CPA, or Science Biotechnology CPA students only.
Antireq: AFM 417 taken F15, F16

AFM 462 LEC,TST,TUT 0.50

Course ID: 013914

Taxation 3 - Tax Planning Topics

This course focuses on the more specialized topics in introductory taxation, with an emphasis on basic planning for owner-managers and the use of corporate reorganizations, partnerships, and trusts.

Prereq: AFM 363; Accounting and Financial Management, Computing and Financial Management, Mathematics/Chartered Professional Accountancy or Biotechnology/Chartered Professional Accountancy students only

AFM 463 LEC,TST,TUT 0.50

Course ID: 015465

Introduction to U.S. Taxation

U.S. tax is an important topic for accounting and finance professionals since the U.S. is Canada's largest trading partner and many individuals move from one country to the other. This course covers the fundamentals of U.S. corporate and personal tax. U.S. tax issues relevant to both Canadian and American individuals and corporations will be emphasized. Important articles in the Canada/U.S. Tax Convention will also be covered in the course.

Prereq: AFM 362 and 363.

Antireq: AFM taken Fall 2016

AFM 473 LEC,TST 0.50

Course ID: 011701

Advanced Topics in Corporate Finance

Topics include items such as corporate governance, mergers and acquisitions, spinoffs and divestitures, security issuance, and capital budgeting.

Prereq: AFM 274/371 or AFM 372/ACTSC 391; Accounting and Financial Management, Biotechnology/Chartered Professional Accountancy, Computing and Financial Management, or Mathematics/Chartered Professional Accountancy students only

AFM 476 LEC,TST,TUT 0.50

Course ID: 011760

Advanced Corporate Finance

This course covers various advanced topics in corporate finance, with emphasis on theories of corporate incentives and asymmetric information. Illustrative applications using cases are provided.

Prereq: AFM 372/ACTSC 391 or ACTSC 372; Comp & Financial Management, Actuarial Science, Math/CPA, Math/Financial Analysis & Risk Mgmt Chartered Financial Analyst or Mathematical Finance.

Antireq: AFM 373

(Cross-listed with ACTSC 471)

AFM 477 LEC,TST 0.50

Course ID: 013730

Mergers and Acquisitions

This course develops understanding of the strategic acquisition and divestiture process, particularly as it relates to corporations in Canada. The course focuses on integrating key analytical skills in the interpretation of financial statements and valuation methodologies in the context of mergers and acquisitions of existing firms, as well as spin-offs, restructurings, buyouts and divestitures of existing assets. The course concentrates on value creation and institutional, strategic, ethical, governance, and control issues.

Prereq: AFM 274/371 or AFM 372/ACTSC 391

AFM 478 LEC,TST 0.50

Course ID: 013749

International Financial Management

This course examines various aspects of corporate decision-making in a global firm, such as cross-border investments and financing, international risk management, multinational working capital management, and the impact of the international regulatory environment.

Prereq: AFM 274/371 or AFM 372/ACTSC 391

AFM 479 LEC,TST 0.50

Course ID: 014853

Cases and Applications in Finance II

This course builds on the theory of finance and uses cases and applications to further address finance issues and competences, including risk management, equities, derivatives, and other investments.

Prereq: Level at least 4A Accounting and Financial Management, Biotechnology/Chartered Professional Accountancy, Computing and Financial Management or Mathematics/Chartered Professional Accountancy students only.

AFM 481 LEC,TST,TUT 0.50

Course ID: 003260

Cost Management Systems

Consideration of more complex topics in management planning and control. Emphasis is on traditional and contemporary cost accumulation systems and their application in modern day organizations. Cases, simulations, projects and presentations are the key instructional methods used to understand and integrate the course material. At the end of the course, students will have a solid understanding of how the correct choice of a costing model adds value to the organization.

Prereq: AFM 102; Accounting and Financial Management, Biotechnology/Chartered Professional Accountancy, Computing and Financial Management, or Mathematics/Chartered Professional Accountancy students only

AFM 482 LEC,TST 0.50

Course ID: 011415

Performance Measurement and Organization Control

This course will trace the evolution of the role of performance measurement systems in supporting areas of organization control. Topics will include the role of both financial and nonfinancial performance measures in: the DuPont method of control, the Harvard model of control, internal control, contemporary approaches to governance, and strategic management systems. After completing this course students will be able to evaluate the nature and suitability of a proposed performance measurement system given its design and purpose.

Prereq: AFM 433, 481. Accounting and Financial Management, Biotechnology/Chartered Professional Accountancy, Computing and Financial Management, or Mathematics/Chartered Professional Accountancy students only.

AFM 483 LEC,TST 0.50

Course ID: 014229

Applications of Analytics to Business

This course explores the metrics, quantitative analyses, and technologies used across a range of applications where an investigation of past business performance provides insights that drive business decisions.

Prereq: One of ECON 221, STAT 211, 230, 231, 240, 241; Accounting and Financial Management, Computing and Financial Management, Mathematics Chartered Professional Accountancy, Biotechnology/Chartered Professional Accountancy students

AFM 484 LEC,TST 0.50

Course ID: 014230

Advanced Management Control Systems

This course provides an in-depth examination of operations management and related issues in performance evaluation and control for various business sectors (e.g., manufacturing, service, and IT intensive).

Prereq: AFM 382 or AFM 482; Accounting and Financial Management, Computing and Financial Management, Mathematics Chartered Accountancy, Science Biotechnology/Chartered Accountancy students only.

AFM 491 LEC,TST,TUT 0.50

Course ID: 003285

Advanced Financial Accounting

An advanced accounting course considering specific problems of accounting for the corporate entity, such as business combinations, intercorporate investments, consolidated financial statements, accounting for foreign operations and foreign currency transactions, and segment reporting.

Prereq: AFM 391; Accounting and Financial Management, Computing and Financial Management, Biotechnology/Chartered Professional Accountancy or Mathematics Chartered Professional Accountancy students only

Financial Statement Analysis

This course introduces fundamental tools of analysis and valuation that are widely used in a variety of financial careers.

Prereq: AFM 291, 391 and (AFM 274/371 or AFM 372/ACTSC 391); Accounting and Financial Management, Computing and Financial Management or Mathematics/Chartered Professional Accountancy students only

AFM 500s**AFM 501 LEC 0.50**

Course ID: 003286

Contemporary Issues in Assurance and Accounting

The objective of this course is to examine assurance in a broad context. The course builds on students' prior knowledge of assurance and examines the role of the assurer and assure judgement in such broader issues as assurance levels, special assurance problems such as controls in governance and other forms of assurance. The course integrates a number of accounting and assurance issues.

Prereq: Accounting Diploma students only

AFM 502 LEC,TUT 0.50

Course ID: 003287

Control Systems in a Computer Environment

This is an advanced course that deals with the risks introduced by computer technology and the general and application controls used to reduce such risks to a tolerable level. The course helps students develop insights into the implications of emerging information technologies and helps students build practical skills to review and evaluate controls in computer-based systems.

Prereq: Accounting Diploma students only

AFM 503 LEC 0.50

Course ID: 003288

Issues and Problems in Accounting Practice

This course introduces students to a number of accounting issues, principles, practices and problems that they are likely to encounter in professional accounting practice.

Prereq: Accounting Diploma students only

AFM 504 LEC 0.50

Course ID: 003289

Issues and Problems in External Reporting

This is a capstone course designed to utilize students' understanding of financial accounting, cost and managerial accounting, finance, auditing, tax and accounting theory to interpret the current developments taking place in external reporting regulations in Canada.

Prereq: Accounting Diploma students only

APPLIED HEALTH SCIENCES**Notes**

Course offerings are subject to minimum enrolment requirements and availability of instructors.

AHS 100s

AHS 100 LEC 0.50

Course ID: 015106

Foundations of a Healthy Lifestyle

This course will introduce the student to the basics of health, wellness and disease, with an emphasis on assessing and evaluating the student's own lifestyle and health risk, and committing to a plan to begin or maintain a healthy lifestyle across the life course.

Prereq: Not open to Applied Health Sciences students

AHS 107 LEC,TUT 0.50

Course ID: 015105

Sociology of Activity, Health, and Well-being

This course will focus on the social and cultural factors that influence leisure, activity, health and well-being in different settings and among different populations. Sociological literature will be used to examine activity, health, and well-being in the lives of individuals, groups, and society.

Prereq: AHS Year 1 students

AHS 150 LEC 0.50

Course ID: 013580

Foundations of Human Anatomy and Physiology

This course covers the anatomy and physiology of the human body systems, with an emphasis on the relationship between a body organ's structure and its function. Topics include organization of the human body, basic chemistry, the cell, tissues, bones and muscles, the nervous system, the blood, cardiovascular system and the urinary system. It is designed for students who have little formal knowledge of the human body but who wish to learn about the human body, or train for a career in Therapeutic Recreation or other social and community services.

Prereq: Not open to Health Studies, Kinesiology or Science students

Only offered Online

APPLIED MATHEMATICS

AMATH 200s

AMATH 231 LEC,TST,TUT 0.50

Course ID: 003316

Calculus 4

Vector integral calculus-line integrals, surface integrals and vector fields, Green's theorem, the Divergence theorem, and Stokes' theorem. Applications include conservation laws, fluid flow and electromagnetic fields. An introduction to Fourier analysis. Fourier series and the Fourier transform. Parseval's formula. Frequency analysis of signals. Discrete and continuous spectra. [Offered: F,W,S]

Prereq: MATH 237 or 247.

Antireq: MATH 207, 212/ECE 206, MATH 217, 227

AMATH 242 LAB,LEC 0.50

Course ID: 011363

Introduction to Computational Mathematics

A rigorous introduction to the field of computational mathematics. The focus is on the interplay between continuous models and their solution via discrete processes. Topics include: pitfalls in computation, solution of linear systems, interpolation, discrete Fourier transforms and numerical integration. Applications are used as motivation.

[Note: This course may be substituted for CS 370 in any degree plan or for prerequisite purposes; lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: W,S]

Prereq: (One of CS 116, 136, 138, 146), MATH 235 or 245, 237 or 247.

Antireq: CS 335, 370, MTE 204

(Cross-listed with CS 371)

AMATH 250 LEC,TST,TUT 0.50

Course ID: 003317

Introduction to Differential Equations

Physical systems which lead to differential equations (examples include mechanical vibrations, population dynamics, and mixing processes). Dimensional analysis and dimensionless variables. Solving linear differential equations: first- and second-order scalar equations and first-order vector equations. Laplace transform methods of solving differential equations. [Offered: F,W,S]

Prereq: (MATH 106 or 114 or 115 or 136 or 146 or NE 112) and (MATH 128 or 138 or 148).

Antireq: AMATH 251, 350, MATH 218, 228

AMATH 251 LEC,TUT 0.50

Course ID: 014120

Introduction to Differential Equations (Advanced level)

AMATH 251 is an advanced-level version of AMATH 250. Compared to AMATH 250, AMATH 251 offers a more theoretical treatment of differential equations and solution methods. In addition, emphasis will be placed on computational analysis of differential equations and on applications in science and engineering.

[Note: AMATH 251 may be substituted for AMATH 250 whenever the latter is a requirement in an Honours plan. Offered: F]

Prereq: (MATH 106 or 114 or 115 or 136 or 146 or NE 112) and (MATH 128 or 138 or 148).

Antireq: AMATH 250, 350, MATH 218, 228

AMATH 271 LEC 0.50

Course ID: 013864

Introduction to Theoretical Mechanics

Dimensional Analysis, Newtonian dynamics, gravity and the two-body problem, Introduction to Hamiltonian Mechanics, Non-conservative forces, Oscillations, Introduction to Special Relativity [Offered: F]

Prereq: MATH 138, PHYS 121.

Coreq: (AMATH 250 or 251 or MATH 228), MATH 235, 237.

Antireq: PHYS 263

AMATH 300s

AMATH 331 LEC 0.50

Course ID: 003323

Applied Real Analysis

Topology of Euclidean spaces, continuity, norms, completeness. Contraction mapping principle. Fourier series. Various applications, for example, to ordinary differential equations, optimization and numerical approximation.

[Note: PMATH 351 may be substituted for AMATH/PMATH 331 whenever the latter is a requirement in an Honours plan. Offered: F,W]

Prereq: MATH 237 or 247

(Cross-listed with PMATH 331)

AMATH 332 LEC 0.50

Course ID: 003324

Applied Complex Analysis

Complex numbers, Cauchy-Riemann equations, analytic functions, conformal maps and applications to the solution of Laplace's equation, contour integrals, Cauchy integral formula, Taylor and Laurent expansions, residue calculus and applications.

[Note: PMATH 352 may be substituted for AMATH/PMATH 332 whenever the latter is a requirement in an Honours plan.
Offered: W,S]

Prereq: MATH 237 or 247.

Antireq: PHYS 365

(Cross-listed with PMATH 332)

AMATH 342 LAB,LEC 0.50

Course ID: 011451

Computational Methods for Differential Equations

An introduction to numerical methods for ordinary and partial differential equations. Ordinary differential equations: multistep and Runge-Kutta methods; stability and convergence; systems and stiffness; boundary value problems. Partial differential equations: finite difference methods for elliptic, hyperbolic and parabolic equations; stability and convergence. The course focuses on introducing widely used methods and highlights applications in the natural sciences, the health sciences, engineering and finance. [Offered: F,W]

Prereq: AMATH 242/341/CS 371 and (One of AMATH 250, 251, 350 or MATH 218, 228)

AMATH 343 LEC 0.50

Course ID: 003328

Discrete Models in Applied Mathematics

Difference equations, Laplace and z transforms applied to discrete (and continuous) mathematical models taken from ecology, biology, economics and other fields. [Offered: W]

Prereq: MATH 128 or 138 or 148

AMATH 350 LEC,TST 0.50

Course ID: 012744

Differential Equations for Business and Economics

First order ordinary differential equations. Applications to continuous compounding and the dynamics of supply and demand. Higher order linear ordinary differential equations. Systems of linear ordinary differential equations. Introduction to linear partial differential equations. The Fourier Transform and the diffusion equation. Discussion of the Black-Scholes partial differential equations, and solutions thereof. [Offered: F,W]

Prereq: MATH 136 or 146, 237 or 247, STAT 230 or 240 & (one of AFM 272/ACTSC 291, ACTSC 371, ECON 371, BUS 393W); Lev at least 3A; Not open to GenMath stdts.

Antireq: AMATH 250, 251, 351, 353, CIVE 222, ENVE 223, MATH 211/ECE 205, MATH 218, 228, ME 203, PHYS 364, SYDE 211

AMATH 351 LEC,TUT 0.50

Course ID: 003329

Ordinary Differential Equations 2

Second order linear differential equations with non-constant coefficients, Sturm comparison, oscillation and separation theorems, series solutions and special functions. Linear vector differential equations in \mathbb{R}^n , an introduction to dynamical systems. Laplace transforms applied to linear vector differential equations, transfer functions, the convolution theorem. Perturbation methods for differential equations. Numerical methods for differential equations. Applications are discussed throughout. [Offered: F,S]

Prereq: AMATH 250 or 251 and MATH 237 or 247; Level at least 3A.

Antireq: AMATH 350

AMATH 353 LEC,TUT 0.50

Course ID: 003330

Partial Differential Equations 1

Second order linear partial differential equations - the diffusion equation, wave equation, and Laplace's equation. Methods of solution - separation of variables and eigenfunction expansions, the Fourier transform. Physical interpretation of solutions in terms of diffusion, waves and steady states. First order non-linear partial differential equations and the method of characteristics. Applications are emphasized throughout. [Offered: W,S]

Prereq: AMATH 231 and (one of AMATH 250 or 251, MATH 211/ECE 205, MATH 218, 228).

Antireq: AMATH 350, PHYS 364

AMATH 361 LEC 0.50

Course ID: 003331

Continuum Mechanics

Stress and strain tensors; analysis of stress and strain. Lagrangian and Eulerian methods for describing flow. Equations of continuity, motion and energy, constitutive equations. Navier-Stokes equation. Basic equations of elasticity. Various applications. [Offered: W]

Prereq: AMATH 231 and (AMATH 271 or PHYS 263).

Coreq: AMATH 351 and (AMATH 353 or PHYS 364)

AMATH 373 LEC 0.50

Course ID: 003338

Quantum Theory 1

Critical experiments and old quantum theory. Basic concepts of quantum mechanics: observables, wavefunctions, Hamiltonians and the Schrodinger equation. Uncertainty, correspondence and superposition principles. Simple applications to finite and extended one-dimensional systems, harmonic oscillator, rigid rotor and hydrogen atom. [Offered: W]

Prereq: AMATH 231 and (AMATH 271 or PHYS 263) and PHYS 234.

Antireq: PHYS 334

AMATH 382 LEC,TUT 0.50

Course ID: 011910

Computational Modelling of Cellular Systems

An introduction to dynamic mathematical modeling of cellular processes. The emphasis is on using computational tools to investigate differential equation-based models. A variety of cellular phenomena are discussed, including ion pumps, membrane potentials, intercellular communication, genetic networks, regulation of metabolic pathways, and signal transduction.

[Note: Offered in the winter of even numbered years.]

Prereq: One of MATH 118, 119, 128, 138, 148; Third year standing in an Honours plan
(Cross-listed with BIOL 382)

AMATH 383 LEC 0.50

Course ID: 014749

Introduction to Mathematical Biology

An introduction to the mathematical modelling of biological processes, with emphasis on population biology. Topics include ecology, epidemiology, microbiology, and physiology. Techniques include difference equations, ordinary differential equations, partial differential equations, stability analysis, phase plane analysis, travelling wave solutions, mathematical software. Includes collaborative projects and computer labs.

[Note: Offered in the winter of odd numbered years.]

Prereq: (One of MATH 106, 114, 115, 136, 146) and (One of AMATH 250, 251, 350 or MATH 218, 228) and (One of STAT 202, 206, 211, 220, 230, 231, 241)

AMATH 390 LEC 0.50

Course ID: 014564

Mathematics and Music

An introduction to some of the deep connections between mathematics and music. Topics covered include: acoustics, including pitch and harmonics, basic Fourier analysis, the mathematics behind the differing pitch and timbre of string, wind and percussion instruments, scales and temperaments, digital music, musical synthesis.

[Note: Offered in the fall of even years.]

Prereq: One of MATH 118, 119, 128, 138, 148; Level at least 3A

AMATH 391 LEC 0.50

Course ID: 012282

From Fourier to Wavelets

An introduction to contemporary mathematical concepts in signal analysis. Fourier series and Fourier transforms (FFT), the classical sampling theorem and the time-frequency uncertainty principle. Wavelets and multiresolution analysis. Applications include oversampling, denoising of audio, data compression and singularity detection.

[Note: Offered in the fall of odd years.]

Prereq: (One of AMATH 231, ECE 342, PHYS 364, SYDE 252) and (One of MATH 114, 115, 136, 146, SYDE 114)

AMATH 400s

AMATH 442 LAB,LEC 0.50

Course ID: 011448

Computational Methods for Partial Differential Equations

This course studies several classes of methods for the numerical solution of partial differential equations in multiple dimensions on structured and unstructured grids. Finite volume methods for hyperbolic conservation laws: linear and nonlinear hyperbolic systems; stability; numerical conservation. Finite element methods for elliptic and parabolic equations: weak forms; existence of solutions; optimal convergence; higher-order methods. Examples from fluid and solid mechanics. Additional topics as time permits. [Offered: F]

Prereq: AMATH 342

AMATH 451 LEC 0.50

Course ID: 003354

Introduction to Dynamical Systems

A unified view of linear and nonlinear systems of ordinary differential equations in \mathbb{R}^n . Flow operators and their classification: contractions, expansions, hyperbolic flows. Stable and unstable manifolds. Phase-space analysis. Nonlinear systems, stability of equilibria and Lyapunov functions. The special case of flows in the plane, Poincaré-Bendixson theorem and limit cycles. Applications to physical problems will be a motivating influence. [Offered: W]

Prereq: AMATH 351

AMATH 453 LEC,TUT 0.50

Course ID: 003355

Partial Differential Equations 2

A thorough discussion of the class of second-order linear partial differential equations with constant coefficients, in two independent variables. Laplace's equation, the wave equation and the heat equation in higher dimensions. Theoretical/qualitative aspects: well-posed problems, maximum principles for elliptic and parabolic equations, continuous dependence results, uniqueness results (including consideration of unbounded domains), domain of dependence for hyperbolic equations. Solution procedures: elliptic equations -- Green functions, conformal mapping; hyperbolic equations -- generalized d'Alembert solution, spherical means, method of descent; transform methods -- Fourier, multiple Fourier, Laplace, Hankel (for all three types of partial differential equations); Duhamel's method for inhomogeneous hyperbolic and parabolic equations.

[Note: Offered in the fall of odd years.]

Prereq: AMATH 351 and 353

AMATH 455 LEC 0.50

Course ID: 003356

Control Theory

Feedback control with applications. System theory in both time and frequency domain, state-space computations, stability, system uncertainty, loopshaping, linear quadratic regulators and estimation. [Offered: W]

Prereq: (AMATH/PMATH 332 or PMATH 352) and AMATH 351

AMATH 456 LEC 0.50

Course ID: 003357

Calculus of Variations

Concept of functional and its variations. The solution of problems using variational methods - the Euler-Lagrange equations. Applications include an introduction to Hamilton's Principle and optimal control. [Offered: F]

Prereq: MATH 237 or 247 and (One of AMATH 250 or 251, MATH 211/ECE 205, MATH 218, 228); Level at least 3B

AMATH 463 LEC,TUT 0.50

Course ID: 003359

Fluid Mechanics

Incompressible, irrotational flow. Incompressible viscous flow. Introduction to wave motion and geophysical fluid mechanics. Elements of compressible flow. [Offered: F]

Prereq: AMATH 353 or PHYS 364) and AMATH 361.

AMATH 473 LEC 0.50

Course ID: 003369

Quantum Theory 2

The Hilbert space of states, observables and time evolution. Feynman path integral and Greens functions. Approximation methods. Coordinate transformations, angular momentum and spin. The relation between symmetries and conservation laws. Density matrix, Ehrenfest theorem and decoherence. Multiparticle quantum mechanics. Bell inequality and basics of quantum computing. [Offered: F]

*Prereq: AMATH 373 or PHYS 334; Level at least 4A in Mathematics or Science
(Cross-listed with PHYS 454)*

AMATH 475 LEC 0.50

Course ID: 003371

Introduction to General Relativity

Tensor analysis. Curved space-time and the Einstein field equations. The Schwarzschild solution and applications. The Friedmann-Robertson-Walker cosmological models. [Offered: W]

*Prereq: (AMATH 231 or MATH 227) and (AMATH 271 or PHYS 263); Level at least 4A Honours Mathematics or Science students
(Cross-listed with PHYS 476)*

AMATH 495 LEC 0.50

Course ID: 003382

Reading Course

Reading course as announced by the department.

Prereq: Not open to General Mathematics students

ANTH 100s

ANTH 100 LEC 0.50

Course ID: 014704

Introduction to Anthropology

Anthropology aims at understanding what it is to be human and to examine how humanity is manifested in the diversity of cultures and societies across time and space. This course gives the student an overview of the breadth of anthropology and orients them toward thinking anthropologically in our shared worlds.

Antireq: ANTH 101 or ANTH 102

ANTH 200s

ANTH 201 LEC 0.50

Course ID: 003396

Introduction to Archaeology

An introduction to the working assumptions, analytic approaches, and integrative and descriptive methods of archaeological anthropology.

(Cross-listed with CLAS 221)

ANTH 202 LEC 0.50

Course ID: 003399

Social and Cultural Anthropology

This course introduces students to fundamental principles of social and cultural anthropology through the reading of ethnographies and supplementary materials as well as the study of films. It examines how anthropologists have used ethnographic approaches to explore the challenges of colonialism, nationalism, genocide, and globalization.

ANTH 204 LAB,LEC 0.50

Course ID: 014705

Biological Anthropology

This course surveys the lines of inquiry in biological anthropology, including evolutionary theory, anthropological genetics, primatology, hominin fossil record, osteology and skeletal biology, and modern human biocultural adaptations. A laboratory component provides students an experiential approach to the material.

Antireq: ANTH 260

ANTH 221 LEC 0.50

Course ID: 015376

Language and Society

This course introduces students to the study of language and culture. Topics covered include language socialization, narrative, the politics of multilingualism, and hate speech.

Antireq: ARTS 290 taken Fall 2014, ANTH 400 taken Fall 2016

ANTH 222 LEC 0.50

Course ID: 015489

Anthropologies of the Body

Drawing upon diverse anthropological perspectives, this course takes a holistic biocultural approach to exploring what human bodies are, what they are used for, by whom, for what purposes, and how we come to know such things.

ANTH 233 LEC 0.50

Course ID: 003422

Inuit Cultures

An examination of Inuit and Eskimo cultures of Alaska, Canada, and Greenland from their prehistoric origins to the present. Administrative systems imposed upon the Inuit and Eskimo will be analyzed and compared, as will the contemporary problems these communities face.

Prereq: Level at least 2A

ANTH 241 LEC 0.50

Course ID: 015375

Food as Culture

The course addresses the topic of food from an anthropological perspective. It examines how the acquisition of food has shaped human biology and forms of social organization. Topics examined include the relationship of food to colonialism, political economy, ritual, and taboo.

ANTH 245 LEC 0.50

Course ID: 015579

Anthropology of Education

This course examines anthropological approaches to the study of education. Topics include classroom discourse, social reproduction, development, citizenship, power, and governmentality.

ANTH 272 LEC 0.50

Course ID: 003945

Issues in Contemporary Indigenous Communities in Canada

An examination of First Nations and Métis cultures and cultural development from the perspective of local indigenous communities. The course will feature lectures, discussions, and occasional guest speakers representative of the wider indigenous community.

Antireq: ANTH 370, NATST 272

(Cross-listed with INDG 272)

Also offered Online

ANTH 289 LEC 0.50

Course ID: 015580

Special Topics in Anthropology

Analysis of a special topic in anthropology, as announced by the department.

[Note: This is a repeatable course, subject to different content; it may be completed a total of two times.]

Prereq: Level at least 2A

ANTH 290 LEC 0.50

Course ID: 003432

Visual Anthropology

This course examines relations between culture and vision, the history of photography in anthropological research, and ethnographic film and its ethical implications. Topics include the roles of museums and representation, indigenous media, advocacy, and activism.

ANTH 300 LEC 0.50

Course ID: 003433

Practicing Anthropology

Thinking anthropologically means bringing observations and empirical findings into a dialogue with theoretical approaches. This course explores how anthropologists have developed the methods they use, considers how they interpret their findings through such lenses as functionalism and structuralism, and examines how they formulate critiques of fieldwork.

Prereq: ANTH 202

ANTH 303 LEC 0.50

Course ID: 013560

Anthropology of Digital Media

This course examines diverse forms of digital media and associated practices anthropologically and inquires into the social orders and cultural assumptions that sustain them or are themselves sustained by them. Topics include social media, virtual worlds, and hacker activism.

Prereq: ANTH 202

ANTH 305 LEC 0.50

Course ID: 014127

Paleopathology of Health and Disease

This course introduces students to the identification and interpretation of skeletal evidence for disease, ancient and modern concepts of health and disease, and current clinical interpretations of skeletal pathologies. Topics include pathology in archaeological remains and the process of developing a differential diagnosis of skeletal lesions.

Prereq: ANTH 204 or ANTH 260 prior to Winter 2015

ANTH 309 LEC 0.50

Course ID: 003401

The Archaeology of North America

This course examines past Aboriginal lifeways in North America north of Mexico from the time of earliest settlement to contact with Europeans. It provides a broad survey of space-time systematics as well as conceptual, methodological, and ethical issues relevant to study of the North American archaeological record.

[Note: Formerly ANTH 203]

Prereq: ANTH 201/CLAS 221.

Antireq: ANTH 203

ANTH 311 LEC 0.50

Course ID: 003440

Anthropology of Religion

This course examines how religion has been studied as an object of anthropological inquiry. Topics may include ritual, magic, witchcraft, symbolism, cosmology, the relation between beliefs and practices, as well as the mutual influences of religion, politics, nationalism, and socioeconomic change.

(Cross-listed with RS 361)

ANTH 320 LEC 0.50

Course ID: 003445

Hunter-Gatherer Archaeology

Detailed consideration of prehistoric cultural developments from earliest toolmaking to the transition to agriculture. An examination of the human mode of adaptation and the increasing complexity of cultural systems among prehistoric hunters and gatherers. Areas and periods of emphasis will vary from year to year.

Prereq: ANTH 201/CLAS 221

ANTH 321 LEC 0.50

Course ID: 003446

Archaeology of Complex Cultures

Cultural development from the agricultural revolution to the rise of literacy. Special attention to the development of agriculture as a means of subsistence and to the rise of early civilization. Areas and periods of emphasis will vary from year to year.

Prereq: ANTH 201/CLAS 221

(Cross-listed with CLAS 321)

ANTH 322 LEC 0.50

Course ID: 003448

The Archaeology of the Great Lakes Area

An in-depth study of the archaeological evidence for prehistoric cultures in the Great Lakes area from their arrival ca. 11,000 years ago to the coming of Europeans. Cultural ecology and cultural evolution will be stressed.

Prereq: ANTH 201/CLAS 221

ANTH 330 LEC 0.50

Course ID: 003452

Environmental Anthropology

This course examines the relationships between environments and human societies, focusing on the nature/culture divide and social and economic organization. Topics may include politics and practice, the influence of globalization, and regional perspectives.

[Note: Instructor consent required for non-Arts students.]

Prereq: ANTH 202

ANTH 335 LEC 0.50

Course ID: 009883

Arctic Archaeology

A detailed examination of the prehistoric development of human adaptations to the Inuit-Eskimo region of Arctic North America, eastern Siberia, and Greenland. Topics covered will include the ecology of the Arctic and the culture history of the peoples who first colonized the region as revealed by archaeological research.

Prereq: One of ANTH 201/CLAS 221, ANTH 233

ANTH 345 PRJ 0.50

Course ID: 003460

Directed Research in Anthropology

This course provides selected students with an opportunity to work (up to a maximum of eight hours per week over one term) as apprentices with a specific instructor on a research project in which the instructor is currently engaged.

[Note: This is a non-paid position and may not be combined with sponsored research positions. Previous or external research experiences will not meet the criteria for this course. This course is offered on a credit/non-credit basis only.]

Instructor Consent Required

Prereq: Level at least 3A Honours Anthropology

ANTH 347 LEC 0.50

Course ID: 011871

Medical Anthropology

This course teaches students the fundamentals of anthropological approaches to illness, health, medicine, and bioethics. It covers the history of medical anthropology as well as major movements, debates, and current topics. Topics include

cross-cultural healing systems, social suffering, and concerns raised by new biomedical technologies and within global health.

Prereq: ANTH 202

ANTH 348 LEC 0.50

Course ID: 013324

Anthropology of Tourism

This course examines the nature of tourism as cross-cultural contact and critiques the phenomena of mass travel and globalized tourism. The various perspectives of anthropologists and tourists in understanding culture will be explored.

ANTH 350 LEC 0.50

Course ID: 003461

Anthropology of Gender

This course examines anthropological perspectives on variations in gender roles and systems through the comparison of ethnographies. Topics include the relationship of gender to social organization, sexuality, economic and political processes, belief systems, and social movements.

Prereq: ANTH 202

ANTH 355 LAB,SEM 0.50

Course ID: 009886

Human Osteology

A laboratory course in the anatomy and function of the human skeleton with an emphasis on recovering and identifying skeletal remains from archaeological and forensic contexts.

[Note: Instructor consent required for non-Arts students.]

Prereq: ANTH 204 or ANTH 260 prior to Winter 2015

ANTH 365 LEC,SEM 0.50

Course ID: 003466

Human Evolution

This course reviews the evolutionary history of humans. It includes an examination of the hominin fossil record, evidence from genetic analyses, and behavioural inferences that have been drawn from nonhuman primate models. Emphasis is placed on the process of knowledge production and interpretation, and the representation of human evolution in the public realm.

Prereq: ANTH 204 or ANTH 260 prior to Winter 2015

ANTH 371 FLD,LEC 0.50

Course ID: 012624

Anthropological Field Experience

This course features a combination of academic content and field experience.

[Note: Additional fees required.]

Department Consent Required

ANTH 372 FLD,LEC 0.50

Course ID: 014707

Archaeological Field School

Data gathering techniques are studied and applied in field work on archaeological sites. Enrolment is limited.

[Note: Additional fees required.]

Department Consent Required

ANTH 381 LEC 0.50

Course ID: 014706

Anthropology of South Asia

An introduction to culture and society in South Asia, focusing on caste, kinship, gender, religion, material culture, regional and national identity, ethnic conflict, globalization, and life in the diaspora.

Prereq: ANTH 202

ANTH 382 LEC 0.50

Course ID: 014709

Anthropology of Contemporary China

This course explores cultural and social change in contemporary China, including Taiwan, Hong Kong, and global migration. Topics include politics, identity, medicine and disease, urbanization, food security, post-colonialism and transnationalism.

Prereq: ANTH 202

ANTH 389 LEC 0.50

Course ID: 015581

Special Topics in Anthropology

Analysis of a special topic in anthropology, as announced by the department.

[Note: This is a repeatable course, subject to different content; it may be completed a total of two times.]

Prereq: Level at least 3A

ANTH 391 RDG 0.50

Course ID: 003473

Reading in Anthropology

Student-initiated independent research on a selected topic. A high standard of written work is required.

[Note: This is a repeatable course, subject to different content; it may be completed a total of two times.]

Department Consent Required

Prereq: Level at least 3A Honours Anthropology

ANTH 395 FLD,LEC 0.50

Course ID: 012749

Anthropological Study Abroad

This course features a combination of academic study and first-hand field study of cultures and visits to or work experience at museums and archaeological sites.

[Note: Field trip fee may be required.]

Instructor Consent Required

Prereq: at least 1.0 unit in Anthropology

ANTH 400s**ANTH 415 SEM 0.50**

Course ID: 015097

Archaeologies of Landscape

This course examines the ways in which past peoples experienced, transformed, remembered, represented, and controlled landscapes. Readings and discussions emphasize both contemporary theoretical approaches and case studies from various settings in an effort to illuminate the social, political, economic, and ideological dimensions of landscape.

Prereq: ANTH 201/CLAS 221.

Antireq: ANTH 400 taken Winter 2015, Fall 2015

ANTH 430 LEC 0.50

Course ID: 014710

Science as Practice and Culture

An examination of science as being constituted by practices which are inevitably social and cultural, as well as of scientific expertise in contemporary issues of new technology, biomedicine, and environmental conflict.

Prereq: Level at least 4A

(Cross-listed with SOC 431)

ANTH 440 LAB,SEM 0.50

Course ID: 009885

Archaeological Analysis and Interpretation

A study of contemporary archaeological method and theory with emphasis on the process of deriving inferences concerning past peoples and societies from different kinds of archaeological materials and data. Students will be required to carry out an analysis of an actual archaeological assemblage. Specific topics will vary from year to year.

Prereq: ANTH 201/CLAS 221

ANTH 447 SEM 0.50

Course ID: 014711

Seminar in Medical Anthropology

This seminar course is a close examination of selected current topics within medical anthropology. It builds upon approaches and content from ANTH 347, and readings include at least two ethnographic manuscripts.

Prereq: ANTH 347

ANTH 455 LAB,LEC 0.50

Course ID: 011982

Skeletal Biology and Forensics

This laboratory course focuses on the evaluation of human skeletal remains in archaeological and forensic contexts. Topics include determination of basic biological categories, e.g., age, sex, race, evaluation of paleopathological conditions, and aspects of forensic anthropology.

Prereq: ANTH 355

ANTH 465 SEM 0.50

Course ID: 015374

Borders, Boundaries, and Crossings

This seminar covers anthropological perspectives on the relationship between state borders and socio-cultural boundaries (across race, gender, class, language, and religion). Readings include ethnographies about contested borders, border dwellers, and border crossers.

Prereq: ANTH 202.

Antireq: ANTH 400 (002) taken Fall 2015

ANTH 489 SEM 0.50

Course ID: 003475

Special Topics in Anthropology

Analysis of a special topic in anthropology, as announced by the department.

[Note: This is a repeatable course, subject to different content; it may be completed a total of two times. Formerly ANTH 400.]

Prereq: Level at least 4A

ANTH 498 LEC 0.50

Course ID: 014712

Anthropology Capstone

This course explores themes of current anthropological research as they intersect across the major subfields of the discipline. Topics may vary.

[Note: The department chair is the course co-ordinator. This course cannot be substituted for other 400-level plan requirements. Course will be graded on a CR/NCR basis.]

Prereq: Level at least 4A; Anthropology majors only

ANTH 499A PRJ 0.50

Course ID: 003489

Honours Essay

Directed reading and research in a selected area of anthropology inquiry.

Department Consent Required

*Prereq: Anthropology majors only; 80% cumulative ANTH average**

ANTH 499B PRJ 0.50

Course ID: 003490

Honours Essay

Directed reading and research in a selected area of anthropology inquiry.

Department Consent Required

*Prereq: Anthropology majors only; 80% cumulative ANTH average**

APPLIED LANGUAGE STUDIES

APPLS 200s

APPLS 205R LEC 0.50

Course ID: 012198

Second Language Acquisition

This course introduces major theories of second language acquisition along with reasons for variations in the speed and accuracy of learner progress. It addresses such issues as error analysis, grammatical accuracy, and the effectiveness of bilingual or immersion education.

Prereq: Level at least 2A.

Antireq: ARTS/APPLS 305R

APPLS 300s

APPLS 301 SEM 0.50

Course ID: 012718

Language, Culture, and Identity

This course provides an introductory overview of fundamental concepts of language, culture, and identity and relates them to foreign/second language learning and teaching. The course is not language-specific but rather addresses general questions related to learning and using more than one language.

[Note: Taught in English.]

Prereq: Level at least 3A

(Cross-listed with GER 301)

APPLS 304R LEC 0.50

Course ID: 011980

Second Language Teaching Methodology

This course offers a foundation for developing competence as a professional second language instructor. In classes exploring theories of second language instruction, students discover the strengths and weaknesses of traditional and popular methodologies and integrated approaches applied to such areas as communicative competence and general language skill development.

Prereq: Level at least 3A

APPLS 306R LEC 0.50

Course ID: 012356

Second Language Assessment and Testing

This course explores the principles of second language testing - reliability, validity, practicality, authenticity, and impact - and applies them to language classrooms and high stakes proficiency tests such as the TOEFL. It considers the implications of testing for both teachers and students. Of interest to prospective teachers of English and other languages.

[Note: Formerly ARTS 306R]

Prereq: One of APPLS 205R, 304R, APPLS/GER 301

ARTS AND BUSINESS**ARBUS 100s****ARBUS 101 LEC,TST 0.50**

Course ID: 003243

Introduction to Business in North America

The functional areas of business: finance, personnel administration, production, marketing, and accounting are examined within differing organizational structures. Coverage also includes study of the principles of effective management and the financial system as a source of corporate capital.

Prereq: Arts and Business Co-op and Regular students.

Antireq: BUS 111W

(Cross-listed with AFM 131)

Also offered Online

ARBUS 102 LEC,TST,TUT 0.50

Course ID: 003239

Accounting Information for Managers

This course is designed for non-accountants who will use accounting information for planning, control, and decision making.

Prereq: Honours Arts and Business students.

Antireq: AFM 101, 102, BUS 127W/227W, 247W, MSCI 262

(Cross-listed with AFM 123)

ARBUS 200s**ARBUS 200 LEC,PRA 0.50**

Course ID: 014241

Entrepreneurship Principles and Practices

The role of the entrepreneur, the entrepreneurial firm, and the creative society are examined. Students are exposed to the practices that enable workplace creativity and innovation with exposure to leadership theory and project management.

[Note: Additional fee may be required.]

Prereq: ECON 101; Level at least 2A Honours Arts & Business, Management Studies.

Antireq: ECON 220/ARBUS 201, ARBUS 200 taken prior to Fall 2013, ENBUS 203

ARBUS 202 LEC 0.50

Course ID: 007266

Professional and Business Ethics

Study of ethical and moral issues that typically arise in professional and business activity. What responsibilities to society at large do people in such business and professional activities as teaching, engineering, planning, architecture, and accounting have? How far should professional autonomy extend?

Prereq: Honours Arts and Business students

(Cross-listed with PHIL 215)

Also offered Online

ARBUS 300s

ARBUS 300 LEC,PRA 0.50

Course ID: 013722

Practical Business Skills

This course will introduce students to important and relevant business skills that will assist them as they prepare for successful careers. The course will supplement contemporary theories with appropriate case studies.

Prereq: ARBUS 200; Level at least 2A Global Business and Digital Arts students or Level at least 3A Arts and Business, Management Studies students

ARBUS 301 LEC,TST 0.50

Course ID: 012769

International Business

This course examines the opportunities, risks, and challenges faced by businesses in international markets, as well as the preparation required to operate them.

Prereq: ARBUS 101; Level at least 3A Arts and Business students

(Cross-listed with AFM 333)

ARBUS 302 LEC 0.50

Course ID: 004936

Marketing 1: Principles of Marketing and Consumer Economics

Economic principles for marketing, exchange theory and consumer analysis, product or service introductions, public and private policies for advertising, differentiation, and quality assurance.

Prereq: ECON 101; Level at least 2B Arts and Business students.

Antireq: ENBUS 211/311, GBDA 304, BUS 352W

(Cross-listed with ECON 344)

ARBUS 303 LEC 0.50

Course ID: 015191

Marketing 2

Because firms exist to satisfy customer needs, a solid understanding of the consumer is needed for any successful marketing management. The course also considers how products, services, and consumption can have far-reaching social impacts.

Prereq: ECON 344/ARBUS 302 or ENBUS 211/311; Level at least 3A Arts and Business students

(Cross-listed with ECON 345)

ARBUS 400s

ARBUS 400 LEC,PRA 0.50

Course ID: 013721

Strategy and Program Integration

A capstone course designed to integrate the arts and business components of the program that incorporate the principles of strategy for the purpose of enabling students to effectively position themselves for opportunities after graduation.

[Note: Additional fee required.]

Prereq: ARBUS 300

ARCHITECTURE

Notes

1. Those students who entered the program prior to September 2005 should consult the Undergraduate Calendar for their year of entry to the program.
2. Students entering the program are expected to supply their own drawing equipment, drafting board (top only) and general art supplies. The estimated cost of this equipment is \$500 - 600.
3. There is a \$25.00 studio fee for each academic term.
4. Students are expected to defray the costs of studio projects. The cost of materials may range from \$100 to \$500 per Design Studio.
5. Computing equipment is available for general use by students.

ARCH 100s

ARCH 100 LEC 0.50

Course ID: 003491

An Introduction to Architecture

An introduction which explores in broad terms the nature of architecture and its evolution over time. The course will familiarize students with the primary concepts and architecture of our culture; develop an awareness of the primary influences on the evaluation of architectural form; establish the concept that architecture conveys meaning through its own expressive language; and introduce the language of architectural criticism and interpretation.

[Note: Instructor consent required for non-Architecture students. Offered: F]

Prereq: Architecture students only

ARCH 110 STU 0.50

Course ID: 003492

Visual and Digital Media 1

Introduction to the use of graphic media in architecture. Students will engage in exercises in drawing using various media, acquire digital skills, and develop fluency in diverse forms of architectural presentation. [Offered: F]

Prereq: Architecture students only

ARCH 113 LAB,LEC 0.50

Course ID: 003494

Visual and Digital Media 2

Introduction to computing techniques in architecture. Students will be instructed in the conceptual foundations for computer use in architecture, graphic applications for the computer and skills for two-dimensional drawing, three-dimensional modelling and graphic techniques for visualization and portfolio development. Students will gain fluency in a range of software applications for the purposes of developing technical and visual proficiencies to be integrated into the design process.

[Offered: W]

Prereq: ARCH 110

ARCH 125 LEC 0.50

Course ID: 010395

Principles of Environmental Design

An introduction to the environmental aspects of architectural design and to an analysis of the form that buildings and landscapes take and the processes and ideals leading to those forms. Topics of discussion include environmental concepts and influences on design, site planning, landscape, sustainability, embodied energy, climatic influences and microclimates.

[Note: Field Trip Fee: \$20. Offered: F]

Prereq: Architecture students or Honours Environment and Business students only.

ARCH 126 LEC 0.50

Course ID: 003541

Environmental Building Design

This study of building construction and design examines relationships between design development and environmental building practices. Case studies, testing exercises, and projects will be used to investigate: solar geometry, influences of climate, regional circumstances, sustainability, vernacular building practice, daylighting, and passive design. Energy related issues will be addressed and energy based software design programs will be introduced. The detailed design of an energy efficient/passive solar building as the final term project will be undertaken.

[Note: Field Trip Fee: \$15. Offered: W]

Prereq: ARCH 125.

Antireq: ARCH 226, 366

ARCH 142 LEC 0.50

Course ID: 003496

Introduction to Cultural History

This course will introduce an approach to cultural history and attempt to localize modern humanity by looking at the principal icons and images that have been central to the compelling myths of Modernism, the principal movement and source of art and architecture in 20th century Western culture. This course will examine how living myths are recapitulated or transformed in relationship to the artistic and cultural conventions of the period. [Offered: F]

Prereq: Architecture students only

ARCH 143 LEC 1.00

Course ID: 003497

The Ancient World and Foundations of Europe

An overview of the cultural history of antiquity and the Early Middle Ages up to the rise of feudalism and the rediscovery of Aristotle: from 2000 BC to 1100 AD. Recognition of patterns of life and the concepts of order and conduct, the metaphors and myths which evolve during this time period through the study of the ideas, literature, art, architecture, technology and town design from ancient Greece and Rome and the lands surrounding the Mediterranean until the end of the first millennium.

[Offered: W]

Prereq: ARCH 142

ARCH 172 LEC 0.50

Course ID: 003500

Building Construction 1

A focus on the construction of small scale buildings will introduce the fundamentals of building construction demonstrating relationships between design development and: building techniques, materials, building science and construction practices, factors of environment, climate and geology. Case studies and projects for small-scale buildings will investigate: climate, solar geometry, soils, foundations, wood frame, stone and masonry construction.

[Note: Field Trip Fee: \$20. Offered: F]

Prereq: Architecture students only

ARCH 173 LEC 0.50

Course ID: 003520

Building Construction 2

An emphasis on the construction of medium to large scale building will examine relationships between design development and the building science and construction practices of structural systems and enclosures. Case studies and projects will be used to investigate: reinforced, precast and prestressed concrete construction; steel framing systems; building envelopes (curtain wall, window walls, glazing and roofing systems); fire protection; interior finish selection.

[Note: Field trip fee: \$20. Offered: W]

Prereq: ARCH 172

Antireq: ARCH 173/ARCH 266

ARCH 174 LEC 0.50

Course ID: 003501

Experimental Courses

These courses offer a vehicle for introducing additional electives to the program on a short-term basis, and for developing future permanent courses.

Department Consent Required

ARCH 175 LEC 0.50

Course ID: 010127

Experimental Courses

These courses offer a vehicle for introducing additional electives to the program on a short term basis, and for developing future permanent courses.

Department Consent Required

ARCH 192 STU 1.50

Course ID: 003502

Design Studio

Development of the means to appreciate the art and science of building; introduction to the study of theories of architecture; development of skills in graphic communication; introduction to a study of building elements; promotion of the application of theory in the practice of design.

[Note: Field trip (one week). Field trip cost: \$300 - \$450. Offered: F]

Prereq: Architecture students only

ARCH 193 STU 1.50

Course ID: 003503

Design Studio

Further development of basic skills, and the application of theory and design in small scale architectural design projects. Introduction to issues of inhabitation, program and context. [Offered: W]

Prereq: ARCH 192

ARCH 200s

ARCH 212 LEC 0.50

Course ID: 015006

Digital Fabrication

This course will introduce students to the tools, work-flows, and culture surrounding computer-aided design/computer-aided manufacturing (CAD/CAM) and its creative applications within architecture. Students will learn how to work with CAD/CAM technologies such as laser cutters, three-dimensional (3D) printers and computer numerical control (CNC) routers while expanding their knowledge of two- and three-dimensional CAD geometries that inform the digital fabrication process. [Offered: F]

Prereq: ARCH 113

ARCH 215 LEC 0.50

Course ID: 012948

Communication Design

This course will elaborate upon the graphic and communication conventions established in the fundamental architecture curriculum through a series of assignments ranging from conventional architectural techniques to introductory principles of graphic and industrial design. The intention is to: cultivate an understanding of fundamental concepts and techniques in leading vector and raster-based graphic tools for design development and presentation; to develop an understanding of the paradigm shift from digital media as a representation tool to that of design development; to expand the depth and breath of skills necessary for modern design industry; and to apply design techniques and technologies to and from industrial and graphic design. [Offered: S]

Prereq: Level at least 2B Architecture

ARCH 225 LEC 0.50

Course ID: 009510

Theory and Design of the Contemporary Landscape

This course provides an historical overview of the ideas of nature and landscape in Western thought. 'Nature', 'Ecology', and 'Landscape' are treated as cultural constructs, related to specific philosophical, technological, economic, political, and social issues. Many of these issues will be considered as the course of study traces the evolution and transformation of contemporary landscape. [Offered: S]

Prereq: Level at least 2B Architecture.

Antireq: ARCH 425

(Cross-listed with ARCH 425)

ARCH 246 LEC,TUT 1.00

Course ID: 003515

Pre-Renaissance to Reformation

This course presents the cultural history of the High and Late Middle Ages, the Renaissance, and the Reformation: from the 12th to 17th centuries. Recognition of the patterns of life of feudalism, the medieval world, scholasticism, the humanist re-interpretation of the place of Man in the universe, the protestant challenge to established doctrines of faith, and the new understanding of the human and natural worlds in the wake of the European discovery of Asia and the Americas. Analysis of the art and architecture from this era with emphasis on the French and German Gothic, and the Italian Renaissance and its spread and transformation in the rest of Europe. [Offered: F]

Prereq: ARCH 143

ARCH 248 LEC,TUT 1.00

Course ID: 003536

Enlightenment, Romanticism and the 19th Century

This course investigates the cultural and architectural history of the scientific, agricultural, industrial and social revolutions. Depiction of early modern culture and those of the Enlightenment and the long nineteenth century as one in which the notion of environmental order as the fulfilling of natural law is replaced by a notion of order as the historical creation of autonomous will. Analysis of the art and architecture from this era with emphasis on the Baroque, Neo-Classicism, Historicism, and the Industrial Revolution. Selected works in philosophy, literature, art and architecture will be studied. [Offered: S]

Prereq: ARCH 246

ARCH 256 LAB,LEC 0.50

Course ID: 012286

Introduction to Photography

Introduction to the main concepts in creating and using photographic images. This will be accomplished in the context of various academic applications including site and model documentation, portfolio, and thesis presentation. The course will include both analog and digital procedures but with a heavy emphasis on monochrome silver images. A limited number of analog and digital cameras are available on a loan basis. Materials at student's expense.

[Note: Lab Fee \$10. Offered: S]

Prereq: Level at least 2A Architecture students.

Antireq: FINE 227/228E

ARCH 260 LEC,TUT 0.50

Course ID: 003498

Principles of Structures

Fundamental concepts of mechanics and structures, as related to architectural design, study of loading conditions, forces, moments, systems of forces, conditions of equilibrium for two and three dimensional structures, centre of gravity of loads and areas, bar forces in trusses, simple frame analysis, moment of inertia. Concepts of simple stress and strain; shear and bending moments in simple beams; shear and moment diagrams, qualitative deflected shapes, flexural and shearing stresses, deflection calculations; compression members; Euler's formula. [Offered: F]

Prereq: Level at least 1B Architecture students.

Antireq: ARCH 163

ARCH 263 LEC 0.50

Course ID: 010396

Integrated Environmental Systems

This course is focused on the integrated environmental systems of buildings with an aim to develop the knowledge and skills appropriate to architectural practice. Subjects covered include environmental parameters, air and water systems, heating and cooling loads, energy conservation, ventilating and air conditioning systems, plumbing and waste systems, artificial source lighting and daylighting, acoustics, and fire protection criteria and systems, with reference to building codes and standards. [Offered: F]

Prereq: Level at least 2A Architecture.

Coreq: ARCH 292

ARCH 264 LEC 0.50

Course ID: 011141

Building Science

The physio-technical factors that influence building design for performance: durability, efficiency, health and sustainability will be explored. Common building design construction problems, their causes and solutions, will be examined with the aid of case studies. Using the principles of building science, good details of masonry, wood, steel and glass will be developed.[Offered: W]

Prereq: ARCH 173.

Antireq: ARCH 364

ARCH 274 LEC 0.50

Course ID: 003521

Experimental Course

These courses offer a vehicle for introducing additional electives to the program on a short-term basis, and for developing future permanent courses.

Department Consent Required

ARCH 275 LEC 0.50

Course ID: 010175

Experimental Courses

These courses offer a vehicle for introducing additional electives to the program on a short-term basis, and for developing future permanent courses.

Department Consent Required

ARCH 276 LEC 0.50

Course ID: 003529

Timber: Design, Structure and Construction

Architectural case studies are used to examine conceptual development, structural design, building process and the selection of structural timber systems. Topics such as flexural, compression and truss members, connections, and plywood construction are studied using calculations, design aids, rules of thumb and the latest CSA design standards. [Offered: S]

Prereq: One of ARCH 260, ARCH 262, CIVE 204 or 205

ARCH 277 LEC 0.50

Course ID: 014259

Timber: Design, Structure and Construction for Engineers

Architectural case studies are used to examine conceptual development, structural design, building process and the selection of structural timber systems. Topics such as flexural, compression and truss members, connections, and plywood construction are studied using calculations, design aids, rules of thumb and the latest CSA design standards. [Offered: S]

Prereq: ARCH 260 or CIVE 204 or CIVE 205.

Antireq: ARCH 276

ARCH 284 RDG 0.50

Course ID: 003530

Architectural Research

This offers a student an opportunity for independent research into architectural problems not offered in the regular curriculum, guided exploration of specific architectural problem areas, of appropriate complexity to the particular term.

Department Consent Required

Prereq: Second year Architecture

ARCH 285 LEC 0.50

Course ID: 003531

Architectural Research

This offers a student an opportunity for independent research into architectural problems not offered in the regular curriculum, guided exploration of specific architectural problem areas, of appropriate complexity to the particular term.

Department Consent Required

Prereq: Second year Architecture

ARCH 292 STU 1.50

Course ID: 003532

Design Studio

The exploration of design as a thinking process through the medium of small scale design projects. The development and analysis of architectural propositions concerning personal space within the context of a larger community.

[Note: Required two day field trip, cost range \$150 - \$200. Offered: F]

Prereq: ARCH 193

ARCH 293 STU 1.50

Course ID: 003533

Design Studio

Design involving problems of human perception and dimension in more complex environments, and dealing with issues of public and private space. Development of skills in analysis and programming, and further exploration of questions of siting

and context.

[Note: Field trip (one week). Estimated field trip cost: \$400 - \$500. Offered: S]

Prereq: ARCH 292

ARCH 300s

ARCH 313 LEC 0.50

Course ID: 015000

Advanced Visualization and Analysis

This course will explore the study of architectural precedent as both an analytic and generative tool exposing students to diagrammatic strategies and advanced visualization methods to be used as a support for urban and architectural analysis and design. This course will expose students to architectural visualization techniques, information design and the management of complexity using Building Information Modelling (BIM) and other digital tools. [Offered: W]

Prereq: ARCH 212

ARCH 314 LEC 0.50

Course ID: 011139

Digital Design

This intermediate level course provides a more in-depth theoretical foundation in architectural design by computer, including three-dimensional modelling, light and colour, rendering, image processing and animation. Practice is provided by weekly tutorial exercises and a small term design project.

[Note: Formerly ARCH 212. Offered: W]

Prereq: ARCH 113

ARCH 327 LEC 0.50

Course ID: 003512

Architecture of the Urban Environment

An introduction to the structure and form of urban environments as understood through the urban architecture. The forces that determine the creation and development of urban places will be examined. Topics include: the plan as a generative form, urban building types, urban morphology and the shape of the public realm, infrastructure as both system and architectural object, nature and the park, and real estate and development controls. Of special interest will be analyses of the suburb and urban master plans. [Offered: F]

Prereq: Level at least 2B Architecture students or Honours Environment and Business students

ARCH 328 SEM 0.50

Course ID: 014260

Approaches to Architecture and Urbanism

The course develops a trans-disciplinary overview to design approaches in architecture and urbanism using image- and symbol-making as key activities in designing environments. The course evaluates the quality of results and the quality of process of design of environments. The students address topics within a wide range of subject matter groupings, from sustainable architecture to engineering, landscape and infrastructure, to branding and aesthetic practices, to design within the municipal political forum. Students present seminars on diverse categories of design as a means to develop a personal design ethos. The final submission includes a set of drawings, diagrams and images that represent a set of design principles allowing students to consciously take a position in the world as a designer. [Offered: F, W]

Prereq: Level at least 3A Architecture

ARCH 331 LEC 0.50

Course ID: 014261

Working with Wood

This course focuses on understanding the premise that hand skills can facilitate and help inform conceptual and academic skills. The content provides a broad based introduction to woodworking equipment, its fabrication methods and methodology. A combination of lectures and hands on experiences are used to equip students with the basic skills and knowledge required to conceptualize, fabricate and finish a designed object from wood. [Offered: W]

Prereq: Level at least 3A Architecture.

Antireq: ARCH 385 (Topics Course - Working with Wood)

ARCH 332 LEC 0.50

Course ID: 010398

Design/Build Workshop

A design/build workshop which offers opportunities for hands-on experience in three-dimensional design. Advancements of technical and design skills provide the underpinnings for the projects. Students are encouraged to explore a variety of media and techniques such as woodworking and metalworking, allowing for both individual and small team investigations. A logbook will be kept to record creative intentions and the design process from conception to completion. [Offered: F, W]

Prereq: Level at least 2B Architecture students

ARCH 342 LEC,TUT 1.00

Course ID: 010399

Modernism to the 21st Century

This course examines the cultural, architectural and urban history of that complex period known as modernism. It is an overview of the individual works, movements and critical texts associated with the evolution of modern architecture and urbanism from the beginning of the 20th century to the early years of the second millennium. The social, technological and aesthetic ambitions of the modern project are critically reviewed and its development and dissemination in Europe, the Americas and Asia is traced. Selected works are examined in depth as examples of the canonic and variant forms of modernism. [Offered: W]

Prereq: ARCH 247

ARCH 345 LEC 0.50

Course ID: 003535

Architectural Theory 1850-1990

Beginning with the introduction of important theories of architecture in vogue prior to 1850, this course examines texts, movements, buildings, projects, and urban proposals of the period in order to understand the structure of contemporary architectural theory.

Prereq: ARCH 247

ARCH 346 SEM 0.50

Course ID: 014262

Competitions in Architecture

This course provides an opportunity for the student to independently engage in the respected tradition of the Architectural Competition. The competition entry and accompanying research paper must focus on the use of architectural precedents as the basis for the creation of typologically based propositions. Submission to the external competition is mandatory, the timing and detailed requirements of which will determine the personalized academic requirements for this course. [Offered: W, S]

Instructor Consent Required

Prereq: Level at least 3A Architecture

ARCH 347 SEM 0.50

Course ID: 014263

Philosophy in Architecture

The course introduces the study of philosophical issues as they pertain to architecture, urbanism, image-making and symbol manipulation. The course focuses on the work of a selection of living and recent philosophers whose issues are relevant to questions of everyday 21st century life, with reference to their basis in the history of philosophy. Work by philosophers such as Giorgio Agamben, Kwame Anthony Appiah and Judith Butler on ethics, Gilles Deleuze on meaning, Friedrich Kittler on media and technology, Jean-Luc Nancy on community and Slavoj Zizek on psychoanalysis and political economy, as well as

Canadian scholars such as Marshall McLuhan and Harold Innis is addressed. Students participate in a seminar format with a series of presentations linking their design projects with philosophical issues, and submit a final project making use of text and diagrams. [Offered: F, W]

Prereq: Level at least 3A Architecture

ARCH 362 LEC,TUT 0.50

Course ID: 003539

Steel and Concrete: Design, Structure and Construction

Architectural case studies are used to examine conceptual development, structural design, building process and the selection of structural steel and concrete systems. Topics such as tension, flexural and compression members; and connections are studied using calculations, design aids, rules of thumb and the latest CSA design standards. [Offered: W]

Prereq: ARCH 262 or ARCH 260/163 and ARCH 276

ARCH 374 LEC 0.50

Course ID: 003545

Experimental Courses

These courses allow for additional electives to the program on a short term basis, and for developing future permanent courses.

Department Consent Required

ARCH 375 LEC 0.50

Course ID: 003549

Experimental Courses

These courses allow for additional electives to the program on a short term basis, and for developing future permanent courses.

Department Consent Required

ARCH 384 RDG 0.50

Course ID: 003554

Architectural Research

This offers a student an opportunity for independent research into architectural problems not offered in the regular curriculum. It allows guided exploration of a specific architectural problem area, of appropriate complexity to the particular term.

Department Consent Required

Prereq: Level at least 3A Architecture

ARCH 385 RDG 0.50

Course ID: 003555

Architectural Research

This offers a student an opportunity for independent research into architectural problems not offered in the regular curriculum. It allows guided exploration of a specific architectural problem area, of appropriate complexity to the particular term.

Department Consent Required

Prereq: Level at least 3A Architecture

ARCH 392 STU 1.50

Course ID: 003556

Design Studio

Development of design skills and theoretical knowledge through their application in projects involving various building types in urban situations. Emphasis is placed upon issues of materiality and technology in architectural design.

[Note: Required four to five day field trip, cost range \$400 - \$500. Offered: W]

Prereq: ARCH 293

ARCH 393 STU 1.50

Course ID: 003557

Option Design Studio

This Design Studio is subdivided into distinct studio sections, each of which provides a specific platform for advanced research and design presented within the context of a topic or set of issues to be explored in relation to a specific design project, program and site. These studios range in both scale and scope, traversing an array of academic investigations, design hypotheses, research agendas, interdisciplinary explorations, and pedagogical intentions. These topics foreground the disciplinary arenas within architecture in the areas of architectural theory, media, technology, urbanism, and landscape. [Offered: F]

Prereq: ARCH 392

ARCH 400s**ARCH 425 LEC 0.50**

Course ID: 009510

Theory and Design of the Contemporary Landscape

This course provides an historical overview of the ideas of nature and landscape in Western thought. 'Nature', 'Ecology', and 'Landscape' are treated as cultural constructs, related to specific philosophical, technological, economic, political, and social issues. Many of these issues will be considered as the course of study traces the evolution and transformation of contemporary landscape. [Offered: S]

Prereq: Level at least 4A Architecture

(Cross-listed with ARCH 225)

ARCH 428 LEC 0.50

Course ID: 003561

Rome and the Campagna (Rome)

History of settlement and building in Rome and the surrounding area from antiquity to the present. Acts of design in architecture, urban form and landscape related to political, cultural and spiritual authority of Rome. Comparison drawn between the image of the city, represented in literature and art, and the material facts of the place. Field trips, lecture.

[Note: Course fee: Required travel fee applies to this course, please contact the Architecture Student Services Co-ordinator for current fees. [Offered: F]

Prereq: Level at least 3B Architecture.

Coreq: ARCH 492

ARCH 429 SEM 0.50

Course ID: 015005

Global Cities

A global cities course enabling students to travel abroad and study first hand the architecture and urbanism of cities across Europe, Asia and South America. These course offerings are thematically based and involve field trips to specific architectural sites, cities, and regions around the world.

[Note: Additional course travel fee applies to this course, please contact the Architecture Student Services Co-ordinator for current fees. Offered: F,W,S]

Prereq: Level at least 3A Architecture

ARCH 442 LEC 0.50

Course ID: 011174

Contemporary Architectural Theory

This course presents a thematically organized survey of contemporary architectural theory that focuses on the relationship between seminal theoretical texts and critical developments in contemporary architectural theory and practice. The course is

intended to be a forum for discussion of selected topics in contemporary culture, and to provide students with an advanced knowledge base in contemporary architectural theory to ground more specialized architectural electives while acting as a support for thesis and other forms of advanced architectural research. [Offered: F]

Prereq: ARCH 342

ARCH 443 LEC 0.50

Course ID: 011766

Architecture and Film

This course explores the relationship between Architecture and the development of early, modern and science fiction films via the examination of the source and methods of portrayal of architectural expression in film. Films will be viewed to examine precedents for imagery, set design, location selection, as well as the integrated vision of the urban and dystopic environmental future. Futuristic film architecture will provide an opportunity to study a vision of the future of urban built form and provide a forum for critical discussion. Assignments will require that the students become familiar with different methods of media; for example - video filming, sound and visual editing, web page production. [Offered: F]

Prereq: Level at least 3A

ARCH 446 LEC 0.50

Course ID: 003559

Italian Urban History (Rome)

The course provides a survey of the history of settlement and urban form on the Italian peninsula from antiquity to the present day. In it the influences upon the structure of public and private space are outlined for each historical period. These include constants such as geography and climate, but more especially the factors that induce and manifest change: politics, warfare, economics, social structure, the arts and theory.

[Note: Course fee: \$550.00. Offered: F]

Prereq: Level at least 4A Architecture.

Coreq: ARCH 492

ARCH 449 LEC 0.50

Course ID: 003562

The Development of Modern Italian Architecture (Rome)

The course addresses the issues of architecture and urbanism in Rome and Italy from 1750 to the present. It explores the relationship between cultural, political and artistic phenomena such as Futurism, Novecento and Rationalism, that anticipate and create modernism in Italy. [Two one day field trips, estimated cost \$60.00. Offered: F]

Prereq: Level at least 4A Architecture.

Coreq: ARCH 492

ARCH 465 LEC,TUT 0.50

Course ID: 014999

Advanced Structures: Design and Analysis

This course builds on the knowledge acquired in the previous structural design courses, to convey practical experience in the application of skills to a specific structure. Students will perform an analysis of a full-scale prototype or structural case-study. Course requirements include the production of a comprehensive structural analysis report that demonstrate students' mastery of the principles of structural behaviour, analysis and design. In this course, students will also be introduced to other types of advanced structural systems such as tensile structures, shells, and tensegrity systems. [Offered: F]

Prereq: ARCH 362.

Antireq: ARCH 365

ARCH 473 LEC 0.50

Course ID: 010400

Technical Report

Students will investigate and report on technical issues as they relate to the development of the comprehensive building project in the parallel Design Studio. Innovation and integration in architectural design will be stressed with respect to

structure, building envelope, environmental systems, health and life safety, movement systems, site planning and the integration of information technology. [Offered: S]

Prereq: Level at least 4A Architecture.

Coreq: ARCH 493

ARCH 474 LEC 0.50

Course ID: 003567

Experimental Courses

These courses allow for additional electives to the program on a short-term basis, and for developing future permanent courses.

Department Consent Required

ARCH 475 LEC 0.50

Course ID: 003571

Experimental Courses

These courses allow for additional electives to the program on a short-term basis, and for developing future permanent courses.

Department Consent Required

ARCH 484 LEC 0.50

Course ID: 003575

Architectural Research

This offers a student an opportunity for independent research into architectural problems not offered in the regular curriculum. It allows guided exploration of a specific architectural problem area, of appropriate complexity to the particular term.

Department Consent Required

Prereq: Level at least 4A Architecture

ARCH 485 LEC 0.50

Course ID: 003577

Architectural Research

This offers a student an opportunity for independent research into architectural problems not offered in the regular curriculum. It allows guided exploration of a specific architectural problem area, of appropriate complexity to the particular term.

Department Consent Required

Prereq: Level at least 4A Architecture

ARCH 492 STU 1.50

Course ID: 003579

Design Studio

The studio course is mounted in Rome, Italy, with the school's own faculty and premises, and offers a unique opportunity to undertake design studies in a truly rich architectural heritage. The main focus is the nature of the institution and its relationship to the city and its culture. Students participating in the Rome term are expected to defray the costs of travel, accommodation and food. For students unable to study in Rome, an alternative studio is offered in Cambridge. It presents similar design projects and theoretical questions in a North American context. [Offered: F]

Prereq: ARCH 393

ARCH 493 STU 1.50

Course ID: 003581

Design Studio/Comprehensive Building Design

This studio represents a culmination of the pre-professional degree, through the integration and application of skills and knowledge to a complex building project. Students will develop designs to a high level of detail. A concern for technical material, environmental and legal aspects of architecture will support open speculation and innovative design. [Offered: S]

Prereq: ARCH 492

ARCH 500s

ARCH 510 SEM 0.50

Course ID: 015001

Visual and Digital Media Courses

A range of special topics within visual and digital media that include course offerings in parametric design and scripting, advanced visualization, interaction design, and digital fabrication. [Offered: F,W,S]

Prereq: Level at least 3A Architecture

ARCH 520 SEM 0.50

Course ID: 015003

Urbanism and Landscape Courses

A range of special topics courses within urbanism and landscape. [Offered: F,W,S]

Prereq: Level at least 3A Architecture

ARCH 540 SEM 0.50

Course ID: 015004

Architectural History and Theory Courses

A range of special topics courses within cultural and architectural history, theory and criticism. [Offered: F,W,S]

Prereq: Level at least 3A Architecture

ARCH 570 SEM 0.50

Course ID: 015002

Building Technology and Environmental Courses

A range of special topics courses within building technologies, structures, materials and methods and environmental systems including coursework in alternative energy systems, ecological design and design build. [Offered: F,W,S]

Prereq: Level at least 3A Architecture

ARTS

Notes

Courses designated "Arts," those listed below, usually cover some topics and themes of general interest to several disciplines and their presentation is often made with this interdisciplinary perspective in view.

ARTS 100s

ARTS 102 LEC,WSP 0.50

Course ID: 011679

Foundations for Writing

This course helps students to develop the fundamental writing skills required by the Faculty of Arts. Students will be introduced to theories of strong composition and grammar, as well as relevant terminology, and will focus on practical applications, based on readings from Arts disciplines.

[Note: A grade of 65% or higher in this course is equivalent to passing ELPE. Course not open to those who have met ELPE requirement.]

Department Consent Required

Prereq: Arts students only

ARTS 111 LEC 0.50

Course ID: 011400

Career Development and Decision-Making

This course is designed to assist students in understanding themselves, the career development process, and occupational information in order to make informed and appropriate occupational and educational decisions. Students will study key career development theories and learn how to integrate self-knowledge into occupational/life decisions, set goals, and devise strategies to attain these goals.

ARTS 122 LEC 0.50

Course ID: 003610

Quest for Meaning in the Modern World

This course invites students on a quest for meaning in the context of a time in which traditional meanings and definitions have been challenged by rapidly-shifting cultural and religious values.

ARTS 125 LEC 0.50

Course ID: 014276

Who are the Mennonites?

This course is an interdisciplinary introduction to the range of Mennonite identities, beliefs, practices, and cultural expressions locally and globally. Themes such as Mennonite history, cultural diversity, theology, religious life, peacemaking, community development, music, literature, and artistic expression will be explored.

Offered at Conrad Grebel University College

ARTS 130 SEM 0.50

Course ID: 015506

Inquiry and Communication

This course provides an introduction to diverse intellectual modes of inquiry in the social sciences and humanities with an emphasis on the development of communication skills. In a small seminar setting, students will explore a variety of topics based on instructor expertise in order to build social awareness, ethical engagement, and communication competencies in comprehension, contextualization, and conceptualization. Students will be expected to engage with the work of others, articulate positions, situate writing and speaking within contexts, practice writing and speaking for situations beyond the classroom, engage in basic forms of research, and workshop, revise, and edit writing.

Prereq: First-year Arts Students

ARTS 140 SEM 0.50

Course ID: 015507

Information and Analysis

This course introduces students to diverse ways of finding, examining, and using data and information in the social sciences and humanities. In a small seminar setting, students will explore a variety of topics based on instructor expertise in order to understand quantitative and qualitative methods of data gathering and build competencies in conceptualizing, contextualizing, and comprehending methods of information analysis. Students will be expected to investigate, use, and assess the presentation of information in their own work and the work of others so that they can better understand the range of social, ethical, and political challenges of our world.

Prereq: First-year Arts Students

ARTS 190 LEC 0.50

Course ID: 013857

First-Year Topics in Arts Disciplines

This topics course will be offered from time to time by particular disciplines in Arts, to cover areas of emerging research and

teaching interest.

[Note: For permission to enrol in the course, students should consult an advisor in the Arts Undergraduate Office. This is a repeatable course, subject to different content; it may be completed a total of three times.]

Department Consent Required

Prereq: First Year students

ARTS 200s

ARTS 280 LEC,TST 0.50

Course ID: 012283

Statistics for Arts Students

A basic course in social statistics for Faculty of Arts students. Introduces descriptive statistics (measures of central tendency, dispersion, cross-tabular analysis) and inferential statistics (sampling, statistical significance, hypothesis testing, test assumptions). Covers a range of statistical techniques including t-tests, one-way ANOVA, Chi square, and bivariate correlation/regression.

Prereq: Level at least 2A; Not open to Econ or Psych students.

Antireq: ECON 221, ENVS 278, GBDA 205, ISS 250A/B, 250R, KIN 222, 232, PSCI 214/314, PSYCH 292, REC 371, SDS 250R, SMF 230, SOC/LS 280, STAT 202, 206, 211, 221, 231, 241, SWREN 250A/B, 250R

Also offered Online

ARTS 290 LEC 0.50

Course ID: 013858

Second-Year Topics in Arts Disciplines

This topics course will be offered from time to time by particular disciplines in Arts, to cover areas of emerging research and teaching interest.

[Note: For permission to enrol in the course, students should consult the department offering the desired section. This is a repeatable course, subject to different content; it may be completed a total of three times.]

Department Consent Required

Prereq: Level at least 2A

ARTS 300s

ARTS 301 LEC,TUT 0.50

Course ID: 003628

Studies in Ideas

A course consisting of a series of lectures, and tutorials, on specific topics dealing with important ideas in the humanities, social sciences, fine and performing arts, and languages and cultures.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Prereq: Level at least 2A

ARTS 365 LEC 2.50

Course ID: 010387

Arts Study Abroad

Study abroad in the Fall term under Exchange Agreements supported by the Faculty of Arts. Discussion and approval of options with your Advisor is required. Credit for specific courses will be evaluated following receipt of a transcript of academic results and supporting course outline documentation. The approved Study Agreement will be recorded on the student's record.

Department Consent Required

ARTS 366 LEC 2.50

Course ID: 010730

Arts Study Abroad

Study abroad in the Winter term under Exchange Agreements supported by the Faculty of Arts. Discussion and approval of options with your Advisor is required. Credit for specific courses will be evaluated following receipt of a transcript of academic results and supporting course outline documentation. The approved Study Agreement will be recorded on the student's record.

Department Consent Required

ARTS 367 LEC 2.50

Course ID: 010731

Arts Study Abroad

Study abroad in the Spring term under Exchange Agreements supported by the Faculty of Arts. Discussion and approval of options with your Advisor is required. Credit for specific courses will be evaluated following receipt of a transcript of academic results and supporting course outline documentation. The approved Study Agreement will be recorded on the student's record.

Department Consent Required

ARTS 390 LEC 0.50

Course ID: 013856

Third-Year Topics in Arts Disciplines

This topics course will be offered from time to time by particular disciplines in Arts, to cover areas of emerging research and teaching interest.

[Note: For permission to enrol in the course, students should consult the department offering the desired section. This is a repeatable course, subject to different content; it may be completed a total of three times.]

Department Consent Required

Prereq: Level at least 3A

ARTS 400s

ARTS 490 LEC 0.50

Course ID: 013859

Fourth-Year Topics in Arts Disciplines

This topics course will be offered from time to time by particular disciplines in Arts, to cover areas of emerging research and teaching interest.

[Note: For permission to enrol in the course, students should consult the department offering the desired section. This is a repeatable course, subject to different content; it may be completed a total of three times.]

Department Consent Required

Prereq: Level at least 4A

AMERICAN SIGN LANGUAGE

ASL 100s

ASL 101R LAB,LEC,TUT 0.50

Course ID: 015565

American Sign Language 1

This introductory course in American Sign Language (ASL) teaches students to manage everyday communication in ASL and integrate Deaf Culture and Deaf Community content. Grammar is introduced in context with an emphasis on developing question and answer skills.

[Note: Conducted entirely in ASL. No prior knowledge of ASL is expected.]

ASL 102R LAB,LEC,TUT 0.50

Course ID: 015566

American Sign Language 2

This course extends the introduction to sign language by refining the skills attained in ASL 101R (American Sign Language 1) to include personal conversations and storytelling. Cultural notes and videos add to information on Deaf Culture and Deaf Community. Grammar includes an emphasis on giving directions and adding description.

[Note: Conducted entirely in ASL.]

Prereq: ASL 101R

AVIATION

AVIA 100s

AVIA 100 LEC,TUT 0.50

Course ID: 015359

Introduction to Aviation

This course incorporates a survey of topic areas that impact the aviation industry in Canada. Key areas include aviation history, civil and military aviation, human factors, airspace and air traffic control systems, airport management, and aviation safety. The nature and impact of each of these topics is explored through a combination of lecture, class discussion and activities, and student presentations. [Offered: F]

AVIA 101 FLT 0.75

Course ID: 013236

Professional Pilot Program Course I

This course provides the required Preparatory Ground Instruction to prepare students for the air exercises to be completed during in-aircraft instruction that is conducted as part of the course. Students will complete flight training to the First Solo level and acquire approximately 20 hours of flight time. This course also includes the ground school required to prepare the student to write the Transport Canada Private Pilot Licence - Airplane examination. The course provides a solid base of the knowledge required to be a safe and proficient professional pilot.

Prereq: Geography and Aviation, Science and Aviation plans

AVIA 102 FLT 0.50

Course ID: 013237

Professional Pilot Program Course II

This course is a continuation of AVIA 101 and provides the required Preparatory Ground Instruction to prepare students for the air exercises to be completed during in-aircraft instruction that is conducted as part of the course. Students will complete flight training to the Private Pilot Licence level and acquire approximately 45 hours of flight time in the semester to total 65 hours of flight time to-date.

Prereq: AVIA 101; Geography and Aviation, Science and Aviation plans

AVIA 200s

AVIA 203 FLT 0.50

Course ID: 013238

Professional Pilot Program Course III

This course is a continuation of AVIA 102 and provides the required Preparatory Ground Instruction to prepare students for the air exercises to be completed during in-aircraft instruction that is conducted as part of the course. Students will complete flight training required to acquire the Night Rating and acquire additional cross-country Pilot-in-Command time to total approximately 85 hours flight time by the end of the course.

Prereq: AVIA 102; Geography and Aviation, Science and Aviation plans

AVIA 204 FLT 0.75

Course ID: 013239

Professional Pilot Program Course IV

This course continues from AVIA 203 and provides the required Preparatory Ground Instruction to prepare students for the air exercises to be completed during in-aircraft instruction that is conducted as part of the course. Students will complete a dual cross border flight to the United States as well as a dual flight into high density controlled airspace (CYYZ). Students also complete a check-out in a complex aircraft and acquire additional cross-country pilot-in-command time. Students will have acquired approximately 110 hours total flight time by the end of the course. This course also includes the ground school required to prepare the student to write the Transport Canada Commercial Pilot Licence - Airplane examination.

Prereq: AVIA 203; Geography and Aviation, Science and Aviation plans

AVIA 205 FLT 0.50

Course ID: 014522

Professional Pilot Program Course V

This course continues from AVIA 204 and provides the required Preparatory Ground Instruction to prepare students for the air exercises to be completed during in-aircraft instruction that is conducted as part of the course. Students will complete a solo cross border flight to the United States as well as a dual flight into a grass field. Students also complete a check-out in a glass cockpit aircraft and work on acquiring cross-country Pilot-in-Command time. Preparation for the Commercial Pilot Flight Test is started during this course as well. The student will have acquired approximately 155 hours total flight time by the end of the course.

Prereq: AVIA 204; Geography and Aviation, Science and Aviation plans

AVIA 270 LEC,TUT 0.50

Course ID: 015557

Remotely Piloted Aircraft Systems (RPAS) Knowledge Requirements

Students will gain knowledge about the requirements and constraints affecting recreational, commercial and research RPAS (Unmanned Aerial Vehicles [UAV], Unmanned Aircraft Systems [UAS]) flights for geomatics applications. Theory and conceptual factors affecting flight, remote sensing, and spatial analysis with very-high resolution data will be discussed. Students will gain knowledge about how to navigate regulatory requirements. They will learn how to link their science and research objectives with geomatics skills to mitigate risk and obtain regulatory approval for legal RPAS flights. Assignments provide a range of experiences to students that may include: applied aspects of flight campaign approval, setup, management; flight training; and integrating imagery with geographic information systems.

Antireq: GEOG 374 001 S17; AVIA 374 001 S17

(Cross-listed with GEOG 270)

AVIA 300s

AVIA 306 FLT 0.75

Course ID: 013242

Professional Pilot Program Course VI

This course continues from AVIA 205 and provides the required Preparatory Ground Instruction to prepare students for the air exercises to be completed during in-aircraft instruction that is conducted as part of the course. Students will complete the Commercial Pilot Flight Test early in the course and then complete the training for the Multi-Engine Class Rating. Students will have acquired approximately 175 hours total flight time by the end of the course. This course also includes ground school to prepare students to write the Transport Canada Instrument Rating examination.

Prereq: AVIA 205; Geography and Aviation, Science and Aviation plans

AVIA 307 FLT 0.75

Course ID: 014523

Professional Pilot Program Course VII

This course continues from AVIA 306 and focuses on exercises that apply knowledge of various considerations and procedures for flight in instrument meteorological conditions. Pairs of students will function as two-person flight crews during simulated IFR flights. Scenarios will enable students to recognize, avoid or manage situations that lead to incidents. Also included is a tour of the Toronto Area Control Centre. The flight portion focuses on acquiring cross-country Pilot-in-Command time to meet the requirements for the Instrument Rating. This course also includes ground school in preparation for students to write the Transport Canada IATRA examination and training in wilderness survival and First Aid skills.

Prereq: AVIA 306; Geography and Aviation, Science and Aviation plans

AVIA 310 LAB,LEC 0.50

Course ID: 013302

Human Factors in Aviation

A case study-influenced course emphasizing the need for pilots to recognize and improve interpersonal skills for problem solving and conflict management. Components introduce Crew Resource Management (CRM), the human component of the human-technology interface, and the cumulative act effect.

Prereq: Level at least 2A Science and Aviation or Geography and Aviation students only

AVIA 320 LEC,TUT 0.50

Course ID: 015619

Aviation Safety

This course is an advanced exploration of how aviation safety is managed at the organizational level. Content will include explorations of pilot threat and error management, safety management systems (including risk analysis and hazard identification), and safety audits. The focal point of the course is on understanding the nature and causation of accidents. [Offered: W]

Prereq: AVIA 310; Geography and Aviation or Science and Aviation students

AVIA 374 LEC,SEM,TUT 0.50

Course ID: 014904

Special Topics in Aviation

A course offered in a particular branch of aviation, subject to availability of instructor.

Department Consent Required

Prereq: Level at least 2A

AVIA 400s**AVIA 408 FLT 0.50**

Course ID: 014524

Professional Pilot Program Course VIII

This course continues from AVIA 307 and completes the instruction toward the Group 1 Instrument Rating. Training will be conducted using a combination of Simulator, Single Engine aircraft and Multi-engine aircraft. Flight in instrument meteorological conditions will be conducted whenever practicable. Any outstanding flight time requirements for the issue of the Commercial Pilot Licence will also be completed. This course completes the flight training.

Prereq: AVIA 307; Geography and Aviation, Science and Aviation plans

AVIA 474 LEC,SEM,TUT 0.50

Course ID: 014107

Special Topics in Aviation

An advanced special topics course offered in a particular branch of aviation, subject to availability of instructor.

Department Consent Required

Prereq: Honours Aviation students

AVIA 475 RDG 0.50

Course ID: 014108

Independent Studies of Selected Topics

Individual study of special topics not covered in other aviation courses. Students will not be given permission to register for this course until a faculty member has agreed to supervise the study and the student has developed a brief outline of study to be approved by the Director of Aviation.

Department Consent Required

Prereq: Level at least 3A Honours Aviation

BRIDGE TO ACADEMIC SUCCESS IN ENGLISH

BASE 00s

BASE 32 LEC 0.50

Course ID: 014762

Academic Skills

This course provides both language and study skills support for a concurrent credit course. The integrated learning approach to this support course is informed and shaped by the content, requirements, and assessment instruments of the related credit course.

Department Consent Required

BASE 34 LEC 0.50

Course ID: 014763

Writing Skills

This process writing course helps students develop strategies to produce well-structured, well-supported academic text of high intermediate level. Students apply basic research and academic discourse skills and focus on creating sentence variety for stylistic purposes, self-editing and revising for clarity and succinctness, and developing unity and cohesion.

Department Consent Required

BASE 36 LEC 0.50

Course ID: 014764

Oral Skills

This course familiarizes students with a variety of academic speaking environments and helps students improve their confidence, pronunciation, listening, academic vocabulary, and academic presentation skills so that they become more effective participants in conversations, discussions, and presentations, both in and out of the classroom.

Department Consent Required

BASE 42 LEC 0.50

Course ID: 014765

Academic Skills

This course provides language and study skills support for a concurrent credit course. Test-taking strategies, assignment support, email as a supporting genre, and essential aspects of academic discourse socialization are also addressed. Students demonstrate their understanding of important credit course content through regular written and spoken assignments.

Department Consent Required

BASE 44 LEC 0.50

Course ID: 014766

Writing Skills

This process/product writing course helps students develop strategies to produce well-structured, comprehensively supported academic text of advanced level and encourages students to develop an independent approach to extended writing and research. Various rhetorical structures are studied, and students practise academic discourse through various writing tasks.

Department Consent Required

BASE 46 LEC 0.50

Course ID: 014767

Oral Skills

This advanced oral skills course expands upon students' confidence in speaking and their academic vocabulary, while refining pronunciation and presentation skills. Major tasks include leading discussion groups, practising the art and language of persuasion, and honing interviewing skills to complete a group project.

Department Consent Required

BUSINESS, ENTREPRENEURSHIP AND TECHNOLOGY**BET 100s****BET 100 LEC 0.50**

Course ID: 014844

Foundations of Entrepreneurial Practice

Successful entrepreneurs combine intellectual rigour with innovation to create solutions that have impact. It is a process that starts with a search for "big ideas" using tools such as research, observation, and appreciative inquiry. Next, entrepreneurs analyze situations and apply creativity techniques to develop solutions. Finally, solutions are tested against business drivers including customer value propositions, customer identification, channel selection, and resource needs. This course covers the three steps that form the foundation of all entrepreneurial success: big ideas, solutions, and testing. Because of its broad scope, the course is valuable to students from different academic backgrounds, entrepreneurship interests, and program level.

[Note: This course is offered online. Offered: F,W,S]

Only offered Online

BET 300s**BET 300 LEC 0.50**

Course ID: 014055

Foundations of Venture Creation

This course provides students with an introduction to the processes involved in moving an idea for a new venture from concept through to launch. The theoretical knowledge and practical skills needed to create a successful small entrepreneurial enterprise are developed. Topics include definition and evaluation of entrepreneurial opportunities, business planning, funding

strategies and early-stage revenue models, legal issues and intellectual property protection. [Offered: F, W, S]

Instructor Consent Required

BET 320 LEC 0.50

Course ID: 014678

Entrepreneurial Strategy

Once your "big idea" has been formulated, what is the best way to realize its potential? With whom should you partner? How do you protect your intellectual property? What is the optimal business model? The objective of this course is to provide an understanding of the commercialization process, with a specific focus on assessment of opportunities and development of an entrepreneurial business plan. Course content includes the importance of strategic partnerships, understanding the bases of competition, conducting industry and market level analyses, evaluating innovative ideas for commercial potential, business planning in a corporate context, intellectual property strategy, and strategic tools needed for launching new ideas.

[Note: It is recommended that students should take BET 100 prior to this course. Offered: F,W,S]

BET 340 LEC 0.50

Course ID: 014679

Essentials of Entrepreneurial Planning and Execution

Success starts with finding a solution to a "big idea" and then creating the right strategy to bring it to market. The final step in the process is explored in this course, the disciplined execution of strategy. A broad range of skills are required for this including understanding founder and team dynamics, hiring and firing, cash flow management, project management, developing suitable equity structures and compensation, pitching, fund-raising, internal and external communications, and people skills. This course explores the business skills and knowledge needed to take a new venture, whether it is a start-up or part of an existing organization, or from strategy to market.

[Note: It is recommended that students should take BET 100 and BET 320 prior to this course. Offered: F,W,S]

Instructor Consent Required

BET 350 LEC 0.50

Course ID: 015528

Customer Experience Design

In this course, entrepreneurial students will learn the principles and tools of customer experience (CX) design and how developing an exceptional experience for the customer fits into an overall business strategy. Not only will students develop a conceptual understanding of user experience and user-centered design, they will also learn how to deeply understand the needs of the customer and develop engaging and innovative products and services. Topics include: visual design principles, design thinking, user experience research, experience mapping, sketching and storyboards, interactive prototypes, and usability testing. [Offered: F]

BET 400s

BET 400 LEC 0.50

Course ID: 014056

Growing Early-stage Ventures

This course develops the theoretical knowledge and practical skills needed to successfully manage a start-up venture through its early stages of growth. Topics include managing product development, marketing and brand development strategies, client management and building a business infrastructure that can sustain growth. [Offered: W]

Prereq: BET 300 or 320

BET 410A LEC 0.25

Course ID: 014680

Capstone Entrepreneurship Planning and Execution Part 1

Goal setting and project planning; Team building; Understanding your competitive landscape; Understanding your customers;

Patents and patent searches taken concurrently with capstone projects. (Note: This is a requirement for the Corporate Entrepreneurship theme, supporting the efforts of capstone project teams to develop a commercialization strategy. This will consist of workshops, seminars and online content. Offered: F,S)

Prereq: BET 320.

Coreq: CHE 482 or CIVE 400 or ECE 498A or ENVE 400/430 or GENE 403 or GEOE 400 or MSCI 401 or ME 481 or MTE 481 or NE 408 or SE 490 or SYDE 461

BET 410B LEC 0.25

Course ID: 014681

Capstone Entrepreneurship Planning and Execution Part 2

Commercialization options and developing a business model; Legal issues; Creating a business case for the capstone project; presentation skills and "pitching"; post-mortem and root cause analysis taken concurrently with capstone projects. Includes the post-mortem/root cause analysis report to be submitted at the end of the term (Note: This is a requirement for the Corporate Entrepreneurship theme, supporting the efforts of capstone project teams to develop a commercialization strategy. This will consist of workshops, seminars and online content. Offered: W)

Prereq: BET 410A.

Coreq: CHE 483 or CIVE 401 or ECE 498B or ENVE 401/431 or GENE 404 or GEOE 401 or MSCI 402 or ME 482 or MTE 482 or NE 409 or SE 491 or SYDE 462

BET 411 LEC 0.50

Course ID: 015007

Capstone Entrepreneurship Planning and Execution

This course taken concurrently with a non-engineering capstone project, consists of workshops, seminars and online content. Topics include: goal setting and project planning, team building, understanding your competitive landscape and customers, patents and patent searches, commercialization options and developing a business model, legal issues, creating a business case for the capstone project, presentation skills and "pitching", post-mortem and root cause analysis. (Note: This is a requirement for the Corporate Entrepreneurship track of the Minor in Entrepreneurship, supporting the efforts of capstone project teams to develop a commercialization strategy.)

[Note: Not open to engineering students. Offered F,W,S]

Instructor Consent Required

Prereq: BET 320; Enrolled in Minor in Entrepreneurship

BET 412 PRJ 0.50

Course ID: 015008

Advanced Topics in Entrepreneurship

This course will be taken by students in the Corporate Entrepreneurship track of the Minor in Entrepreneurship, and approved by the program co-ordinator in order to meet the experiential component requirements in the minor with special projects as assigned.

[Note: Not open to engineering students. Offered: F,W,S]

Instructor Consent Required

Prereq: Enrolled in Minor in Entrepreneurship

BET 420 LEC 0.50

Course ID: 015009

Entrepreneurship for Social Impact

This course explores how innovative approaches can address social problems, create organizations that make positive change, have significant social impact, and be sustainable and economically viable. Topics include the principles of social entrepreneurship, design thinking applied to identifying significant problems, innovative solutions for social impact, and identifying opportunities for social change. Students develop skills and tools for refining and implementing their ideas as well as measuring the success and value of mission-driven organizations. Through case studies, lectures, and workshops, students also develop skills in strategic thinking with a socially conscious business mindset to create high-impact ventures. [Offered: F]

BET 430 LEC 0.50

Course ID: 015530

Sales Fundamentals

The one thing every new venture needs whether small or large, not-for-profit or for-profit, startup or part of an already mature business, is sales. This course is designed to help you create and grow a successful business venture through your personal marketing and sales efforts. Coursework examines key sales technologies, networking techniques, the use of marketing in sales, the sales process, and assessing the value of a particular sale from both the perspective of customer impact and the financial/strategic impact on the organization. [Offered: F]

BET 450 LEC 0.50

Course ID: 015529

Leadership

Leaders make things happen. Leaders make things possible. This course explores the relevant concepts, theories and skills needed to lead successfully in any environment, from new ventures to change management in large corporations, government, and not-for-profits. Course topics include: leadership and followership, group and team dynamics, change management, interpersonal dynamics, and supporting leadership skills such as self-awareness, conflict management, and communications. Course topics will be enriched through a critical study of leadership exemplars in popular media. [Offered: W]

Antireq: GBDA 204, MSCI 411, SPCOM 204, 227

BIOLOGY**Notes**

1. The Department of Biology reserves the right to limit enrolment in Biology courses to those individuals whose Academic Plans require those courses.
2. Biology Courses: While the Biology Department wishes to teach all students who request its courses, the Department's resources are limited. Priority of access to crowded courses will be given to students whose academic plan requires those particular courses be taken. Students who do not attend the first week of laboratory classes may find that their place has been given to another student.

BIOL 100s**BIOL 101 LEC 0.50**

Course ID: 014690

Biology in the Modern World

This course will introduce a variety of fundamental concepts of biology to non-majors. The goal is to improve scientific literacy. Topics will include the scientific method, biodiversity, genetics, evolution, physiology, and ecology.

[Note: Offered in Winter of even years]

Prereq: Not open to students in a Biology plan.

Antireq: Any university 300/400 BIOL course

BIOL 110 LAB,LEC,TST 0.50

Course ID: 003654

Introductory Zoology

A study of the functional morphology of selected animals with special emphasis on the various grades of organization and development in the different phyla. [Offered: F]

BIOL 120 LAB,LEC,TST 0.50

Course ID: 003657

Introduction to Plant Structure and Function

A brief introduction to plant diversity, and the anatomy and physiology of vascular plants. The course will include a description of major cell and tissue types, and their organization in roots, stems, and leaves. Topics such as the processes of water and ion uptake, photosynthesis, long distance transport, and growth regulation will also be covered. [Offered: W,S]

BIOL 130 LEC,TST,TUT 0.50

Course ID: 011617

Introductory Cell Biology

An introduction to the concepts of cell biology with emphasis on (1) the structural organization of the cell and (2) the function of critical molecular processes that are characteristic of living organisms.

[Note: BIOL 130L may be required for entrance to certain professional/graduate programs. Offered: F,S,W]

Antireq: PHYS 381

Also offered Online

BIOL 130L LAB 0.25

Course ID: 011567

Cell Biology Laboratory

Experiments to study the principles of cell biology that are elaborated in BIOL 130. [Offered: F,S]

Coreq: BIOL 130.

Antireq: BIOL 230

BIOL 150 LEC 0.50

Course ID: 003668

Organismal and Evolutionary Ecology

This course provides students with an introduction to the basic principles of Scientific Reasoning, Ecology and Evolution. Coverage includes hypothesis testing and the nature of scientific inquiry, basic population genetics, physiological ecology, life histories, dispersal, basic population and community ecology, macroevolution, systematics and classification, as well as functional morphology. [Formerly BIOL 250. Offered: F]

BIOL 165 LEC 0.50

Course ID: 009491

Diversity of Life

An introduction to the diversity of living organisms from simple prokaryotes to complex eukaryotes. Current ideas on classification and phylogeny will be compared with traditional schemes. Morphology, ecology, and economic uses of representative Phyla and Divisions will be discussed. [Formerly BIOL 265. Offered: W]

BIOL 200s**BIOL 211 LAB,LEC,TST 0.50**

Course ID: 003655

Introductory Vertebrate Zoology

An introduction to the structure, evolution and development of vertebrate organ systems. [Offered: W]

BIOL 225 LEC 0.50

Course ID: 014403

Plants and Civilization

This course examines the importance of plants and the role they have in the local and global community. It introduces students to the impact of plants on the past, present and future of human civilization and describes the importance of plants as sources of food, medicine, fuel, shelter, clothing and psychoactive agents. Topics include medicinal plants and human health, the origin of agricultural crops, plants that changed the course of history, plant-based biofuels, the green revolution, plant biotechnology and genetic engineering of plants. [Offered: F]

BIOL 239 LEC,TUT 0.50

Course ID: 003665

Genetics

Mendelian genetics. Chromosomal mechanisms in mitosis and meiosis. The origin, inheritance and adaptive significance of chromosomal changes. Nucleic acids as the carriers of genetic information. Natural selection and the evolution of genetic systems. [Formerly BIOL 139. Offered: W,S]

Also offered Online

BIOL 240 LEC 0.50

Course ID: 011618

Fundamentals of Microbiology

Introduction to the biology of bacterial and archaeal organisms. Topics include cell structure and function, methods of cultivation, genetics, phylogeny and taxonomy, and metabolic and genetic diversity.

[Note: BIOL 240L must be completed before taking BIOL 241. BIOL 240L may be required for entrance to certain professional/graduate programs. Formerly BIOL 140. Offered: S, F, W]

Also offered Online

BIOL 240L LAB 0.25

Course ID: 011568

Microbiology Laboratory

Experiments to study the principles of microbiology that are elaborated in BIOL 240. [Formerly BIOL 140L. Offered: S, F]

Coreq: BIOL 140/240

BIOL 241 LAB,LEC 0.50

Course ID: 003667

Introduction to Applied Microbiology

Introduction to microbial ecology, environmental microbiology, food microbiology and medical microbiology. Topics in environmental microbiology include biogeochemical cycling and biological treatment of wastes and pollutants. Topics in medical microbiology include concepts of immunology and host-parasite relationships. [Offered: W,S]

Prereq: BIOL 140/240 and 140/240L

BIOL 266 LAB,LEC 0.50

Course ID: 011508

Introduction to Computational Biology

This course provides an introduction to computational methods in biology, including exploration of bioinformatics databases and tools, analysis of protein and DNA sequences, and computer-aided modelling of biological systems. Labs will include practical experience applying computational tools to biological problems.

[Note: Formerly BIOL 366. Offered: F]

Prereq: BIOL 130.

Antireq: BIOL 366

BIOL 273 LEC,TST 0.50

Course ID: 003669

Principles of Human Physiology 1

The physiology of major organ systems of the human body. Topics include neurophysiology and peripheral nervous system, muscle, the cardiovascular system, the components of blood, respiratory system and immune system. The combination of BIOL 273 and BIOL 373 covers all of the major topics of human physiology.

[Note: BIOL 273L may be required for entrance to certain professional/graduate programs. Offered: W,S]

Prereq: BIOL 130;

Antireq: BIOL 301A, 301B, SCI 351, 352

Also offered Online

BIOL 273L LAB 0.25

Course ID: 011569

Human Physiology 1 Laboratory

Experiments to study the principles of human physiology that are elaborated in BIOL 273. [Offered: W,S]

Coreq: BIOL 273.

Antireq: BIOL 301A, 301B

BIOL 280 LEC 0.50

Course ID: 012773

Introduction to Biophysics

Introduction to a physical understanding of biological systems at macro and molecular scales. The course is intended for 2nd year science and engineering students and will cover a broad spectrum of topics in biophysics, as well as an introduction to neurobiology, nanotechnology and biotechnology. [Offered: W,S]

Prereq: Level at least 2A Honours Science or Engineering plans

(Cross-listed with PHYS 280)

BIOL 300s

BIOL 301 LAB,LEC 0.50

Course ID: 003651

Human Anatomy

This course will survey the basic human anatomical features of the skeletal, muscular, nervous, cardiovascular, endocrine and reproductive systems. Emphasis will be placed on functional and clinical anatomy.

[Note: Offered: F]

Prereq: BIOL 273

BIOL 302 LAB,LEC 0.50

Course ID: 003673

Functional Histology

A hierarchical approach to biological structure with an emphasis on functional morphology. Starting with the cell, the fundamental unit of structure and function, the material progressively develops how cells organize to form tissues such as epithelium, connective tissue and muscle. Emphasis on how these tissue building blocks cooperate to form the major organs and organ systems of the human body. [Offered: W]

Prereq: BIOL 130, 273

BIOL 303 LEC 0.50

Course ID: 003674

Introductory Developmental Biology and Embryology

Fundamental processes and concepts in embryonic development including the acquisition of multicellularity, organization of the early embryo, morphogenesis of tissues, major organ systems, fetal membranes, growth, differentiation and analysis of common developmental defects. [Offered: F]

Prereq: BIOL 130, 139/239

BIOL 308 LEC 0.50

Course ID: 012246

Principles of Molecular Biology

Prokaryote and eukaryote genome structure and replication; mechanisms of gene expression and regulation.

[Note: BIOL 240 is recommended. BIOL 308 is recommended for those wishing a general understanding in molecular biology. Students intending to take several upper year molecular biology courses are advised to take BIOL 308 and BIOL 309 concurrently. BIOL 308 is required as a prerequisite for the following courses: BIOL 331, 403, 428, 431, 434, 438, 441, 442, 448. Offered: F, S]

Prereq: BIOL 130, 139/239

BIOL 309 LEC,TUT 0.50

Course ID: 012245

Analytical Methods in Molecular Biology

An introduction to molecular methods used to analyze the structure of genes and genomes, including DNA sequencing, cloning, restriction mapping and bioinformatic tools. Techniques to monitor transcript and protein abundance, protein-protein and DNA-protein interactions will also be covered.

[Note: BIOL 240 is recommended. BIOL 309 is recommended for students intending to take upper year molecular biology courses. BIOL 309 is a required prerequisite for: BIOL 331, 342, 335L, 428, 431, 434, 438. Formerly BIOL 208. Offered: F,S]

Prereq: BIOL 130, 139/239

BIOL 310 LAB,LEC 0.50

Course ID: 003675

Invertebrate Zoology

The diversity of invertebrate animals will be explored in this class. Topics covered will include reproduction, development, life history, feeding, locomotion, and behaviour. [Offered: F]

Prereq: BIOL 110, 165

BIOL 321 LAB,LEC 0.50

Course ID: 010002

Plant Anatomy and Morphogenesis

Plant structure in relation to tissue formation and development with particular reference to the angiosperms. Cell, tissue and organ differentiation will be discussed. Phenotypic variation in response to environmental influences will also be covered. [Offered in Fall of even years]

Prereq: BIOL 120, 130

BIOL 323 LAB,LEC 0.50

Course ID: 003680

Plant Physiology

A study of plant physiological processes with an emphasis on the role of key metabolic pathways in plant growth and development. Topics such as photosynthesis, nitrogen assimilation, growth regulators, mineral nutrition, water relations, and stress physiology will be covered. [Offered in Fall of odd years]

Prereq: BIOL 120, 130

BIOL 325 LAB,LEC 0.50

Course ID: 010179

Flowering Plants

A study of floral morphology in relation to classification and evolution. An introduction to taxonomy and nomenclature. History of taxonomy. Systems of classification. Mechanisms of pollination. [Offered: F]

BIOL 331 LAB,LEC,TST 0.50

Course ID: 003685

Advanced Cell Biology

The functional organization of cells with particular reference to cell-cell interaction, the structure, function and development of organelles and the biological roles of cellular membranes. [Offered: W]

Prereq: BIOL 308 or 309 and CHEM 233 or 237; BIOL 308 or BIOL 309 and co-req CHEM 233 or CHEM 237 for Science and Business/Biotechnology Specialization or Honours Biotechnology/Economics or CS Honours Bioinformatics

BIOL 335L LAB,TUT 0.50

Course ID: 003724

Molecular Biology Techniques

Selected experiments to provide students with a range of laboratory skills in recombinant DNA technology.

[Note: Formerly Biol 435L. Students in the Molecular Biology and Biotechnology Specialization are encouraged to take this course unless they have previous laboratory experience involving molecular biology techniques. Offered: F,W]

Prereq: BIOL 140L/240L, BIOL 208/309

BIOL 341 LAB,LEC 0.50

Course ID: 015026

Fundamentals of Immunology

This course will provide students with an understanding of the fundamental concepts of the vertebrate immune system. Topics will focus on the components of the immune system, innate and adaptive immunity, immune cell development, communication, and recognition of non-self leading to an immune response. [Offered: W]

Prereq: BIOL 140/240, 140/240L and 241 or 273.

Antireq: BIOL 441 prior to Spring 2015

BIOL 342 LEC,TUT 0.50

Course ID: 003691

Molecular Biotechnology 1

Molecular biotechnology applies the principles of recombinant DNA technology (genetic engineering, gene cloning) to the development of commercial products. The methods of recombinant DNA technology, molecular diagnostic systems for detecting diseases and transgenic organisms will be discussed.

[Note: Recommended prerequisite BIOL 241. It is recommended that BIOL 342 be taken after completion of second year. Offered: F,S]

Prereq: BIOL 140/240, BIOL 208/309

BIOL 345 LAB,LEC 0.50

Course ID: 003734

Microorganisms in Foods

Food preservation, spoilage, poisoning and modern concepts in quality assurance programs are studied. The aim is to understand factors governing microbial changes in foods. Problem solving in the food industry is emphasized. Laboratory work will reflect current practices in quality control and testing.

[Note: Formerly BIOL 445. Offered: F]

Prereq: BIOL 140/240, 140L/240L, 241

BIOL 346 LAB,LEC 0.50

Course ID: 003735

Microbial Ecology and Diversity

Examples from terrestrial and aquatic ecosystems, and plant- and animal-associated environments, will be used to illustrate the activities and diversity of microorganisms in these habitats. The importance of the ecological roles of microbes to aspects of agriculture, geochemistry, human biology, and the biology of extreme environments will be considered. [Formerly BIOL 446] [Offered: W]

Prereq: BIOL 140/240, 140/240L, 241

BIOL 348L LAB,TUT 0.50

Course ID: 011570

Laboratory Methods in Microbiology

Selected experiments to provide students with a range of laboratory skills in microbiology. [Offered: W]

Prereq: BIOL 140/240, 140L/240L, 241

BIOL 349 PRJ,TUT 0.50

Course ID: 013110

Synthetic Biology Project Design

Synthetic biology involves developing new approaches, based on engineering principles, for genetic engineering of biological systems. Students will prepare a comprehensive research proposal for a synthetic biology project of their own design, under the supervision of a faculty member. Attendance at a weekly journal club focused on synthetic biology will be mandatory [Offered: F,W,S].

Instructor Consent Required

Prereq: Level at least 3A

BIOL 350 LEC,TUT 0.50

Course ID: 012918

Ecosystem Ecology

This course provides an overview of the dynamic interactions among microbes, plants, animals and their physical environment with emphasis on ecosystem structure and function. Topics include the hydrological cycle, biogeochemical cycling, ecological energetics, roles of population and community interactions, paleoecology and current topics in ecosystem science. [Offered: F]

Prereq: BIOL 150/250 or ENVS 200

BIOL 351 LEC 0.50

Course ID: 003740

Aquatic Ecology

Study of the structure and function of lake and stream ecosystems. The course emphasizes biological components and processes, but includes the origin and nature of lake and stream systems and the fundamentals of surface water chemistry and physics. Human influences, management options and current issues will be examined with readings and project work.

[Note: Offered: W]

Prereq: BIOL 150 and BIOL 110 or BIOL 120 or BIOL 165.

BIOL 354 LAB,LEC,TST 0.50

Course ID: 003694

Environmental Toxicology 1

An introduction to the basic theories, principles and techniques of environmental toxicology. A comparative study of the effects of specific groups of toxicants on ecosystems; biodegradation and cycling. [Offered: F,S]

Prereq: One of CHE 102, CHEM 120, 121

BIOL 355 LEC 0.50

Course ID: 013897

Biology of Human Aging

An overview of current aspects of the biology of human aging and the functional changes associated with both normal aging and pathological problems often present in the elderly. Biological theories of aging and normal age-related structural and physiological changes on all of the major body systems will be discussed. Extrinsic factors such as diet and exercise and their role on the aging process will be examined as well as various medical treatments. [Offered: W]

Prereq: BIOL 130

(Cross-listed with GERON 355)

BIOL 359 LEC,TST 0.50

Course ID: 003748

Evolution 1: Mechanisms

A study of the processes of evolution; the differentiation of populations and the origin of new forms of life. [Offered: W]

Prereq: BIOL 139/239; or Level at least 3A Environment and Resource students.

BIOL 360 LEC,TUT 0.50

Course ID: 004838

Evolution 2: Fossil Record

An overview of the origin of life, how it evolved and diversified, modern principles of paleontology with particular emphasis on analytical tools to interpret ancient life forms. Patterns, processes of evolution and paleoecology of key groups of microfossils, invertebrates, plants, vertebrates and their trace fossils. [Offered: W]

Prereq: EARTH 121 or EARTH 153 or BIOL 359

(Cross-listed with EARTH 336)

BIOL 361 LAB,LEC 0.50

Course ID: 009500

Biostatistics and Experimental Design

An introduction to hypothesis testing and experimental design in Biology. Topics will include: exploratory data analysis, analysis of variance, categorical data analysis, correlation, linear regression, multiple linear regression, power analysis, visualization tools and statistical software. [Offered: W]

Prereq: STAT 202 or ECON 221 or ENVS 278.

Antireq: PSYCH 391, STAT 332

BIOL 364 LAB,LEC 0.50

Course ID: 013528

Mathematical Modelling in Biology

An introduction to the mathematical modelling of biological processes using a variety of techniques including linear difference models, ordinary differential equations, and Markov models. Modelling applications ranging from genetics to ecosystem biology will be addressed. [Offered: F]

Prereq: One of MATH 116,127,137,147; Level at least 3A

BIOL 365 LAB,LEC 0.50

Course ID: 009501

Methods in Bioinformatics

This course covers bioinformatics methods with an emphasis on analysis of high-throughput '-omics' data. Topics include analysis of genome-scale gene and protein expression, construction of species and gene trees from molecular sequence data, and analysis of biological systems using bioinformatics tools. Included will be practical experience with bioinformatics tools and datasets. [Offered: W]

Prereq: BIOL 239 & one of BIOL 266, CHEM 140 or CS 136

BIOL 370 LEC 0.50

Course ID: 003696

Comparative Animal Physiology: Environmental Aspects

A comparative study of salt and water balance, circulation, respiratory systems, nitrogenous excretion, and mechanisms of energy acquisition and metabolism in animals. Adaptations to different environments will be emphasized. [Offered: F]

Prereq: BIOL 110 or 211; BIOL 273

BIOL 371 LEC 0.50

Course ID: 003697

Comparative Animal Physiology: Evolutionary Themes

A comparative study of neural, sensory, endocrine, digestive and reproductive strategies across animal taxa. The emphasis will be on evolutionary themes at the organismal, cellular and molecular levels. [Offered: W]

Prereq: BIOL 110 or 211; BIOL 273

BIOL 373 LEC 0.50

Course ID: 010000

Principles of Human Physiology 2

The physiology of major organ systems of the human body. Topics include the central nervous system, the sense organs, the digestive system, the endocrine system, the reproductive system, and the excretory system. [Offered: W]

Prereq: BIOL 273.

Antireq: BIOL 301A, 301B, SCI 351, 352

BIOL 373L LAB,TST 0.25

Course ID: 010001

Human Physiology 2 Laboratory

Laboratory exercises to study the principles of human physiology that are described in BIOL 373. [Offered: W]

Coreq: BIOL 373

BIOL 376 LAB,LEC 0.50

Course ID: 012976

Cellular Neurophysiology

This course gives students background in neuronal signaling, ion channels, and methods in electrophysiological recording methods. The course requires completion of neuro-simulation laboratories, which provide an introduction to biophysical modelling to explain the functions of neural systems.

[Note: PHYS 111/112 are recommended; Offered: F]

Prereq: BIOL 273 or BME 284 or PSYCH 261 or SYDE 384

BIOL 377 LEC,TUT 0.50

Course ID: 013977

Systems Neuroscience: From Neurons to Behaviour

Systems neuroscience attempts to explain complex functions of the nervous system in terms of underlying neural circuits and molecules. A diverse range of systems - from sea snails and fruit flies to rodents and humans - with the help of interactive computer simulations will be used to illustrate principles of systems neuroscience.

[Note: CS 115 or CS 116 recommended. Offered: F]

Prereq: BIOL 273 or PSYCH 261; at least one of MATH 127, 137, PHYS 111, 115, 121

BIOL 382 LEC,TUT 0.50

Course ID: 011910

Computational Modelling of Cellular Systems

An introduction to dynamic mathematical modeling of cellular processes. The emphasis is on using computational tools to investigate differential equation-based models. A variety of cellular phenomena are discussed, including ion pumps, membrane potentials, intercellular communication, genetic networks, regulation of metabolic pathways, and signal transduction.

[Note: Offered in the winter of even numbered years.]

Prereq: One of MATH 118, 119, 128, 138, 148; Third year standing in an Honours plan

(Cross-listed with AMATH 382)

BIOL 383 LEC 0.50

Course ID: 012580

Tropical Ecosystems

This course examines the fundamental concepts of terrestrial ecosystems in tropical climates. The course has three sections: (1) biophysical aspects (climate, location, landforms, soil, vegetation), (2) tropical resource systems (forest- and agroecosystems) within the framework of conventional and sustainable resource extraction, and (3) current conservation issues. Case studies are presented.

Prereq: BIOL 150/250 or ENVS 200 or ERS 218 or consent of instructor

(Cross-listed with ERS 383)

BIOL 400s**BIOL 403 LEC 0.50**

Course ID: 003701

Advanced Topics in Developmental Biology

This course explores the cellular and molecular basis of developmental phenomena in animals. Lectures will emphasize the experimental basis for both historical and contemporary knowledge with a focus on the major developmental systems in model organisms. Course content will concentrate on themes that permeate current published research.

[Note: BIOL 208/309 is recommended as a prerequisite. Offered: F]

Prereq: BIOL 303, 308, 331

BIOL 414 LEC,TUT 0.50

Course ID: 014689

Parasitology

This course will explore how parasites affect their host(s) and interact with other parasites. Attention will be given to eukaryotic parasites impacting human and domestic animal health. Public measures of parasite control will be covered. [Offered: W]

Prereq: BIOL 110, 165, 359

BIOL 426 LAB,LEC 0.50

Course ID: 003713

Phycology

Algae and applied uses of algae. Topics include examination of algal groups from evolutionary and ecological perspectives. Uses of algae in industry and food as well as negative impacts of various algal groups. [Notes: Offered in odd numbered years. Offered: W]

Prereq: BIOL 120, 165

BIOL 428 LAB,LEC,TUT 0.50

Course ID: 003716

Plant Molecular Genetics

An examination of the current molecular techniques used to study plant development physiology. Topics include mutant isolation, transcript and metabolite profiling, gene silencing and protein localization. [Offered: W]

Prereq: BIOL 120, BIOL 208/309 and BIOL 308

BIOL 431 LEC 0.50

Course ID: 003718

Bacterial Molecular Genetics

Bacterial molecular biology with an emphasis on the use of genetic tools to study the biology of microorganisms. Topics include mutagenesis, conjugation, recombination, gene regulation, plasmids, transposons, bacteriophage and genomics. [Offered: W]

Prereq: BIOL 140/240, 140/240L, BIOL 208/309 and BIOL 308

BIOL 432 LEC,TST 0.50

Course ID: 003720

Molecular Biotechnology 2

How recombinant DNA technology is used to produce vaccines, pharmaceuticals, crop plants, and other commercial products will be discussed. [Offered: W]

Prereq: BIOL 342

BIOL 433 LEC 0.50

Course ID: 003721

Plant Biotechnology

Biotechnological approaches and their applications in plant genetic manipulation, transformation and cell culture for plant improvement, propagation, and biochemical production. [Offered: W]

Prereq: BIOL 120, 130, 239. Level at least 3A.

BIOL 434 LEC,SEM 0.50

Course ID: 003722

Human Molecular Genetics

Recent advances in human molecular genetics will be examined with emphasis on how human disease-causing genes are mapped, identified, isolated and characterized. Examples will draw from research on Duchenne muscular dystrophy, Huntington disease, cystic fibrosis, Alzheimer disease, cancer, vision defects and other disorders. [Offered: F]

Prereq: BIOL 208/309 and BIOL 308

BIOL 438 LEC,SEM 0.50

Course ID: 003727

Molecular Biology of Animal Development

An examination of the current major issues in the regulation of gene expression during animal development with emphasis on technical and conceptual advances. Current research literature will be reviewed. [Offered: W]

Prereq: BIOL 208/309, BIOL 303 and 308

BIOL 439 LEC,TUT 0.50

Course ID: 003728

Environmental and Natural Products Biochemistry

This course deals with the functions, distribution and environmental ramifications of natural compounds produced by plants and other biological systems. Natural products are those compounds usually described as secondary metabolites, i.e. those apparently non-essential products whose physiological and ecological functions are either obscure or are of peripheral importance to the organism. However, many of these non-essential products have profound competitive, economic and pharmacological significance; and as research proceeds, their physiological roles within the parent organisms are becoming clearer. As well, this course has a strong emphasis on how environmental chemical and physical processes impact on living organisms and their biochemistry. [Offered: F]

Prereq: CHEM 233 or 237 and CHEM 264 or 266

BIOL 441 LEC,SEM 0.50

Course ID: 003730

Advances in Immunology

A survey of the recent advances in the vertebrate immune response; the cells and tissues of the lymphoid system; humoral and cell-mediated immunity; initiation and regulation of the immune response; the immune system and disease, emerging techniques used in immunology. [Offered: W]

Prereq: BIOL 308, 341

BIOL 442 LAB,LEC 0.50

Course ID: 003731

Virology

A survey of viral structures, life cycles, and the interactions of viruses with their hosts. The laboratory component will include procedures used for viral detection and titration, as well as individual library research projects. [Offered: W]

Prereq: BIOL 140/240, 140/240L, 241, 308, 341

BIOL 443 LAB,LEC 0.50

Course ID: 003732

Fermentation Biotechnology

Biology of industrial micro-organisms; fermentation systems; fermentation raw materials; downstream processing; biomass production; food fermentations; production of industrial chemicals, food additives, enzymes and other products by fermentation. [Offered: F]

Prereq: BIOL 140/240, 140/240L, 241

BIOL 444 LAB,LEC 0.50

Course ID: 003733

Bacterial Pathogenesis

A study of the bacteria involved in pathogenesis, their mode of infection, symptoms and prevention of diseases. The laboratory will focus on identification of bacterial isolates. [Offered: F]

Prereq: BIOL 140/240, 140L/240L, 241, 341

BIOL 447 LEC,TUT 0.50

Course ID: 003736

Environmental Microbiology

A study of the environmental impact of microorganisms. Aspects of pollution, waste treatment, biodegradation of environmental contaminants, and nutrient cycling will be examined. [Offered: F]

Prereq: BIOL 140/240, 140/240L, 241

BIOL 448 LAB,LEC 0.50

Course ID: 003737

Microbial Physiology and Biochemistry

A study of the physiology of microorganisms. Provides biochemical and molecular level detail on the diverse structures and metabolic functions of bacterial, archaeal, and eukaryal cells. Aspects of microbial growth, nutrition and metabolism are examined in the context of how microorganisms develop diverse solutions for meeting essential requirements for life. [Offered: F]

Prereq: BIOL 140/240, 140/240L, 241 and 308

BIOL 449 LEC 0.50

Course ID: 012173

Public Health Microbiology

How the health of human populations is influenced by microbial communities. Aspects of the epidemiology of infectious diseases, factors influencing the emergence of microbial pathogens and antibiotic-resistant strains, means to control undesired microbial populations in habitats such as water, biodegradable materials and food will be discussed. Approaches to the regulation and monitoring of microbial agents will also be examined.

[Note: It is recommended that one or more of BIOL 345, BIOL 441, BIOL 444, BIOL 447 be taken before or with BIOL 449. Offered: W]

Prereq: BIOL 241

BIOL 450 LEC,SEM 0.50

Course ID: 003739

Marine Biology

Ecological processes and evolutionary adaptation are explored in the world's largest and most diverse ecosystems. The major ocean habitats will be characterized, stressing their importance as resources, moderators of climate and reservoirs of biodiversity. [Notes: Offered: W]

Prereq: BIOL 150/250, 165

BIOL 452 LEC 0.50

Course ID: 003741

Quantitative Fisheries Biology

The practices of fisheries science including the effects of industrial fisheries on fish stocks, methods of capture, obtaining, using and interpretation of vital statistics of fish stocks, population estimation, stock-recruitment, growth, mortality and fecundity. Emphasis is placed on the use of statistical information for making ecological inferences about the status of fish populations. Familiarity with linear regression is essential. [Offered: F]

Prereq: BIOL 150/250, STAT 202

BIOL 455 LEC,TUT 0.50

Course ID: 003744

Ecological Risk Assessment and Management

Examination of the use of scientific information characterizing the risks posed to the environment by anthropogenic stresses. Discussions will take place in the context of aquatic ecology and presume a background of standard aquatic toxicology methods. Methods for assessing risks, including environmental impact assessment, risk quotients, national and international risk assessment paradigms, and cumulative effects assessment will be examined. Critical connections between assessment and management will also be discussed. [Offered: F of even years]

Prereq: BIOL 150/250, 354, STAT 202

BIOL 456 LEC,TUT 0.50

Course ID: 003745

Population Biology

The analysis of the structure and dynamics of plant and animal populations. Theoretical, mathematical and experimental approaches to the study of population ecology.

[Note: Students are advised that this course involves computer and numerical applications. Offered: F]

Prereq: BIOL 350 and one of STAT 202, ECON 221, ENVS 278

BIOL 457 LEC,TUT 0.50

Course ID: 003746

Analysis of Communities

A study of the organization, structure and development of communities with emphasis on vegetation change. Topics include: diversity, stability; succession; sampling procedures and multivariate analysis. [Offered: W]

Prereq: (BIOL 150/250 or ENVS 200) and one of STAT 202, ECON 221, ENVS 278

BIOL 458 LAB,LEC 0.50

Course ID: 013953

Quantitative Ecology

The course addresses the integration of mathematical and statistical tools to solve problems in ecology, using examples from individual, population, community, and ecosystem scales. Coursework will explore the relationships between models, hypotheses, experiments and data.

Prereq: (BIOL 150/250 or ENVS 200) and one of (STAT 202, ECON 221, ENVS 278).

Antireq: BIOL 358

BIOL 461 LEC 0.50

Course ID: 003751

Advanced Biostatistics

Advanced aspects of statistics and experimental design for biologists. Topics will include analysis of variance (factorial, hierarchical and blocking designs; fixed- and random-effects models); a-priori and a-posteriori comparisons; multivariate analysis of variance; analysis of covariance; multiple linear regression; multivariate statistics (indirect and direct gradient analysis). [Offered: W]

Prereq: BIOL 361; Not open to students in the Faculty of Mathematics.

BIOL 462 LEC,TUT 0.50

Course ID: 012909

Applied Wetland Science

Advanced concepts on wetland ecosystems in the context of regional and global earth systems processes such as carbon and nitrogen cycling and climate change, applications of wetland paleoecology, use of isotopes and other geochemical tools in wetland science, and wetland engineering in landscape rehabilitation and ecotechnology. Current issues in Canada and abroad will be examined. [Offered: F]

Prereq: (One of BIOL 150/250, CIVE 153, EARTH 121, 153, ENVE 153, ENVS 200, GEOE 153) and (one of CHEM 120, 123, CHE 102) and (one of CIVE 224, ENVE 224, STAT 202).

Antireq: BIOL 453, GEOG 405

(Cross-listed with EARTH 444)

BIOL 465 LEC,TUT 0.50

Course ID: 010003

Structural Bioinformatics

Functional and structural analysis of proteins using bioinformatics tools. Topics include protein structure visualization, structure comparison and prediction, prediction of protein function and interactions, molecular dynamics, and protein design. [Offered: W]

Prereq: CHEM 237 & one of BIOL 266/366 or BIOL 365

BIOL 469 LAB,LEC 0.50

Course ID: 014880

Genomics

An applied course on the computational exploration of genomes. Topics include comparative and evolutionary genomics, metagenomics, and genomics applications in health/medicine. The lab will involve analysis of genomic datasets using scripting and bioinformatic software.

[Note: Offered: F]

Prereq: BIOL 239 and one of BIOL 266/366 or BIOL 365

BIOL 470 LAB,TUT 0.50

Course ID: 003750

Methods of Aquatic Ecology

An introduction to methods used to sample and characterize the ecological structure and function of aquatic ecosystems, including basic aspects of the abiotic environment. Field trips to lake and stream sites are combined with laboratory analysis of samples and data. While the main emphasis is on the techniques, the exercises also provide direct experience with some of the natural and anthropogenic variation observable in aquatic systems.

[Note: Formerly BIOL 460L. Field Trip fee of \$60 is required toward the cost of transportation. Offered: F]

Prereq: BIOL 350 or 351

BIOL 472 LEC 0.50

Course ID: 013530

Cell Biology of Human Disease

This course focuses on the nature and mechanisms of disease processes. Abnormalities in the structure and function of cells, tissues and organs that underlie disease are explored. Emphasis is placed on current research aimed at understanding the mechanisms of disease and disease therapy, covering topics including inherited disorders, cellular pathology and immunology, diabetes and cancer.

[Note: Offered F]

Prereq: BIOL 273, 331, 341

BIOL 473 LAB,LEC 0.50

Course ID: 003756

Mammalian Reproduction

This course will provide an in-depth coverage of reproductive biology in a range of mammalian species. Emphasis will be on the principles underlying the regulation of key reproductive processes, from the whole animal to the molecular level. Topics will include applications of these principles to human and veterinary medicine, and ethical problems posed by some reproductive technologies. [Offered: F]

Prereq: BIOL 273, 373

BIOL 475 LEC,SEM 0.50

Course ID: 011571

Current Topics in Applied Microbiology

Students will explore a variety of topics in applied microbiology as reflected by journal articles in the current literature. [Offered W].

Prereq: BIOL 241, Level at least 3A

BIOL 476 LEC 0.50

Course ID: 012174

Systems Neuroscience: From Neurons to Behaviour

Systems neuroscience attempts to explain complex functions of the nervous system in terms of underlying neural circuits. The course focuses on how neural circuits analyze sensory information, form perceptions, make decisions, and execute movements, as well as contribute to high-level mental functions such as language, memory, and self-awareness.

[Note: BIOL 376 is recommended. Offered: F]

Prereq: BIOL 273 or BME 284 or PSYCH 261 or SYDE 384.

Antireq: BIOL 377

BIOL 477L LAB,TUT 0.50

Course ID: 003698

Techniques in Animal Physiology

Laboratory exercises and computer-based data collection to study the functions of the cardiovascular, respiratory, nervous, digestive and excretory systems of vertebrates and invertebrate animals. Students will learn animal handling techniques, data collection with state of the art physiological equipment and data analysis using computer software. Tutorials will allow students to investigate and discuss current animal physiology research topics in greater detail. [Formerly BIOL 374L. Offered: W]

Coreq: BIOL 370, 371

BIOL 479 LEC 0.50

Course ID: 012404

Population Genetics and Evolution

This course provides an overview of the interplay among mutation, random and non-random mating, genetic drift, gene flow and selection within and among natural populations. Special emphasis is placed on the dynamic role these factors play in the process of population divergence, and ultimately speciation. Case studies will illustrate the application of population genetic methodology in fields such as ecology, conservation biology, and forensic sciences. [Offered: F]

Prereq: BIOL 139/239, 359

BIOL 483 LEC 0.50

Course ID: 012166

Animal Cell Biotechnology

A study of the techniques and applications of animal cell culture to biotechnology. Topics include basic cell culture technique, gene modification, products of animal cell culture, large-scale productions, and tissue engineering. [Offered: F]

Prereq: BIOL 342

BIOL 484 LEC,TUT 0.50

Course ID: 012330

Advanced Eukaryotic Genetics

The role of classical genetic analysis in the context of today's genomic era. Topics: meiotic recombination, meiosis, complementation analysis, chromosome aberrations, and genetic interactions. Methods used in model eukaryotic genetic organisms such as forward and reverse genetic screens, genetic mosaics, conditional mutants, and genetic mapping will be discussed. Examples will illustrate how genes continue to be identified using classical-based approaches in a variety of biological processes, including cell cycle progression, cancer and metastasis, learning and memory, as well as pattern formation and embryonic development. Alternatives to traditional mutagenesis-based screens and the links between classical and molecular genetics will also be discussed. [Offered: W]

Prereq: BIOL 130, 139/239, and BIOL 308

BIOL 485 LEC 0.50

Course ID: 014515

Conservation Biology

An introduction to conservation biology and the ongoing biodiversity crisis. Topics will include the history of conservation biology and impacts on populations, communities, and ecosystems. [Offered: W]

Prereq: BIOL 150, 359

BIOL 486 LEC,SEM 0.50

Course ID: 013531

Glycobiology

Monosaccharides and their linkages; conformations of oligosaccharides; glycoconjugates/glycoproteins: their physiological functions and how they are synthesized; O- and N-glycosylation; receptors and lectins; glycobiology of plants, viruses and microbes; glycobiology and disease; glycans as bio-energy sources.

[Note: BIOL 331 recommended. Offered: F]

Prereq: BIOL 130 and CHEM 233 or 237 and CHEM 264 or 266

BIOL 487 LEC,TUT 0.50

Course ID: 014290

Computational Neuroscience

Introduction to quantitative principles in the analysis of neurophysiological systems. Biophysics of excitable membranes. Encoding of sensory information in neural spiking activity. Bayesian models in perception and motor control. Models of synaptic plasticity, learning, and memory. [Note for Systems Design Engineering students: It is recommended that one of BIOL 273, 376, 377 or BME 284 or SYDE 384 be taken before or concurrently with SYDE 552. Offered: W]

Prereq: (One of CS 115,135 or 200) and a 200-level STAT course; Level at least 3B within the Faculty of Science (Cross-listed with SYDE 552)

BIOL 488 LEC 0.50

Course ID: 012267

Ecotoxicology from a Watershed Perspective

The course will explore the scientific principles behind predicting the risk of environmental contaminants on ecosystems at the watershed scale. Using an environmental risk assessment framework, case studies will be used with an emphasis on local watershed issues, to more fully understand the mechanisms and processes that control and modify impacts of natural gradients

and human activities on the ecology of drainage basins. The course may include a local field trip. [Offered W, even years]
Field trip fee: \$30-50 to offset cost of transportation.

Prereq: BIOL 354, and one of BIOL 350, 351 or ENVE 276

BIOL 489 LEC 0.50

Course ID: 014516

Arctic Ecology

This course explores the unique ecology of Arctic and sub-Arctic ecosystems. Topics addressed will include postglacial history, climate, permafrost, nutrient cycling and food web structure of terrestrial, marine, and freshwater systems, plant and animal adaptations to cold, human ecology, traditional ecological knowledge, climate change, resource extraction, and other human impacts.

[Note: BIOL 350 recommended. Offered: W]

Prereq: BIOL 150 or ENVS 200; Level at least 3B

BIOL 490A LAB,LEC 0.50

Course ID: 003762

Biology Field Course I

A two-week field study of terrestrial, aquatic and/or marine biology offered by the Ontario Universities Program in Field Biology (OUPFB). OUPFB offers a diverse array of courses annually that normally take place at off campus locations. Field courses consist of lectures, field exercises, and a small project chosen in consultation with the course instructor(s). Contact the Biology Department field course coordinator for additional information.

[Note: Field course fee: \$400-\$4500. A Biology Department field course information session is held in early January of each year]

Department Consent Required

Prereq: BIOL 110, 120, 150/250 or ENVS 200, STAT 202, or ENVS 278

BIOL 490B LAB,LEC 0.50

Course ID: 003763

Biology Field Course II

A two-week field study of terrestrial, aquatic and/or marine biology offered by the Ontario Universities Program in Field Biology (OUPFB). OUPFB offers a diverse array of courses annually that normally take place at off campus locations. Field courses consist of lectures, field exercises, and a small project chosen in consultation with the course instructor(s). Contact the Biology Department field course coordinator for additional information.

[Note: Field course fee: \$400-4500. A Biology Department field course information session is held in early January of each year]

Department Consent Required

Prereq: BIOL 110, 120, 150/250 or ENVS 200, STAT 202, or ENVS 278

BIOL 490C LAB,LEC 0.50

Course ID: 003765

Biology Field Course III

A two-week field study of terrestrial, aquatic and/or marine biology offered by the Ontario Universities Program in Field Biology (OUPFB). OUPFB offers a diverse array of courses annually that normally take place at off campus locations. Field courses consist of lectures, field exercises, and a small project chosen in consultation with the course instructor(s). Contact the Biology Department field course coordinator for additional information.

[Note: Field course fee: \$400- \$4500. A Biology Department field course information session is held in early January of each year]

Department Consent Required

Prereq: BIOL 110, 120, 150/250 or ENVS 200, STAT 202, or ENVS 278.

Antireq: BIOL 491A

BIOL 490D LAB,LEC 0.50

Course ID: 003766

Biology Field Course IV

A two-week field study of terrestrial, aquatic and/or marine biology offered by the Ontario universities program in field biology (OUPFB). OUPFB offers a diverse array of courses annually that normally take place at off campus locations. Field courses consist of lectures, field exercises, and a small project chosen in consultation with the course instructor(s). Contact the Biology Department field course coordinator for additional information.

[Note: Field course fee: \$400- \$4500. A Biology Department field course information session is held in early January of each year]

Department Consent Required

Prereq: BIOL 110, 120, 150/250 or ENVS 200, STAT 202, or ENVS 278.

Antireq: BIOL 490D/491B

BIOL 492 LAB,LEC 0.50

Course ID: 003767

Marine Mammals and Seabirds

A three-week field course at the Huntsman Marine Science Centre, St. Andrews, NB. Marine mammals and seabirds will be observed under natural conditions through frequent field trips at sea and ashore. There is a strong emphasis on field research and each student will complete an independent research project. Lectures and labs will introduce the evolution, zoogeography, morphology, ecology, physiology, and behaviour of diving air-breathing vertebrates.

[Note: This course will normally be offered during the first weeks of August. Field trip fee = approx.\$1800]

Department Consent Required

BIOL 496 LEC,SEM 0.50

Course ID: 014281

Neuroscience Research Seminar

Current and classical topics in neuroscience research will be explored, discussed and presented by students. [Offered: W, even-numbered years]

Prereq: BIOL 376 or 377

BIOL 498A LAB,LEC 0.25

Course ID: 003770

Short Biology Field Course 1

A one-week field study of terrestrial, aquatic and/or marine biology offered by the Ontario Universities Program in Field Biology (OUPFB). OUPFB offers a diverse array of courses annually that normally take place at off campus locations. Field courses consist of lectures, field exercises, and a small project chosen in consultation with the course instructor(s). Contact the Biology Department field course coordinator for additional information.

[Note: Field trip fee: \$400 - \$2500. A Biology Department field course information session is held in early January of each year]

Department Consent Required

Prereq: BIOL 110, 120, 150/250 or ENVS 200, STAT 202, or ENVS 278

BIOL 498B LAB,LEC 0.25

Course ID: 003771

Short Biology Field Course 2

A one-week field study of terrestrial, aquatic and/or marine biology offered by the Ontario Universities Program in Field Biology (OUPFB). OUPFB offers a diverse array of courses annually that normally take place at off campus locations. Field courses consist of lectures, field exercises, and a small project chosen in consultation with the course instructor(s). Contact the Biology Department field course coordinator for additional information.

[Note: Field trip fee: \$400- \$2500 A Biology Department field course information session is held in early January of each year]

Department Consent Required

Prereq: BIOL 110, 120, 150/250 or ENVS 200, STAT 202, or ENVS 278

BIOL 499A PRJ 0.50

Course ID: 003772

Senior Honours Project

A senior-year research project.

[Note: Normally, only students attaining either a 73% or better cumulative major average or a 78% or better major average in their two most recent terms (normally 3A and 3B) will be accepted into this course. May only be taken with the permission of the BIOL 499 co-ordinator. Consult the BIOL 499 manual for details. A final grade for BIOL 499A will be submitted only after completion of 499B. Normally, BIOL 499A and 499B may not be taken concurrently without prior permission of the BIOL 499 co-ordinator]

Department Consent Required

Prereq: Cumulative Major Average at least 73%; Honours Biology, Biochemistry, Biomedical Sciences, Environmental Science - Ecology Specialization, Life Physics - Biophysics Specialization only.

BIOL 499B PRJ 0.50

Course ID: 003773

Senior Honours Project

A senior-year research project.

[Note: Normally, only students attaining either a 73% or better cumulative major average or a 78% or better major average in their two most recent terms (normally 3A and 3B) will be accepted into this course. May only be taken with the permission of the BIOL co-ordinator. Consult the BIOL 499 manual for details. A final grade for BIOL 499A will be submitted only after completion of 499B. Normally, BIOL 499A and 499B may not be taken concurrently without prior permission of the BIOL 499 co-ordinator]

Department Consent Required

Prereq: Cumulative Major Average at least 73%; Honours Biology, Biochemistry, Biomedical Sciences, Environmental Science - Ecology Specialization, Life Physics - Biophysics Specialization only.

BIOMEDICAL ENGINEERING**BME 100s****BME 101 LEC 0.25**

Course ID: 014447

Introduction to Biomedical Engineering

This course introduces first year students to Biomedical Engineering with a focus on the engineering profession and technical communication skills: written, oral, and graphical. Engineering practice will be discussed, including engineering professional development, engineering ethics, résumé writing skills, interview skills, the co-op system, and preparations for the upcoming co-op term. [Offered: F]

Prereq: 1A Biomedical Engineering.

Antireq: SYDE 101

BME 101L LAB,LEC 0.25

Course ID: 014448

Computer-Aided Design

This laboratory course will introduce students to engineering graphic design using various computer-aided-design (CAD) software packages. Detail drawings, assembly drawings, dimensioning, and tolerance specification. Orthographic, isometric, and oblique projections. Graphic design software (AutoCAD, SolidWorks), and file export formats. [Offered: F]

Prereq: 1A Biomedical Engineering.

Antireq: SYDE 101L

BME 102 SEM 0.00

Course ID: 014858

Seminar

Biomedical Engineering first-year students will meet with a faculty member designated as their class professor. Performance in assignments, conceptual difficulties with courses, interrelation of coursework, later work and engineering practice will be discussed. Non-credit course. [Offered: W]

Prereq: 1B Biomedical Engineering

BME 121 LAB,LEC,TUT 0.50

Course ID: 014449

Digital Computation

The key skills necessary to develop software solutions to solve biomedical engineering problems. Topics include software development, software design, programming language syntax, object oriented programming, structured programming, arrays, matrices, pointers, and algorithm efficiency. The topics will be reinforced in the context of practical biomedical software systems such as physiological monitoring systems and clinical support systems. [Offered: F]

Prereq: 1A Biomedical Engineering.

Antireq: SYDE 121

BME 122 LEC,TUT 0.50

Course ID: 014452

Data Structures and Algorithms

Topics of structured software design, data structures, abstract data types, recursive algorithms, algorithm and data structure analysis and design from both computational and memory perspectives, lists, stacks, queues, trees, graphs, sorting and searching, hashing, and problem-solving strategies. Embedded programming in health monitoring systems and healthcare management systems. [Offered: W]

Prereq: Level at least 1B Biomedical Engineering.

Antireq: SYDE 223

BME 161 LEC,TUT 0.50

Course ID: 014439

Introduction to Biomedical Design

Topics related to biomedical design will be covered: multidisciplinary system design, design process, problem definition, life-cycle design, design specification, function analysis, design evaluation and decision-making, introduction to mechanical design, prototyping, experimentation, safety and responsibility in engineering design, design for society and environment, and design documentation. [Offered: F]

Prereq: 1A Biomedical Engineering.

Antireq: SYDE 161

BME 162 LEC,TUT 0.50

Course ID: 014440

Human Factors in the Design of Biomedical and Health Systems

Design of human-machine environments, designing for patient safety and reduce human error in decision making, analytical methods of determining user needs, information processing and human sensory processes and consideration of these elements in the design of systems with humans, and consideration of human physical capabilities in ergonomic design. Topics will be reinforced in the context of the design of prosthetics or rehabilitation devices. [Offered: W]

Prereq: Level at least 1B Biomedical Engineering.

Antireq: SYDE 162

BME 181 LEC,TUT 0.50

Course ID: 014453

Physics I - Statics

Introduction to the basic theory and principles of mechanics of static systems. Topics covered include: statics of particles, rigid bodies and force systems, equilibrium of rigid bodies, analysis of joints and frames, distributed forces, centroids and moments of inertia, and friction. Applications of mechanical principles to musculoskeletal systems will be presented. [Offered: F]

Prereq: 1A Biomedical Engineering.

Antireq: SYDE 181

BME 182 LEC,TUT 0.50

Course ID: 014458

Physics II - Dynamics

The science of motion is taught with initial focus on particles, and then progressing to planar rigid body systems. Concepts such as inertia, momentum, work, energy, Newton's laws, and contact dynamics are covered, with particular application to human motions (eg. walking, running, jumping, lifting, and throwing). [Offered: W]

Prereq: Level at least 1B Biomedical Engineering.

Antireq: ME 212, SYDE 182

BME 186 LEC,TUT 0.50

Course ID: 014432

Chemistry Principles

The stoichiometry of compounds and chemical reactions. Periodicity and chemical bonding. Energy changes in chemical systems. Electronic structure of atoms and molecules, correlation with the chemical reactivity of common elements, inorganic and organic compounds. Discussion of the structure, nomenclature and reactions of important classes of organic compounds. Stereochemistry and its role in reaction mechanisms. [Offered: W]

Prereq: Level at least 1B Biomedical Engineering

BME 200s

BME 201 SEM 0.00

Course ID: 014859

Seminar

Biomedical Engineering second-year students will meet with a faculty member designated as their class professor. Performance in assignments, conceptual difficulties with courses, interrelation of coursework, later work and engineering practice will be discussed. Non-credit course. [Offered: F]

Prereq: 2A Biomedical Engineering

BME 202 SEM 0.00

Course ID: 014860

Seminar

Biomedical Engineering second-year students will meet with a faculty member designated as their class professor. Performance in assignments, conceptual difficulties with courses, interrelation of coursework, later work and engineering practice will be discussed. Non-credit course. [Offered: S]

Prereq: 2B Biomedical Engineering

BME 213 LEC,TUT 0.50

Course ID: 014454

Statistics and Experimental Design

Fundamentals of probability and statistics, and applications to biomedical engineering. Random variables and statistical distributions, statistical estimation, hypothesis testing, regression, and experiment design considerations. Applications to biomedical experiments, biomedical imaging data, and clinical trials. [Offered: F]

Prereq: Level at least 2A Biomedical Engineering.

Antireq: BIOL 361, CHE 220, CIVE 224, ENVE 224, KIN 222, MSCI 252, ME 202, MTE 201, NE 115/215, PSYCH 292, STAT 202, 206, 211, SYDE 212

BME 252 LEC,TUT 0.50

Course ID: 014462

Linear Signals and Systems

Models and analysis of linear systems in the context of measurement and processing of biosignals such as electroencephalography (EEG), electrocardiography (ECG), and electromyography. Discrete and continuous time systems, difference and differential equations, impulse and frequency response, transform domain techniques, transfer functions and frequency response, frequency domain analysis of linear systems, sampling theory, stability, and linear filters. [Offered: S]

Prereq: Level at least 2B Biomedical Engineering.

Antireq: SYDE 252

BME 261 LEC,TUT 0.50

Course ID: 014441

Prototyping, Simulation and Design

Problem solving approaches, agile design and development, rapid prototyping, revision control, design patterns, development cycles, and simulation. Topics will be reinforced in the context of biomedical engineering projects conducted in groups within a collaborative environment. [Offered: F]

Prereq: Level at least 2A Biomedical Engineering

BME 281 LEC,TUT 0.50

Course ID: 014455

Mechanics of Deformable Solids

Introduction to mechanical response of materials and stress-strain relationship. Behaviour of prismatic members in tension, compression, shear, bending and torsion. Shear-force and bending-moment diagrams. Introduction to instability. Mechanical properties of biological tissues, and viscoelastic models. Applications to bone, cartilage, and biomedical implants. [Offered: F]

Prereq: Level at least 2A Biomedical Engineering.

Antireq: CIVE 204, ME 219, SYDE 286

BME 281L LAB 0.25

Course ID: 014456

Mechanics of Deformable Solids Laboratory

Laboratory experiments for students taking BME 281. [Offered: F]

Prereq: Level at least 2A Biomedical Engineering

BME 282 LEC,TUT 0.50

Course ID: 014457

Materials Science for Biomedical Engineers

Crystalline structure, crystal defects, non-crystalline materials, structure and properties of metals, ceramics, glasses, semi-conductors, polymers, and composites. Factors in materials design, material selection and processing in the context of biomedical devices and instruments will also be discussed.[Offered: S]

Prereq: Level at least 2B Biomedical Engineering.

Antireq: SYDE 285

BME 284 LEC,TUT 0.50

Course ID: 014435

Physiological and Biological Systems

The structure, functions and properties of the major biological systems (musculoskeletal, nervous, cardiovascular) will be presented in relation to the design of biomedical devices (imaging, assistive, and diagnostic). Concepts in modeling biological systems will be introduced. Various aspects of pathology and how they influence medical device design will also be discussed. [Offered: S]

Prereq: Level at least 2B Biomedical Engineering.

Antireq: SYDE 384

BME 284L LAB 0.25

Course ID: 014436

Physiology and Anatomy Laboratory

Laboratory experiments for students taking BME 284. [Offered: S]

Prereq: Level at least 2B Biomedical Engineering

BME 285 LEC,TUT 0.50

Course ID: 014433

Engineering Biology

Introduction to basic concepts of biochemistry and cell biology. Overview of the chemistry of amino acids, carbohydrates, lipids and nucleic acid. Structure and properties of proteins and enzymes. Elements of cell structure and diversity, and relationship of biochemistry with cell metabolism. A focus on biomedical engineering with relevant examples such as biomimetic engineering design, system biology and tissue engineering. [Offered: F]

Prereq: Level at least 2A Biomedical Engineering

BME 285L LAB 0.25

Course ID: 014434

Engineering Biology Laboratory

Laboratory experiments for students taking BME 285. [Offered: F]

Prereq: Level at least 2A Biomedical Engineering

BME 294 LEC,TUT 0.50

Course ID: 015453

Circuits, Instrumentation, and Measurements

Basic concepts of hardware measurement systems pertaining to the measurement of biosignals: active and passive circuit elements, Kirchhoff's laws, mesh and nodal circuit analysis, principle of superposition, step responses of first and second order networks, sinusoidal steady state analysis, input-output relationships, transfer functions and frequency response of linear systems, operational amplifiers, analog signal detection, conditioning and conversion systems, transducers, difference and instrumentation amplifiers, A/D and D/A conversion. Examples will be presented in the form of physiological monitoring hardware for vital measurements such as electroencephalography (EEG), electrocardiography (ECG), and electromyography (EMG). [Offered: S]

Prereq: Level at least 2B Biomedical Engineering.

Antireq: BME 392, SYDE 292

BME 294L LAB 0.25

Course ID: 015454

Circuits, Instrumentation, and Measurements Laboratory

Laboratory experiments for students taking BME 294. [Offered: S]

Prereq: Level at least 2B Biomedical Engineering.

Antireq: BME 392L, SYDE 292L

BME 301 SEM 0.00

Course ID: 014861

Seminar

Biomedical Engineering third-year students will meet with a faculty member designated as their class professor. Performance in assignments, conceptual difficulties with courses, interrelation of coursework, later work and engineering practice will be discussed. Non-credit course. [Offered: W]

Prereq: 3A Biomedical Engineering

BME 302 SEM 0.00

Course ID: 014862

Seminar

Biomedical Engineering third-year students will meet with a faculty member designated as their class professor. Performance in assignments, conceptual difficulties with courses, interrelation of coursework, later work and engineering practice will be discussed. Non-credit course. [Offered: F]

Prereq: 3B Biomedical Engineering

BME 355 LEC,TUT 0.50

Course ID: 014437

Anatomical Systems Modelling

Introduction to systems theory as a general modeling method, and applied to the skeletal, neuromuscular, central nervous, cardiovascular, and respiratory systems of the human body. Time-domain simulations, sensitivity analyses, and parameter identification, with the latter driven by experimental measurements of system performance. [Offered: W]

Prereq: Level at least 3A Biomedical Engineering

BME 356 LEC,TUT 0.50

Course ID: 014463

Control Systems

Classical and state space representations of control systems. Stability, controllability, observability and sensitivity. Routh-Hurwitz and root-locus methods. Frequency domain behaviour, Bode plots, Nyquist stability criteria. Pole placement, PID, phase-lead and phase-lag controllers. Application to anatomical system models, including musculoskeletal and cardiovascular systems, and to physiological feedback systems. [Offered: F]

Prereq: Level at least 3B Biomedical Engineering.

Antireq: BME 353, SYDE 352

BME 356L LAB 0.25

Course ID: 014464

Control Systems Laboratory

Laboratory experiments for students taking BME 356. [Offered: F]

Prereq: Level at least 3B Biomedical Engineering.

Antireq: BME 353L, SYDE 352L

BME 361 LAB,LEC,TUT 0.50

Course ID: 014442

Biomedical Engineering Design

Design methods: problem definition, requirements analysis, criteria and generation of alternative solutions, feasibility analysis, and optimization. Product development. Design survey of biomedical equipment and assistive technologies. A term-long design project in small groups. [Offered: W]

Prereq: Level at least 3A Biomedical Engineering.

BME 362 LAB,LEC 0.50

Course ID: 014443

Biomedical Engineering Design Workshop 1

Engineering design project course where students work in small groups applying the principles of engineering problem solving, systems analysis, simulation, optimization and design to a biomedical engineering problem of their own choosing. Lecture topics include project management, risk management, standards, regulatory clearance and certification for biomedical devices. [Offered: F]

Prereq: Level at least 3B Biomedical Engineering.

Antireq: SYDE 362

BME 364 LEC,TUT 0.50

Course ID: 014465

Engineering Biomedical Economics

This course examines key economic issues in health care and biomedical industries. Topics include the market for medical care, health insurance, various models of healthcare delivery and competition and the role of government in policy, financing and delivery of health care. This course will train students to use economic analysis to model and understand the complex interactions between health care delivery, insurance markets, health innovators, governments, and firms. [Offered: F]

Prereq: Level at least 3B Biomedical Engineering.

Antireq: SYDE 262

BME 381 LEC,TUT 0.50

Course ID: 014444

Biomedical Engineering Ethics

This course explores ethical issues in biomedical engineering practice, including professional ethics, medical ethics, the ethics of human and animal subject use in biomedical research, and the impact of biomedical engineering solutions on society and the environment. [Offered: W]

Prereq: Level at least 3A Biomedical Engineering

BME 384 LEC,TUT 0.50

Course ID: 014438

Biomedical Transport: Biofluids and Mass Transfer

Fundamental concepts in systems involving fluid flow. Basic treatment of statics, kinematics and dynamics of fluids. Mass transfer, conservation of mass, momentum and energy for a control volume. Dimensional analysis and similarity. Discussion of flow in pipes and channels and brief introduction to boundary layers, lift and drag, ideal and compressible flow will be specifically covered in the context of the cardiovascular system (macrocirculation and microcirculation). [Offered: F]

Prereq: Level at least 3B Biomedical Engineering.

Antireq: SYDE 381, 383

BME 386 LEC,TUT 0.50

Course ID: 014459

The Physics of Medical Imaging

The fundamental laws of electricity, magnetism and optics will be taught through the introduction to basic concepts of medical imaging: radiation for imaging, x-ray, computed tomography (CT), magnetic resonance imaging (MRI), ultrasound or sonography imaging, electric impedance tomography, confocal microscopy, fluoroscopy. Radionuclide imaging: Single Photon Emission Computed Tomography (SPECT), and Positron Emission Computed Tomography (PET). Emerging technologies: Elastography, THz imaging, Molecular imaging will also be discussed. [Offered: F]

Prereq: Level at least 3B Biomedical Engineering.

Antireq: SYDE 283

BME 393 LEC,TUT 0.50

Course ID: 014460

Digital Systems

Digital technology, combinatorial logic, binary arithmetic, sequential circuits, digital design, and microcontrollers. Topics will be reinforced in the context of biomedical microcontrollers and sensors used in physiological monitoring and clinical support systems. [Offered: W]

Prereq: Level at least 3A Biomedical Engineering.

Antireq: BME 292, SYDE 192

BME 393L LAB 0.25

Course ID: 014461

Digital Systems Laboratory

Laboratory experiments for students taking BME 393, focusing on circuit construction, simulation, and design. [Offered: W]

Prereq: Level at least 3A Biomedical Engineering.

Antireq: BME 292L, SYDE 192L

BME 399 PRJ 0.25

Course ID: 015625

Directed Biomedical Research Project

A biomedical research project carried out under the supervision of a faculty member. Students interested in graduate studies or industrial research careers will gain experience in advanced research techniques and develop valuable research skills. A written report is to be submitted to the course co-ordinator. This course is extra over and above the normal course load. Good standing and permission of department is required for registration.

[Note: This course is graded as CR/NCR. Offered: F,W]

Department Consent Required

Prereq: Level at least 3A Biomedical Engineering

BME 400s**BME 401 SEM 0.00**

Course ID: 014863

Seminar

Biomedical Engineering fourth-year students will meet with a faculty member designated as their class professor. Performance in assignments, conceptual difficulties with courses, interrelation of coursework, later work and engineering practice will be discussed. Non-credit course. [Offered: F]

Prereq: 4A Biomedical Engineering

BME 402 SEM 0.00

Course ID: 014864

Seminar

Biomedical Engineering fourth-year students will meet with a faculty member designated as their class professor. Performance in assignments, conceptual difficulties with courses, interrelation of coursework, later work and engineering practice will be discussed. Non-credit course. [Offered: W]

Prereq: 4B Biomedical Engineering

BME 411 LEC,TUT 0.50

Course ID: 014468

Optimization and Numerical Methods

Interpolation and curve fitting, root-finding methods, local and global optimization methods, constrained optimization, multiobjective and multidisciplinary design optimization for biomedical applications such as implanted chips and therapeutic regimens. [Offered: F]

Prereq: Level at least 4A Biomedical Engineering.

Antireq: SYDE 411

BME 450 LEC,TUT 0.50

Course ID: 015620

Sports Engineering

This course focuses on the application of engineering principles to the analysis of sports equipment and their effects on athletic performance. Principles of mechanics are used to understand the motion and forces arising in sports equipment, and their interaction with the musculoskeletal dynamics of athletes. [Offered: F]

Department Consent Required

Prereq: (BME 182 or ME 212 or SYDE 182), (BME 281 or ME 219 or SYDE 281); Level at least 3A Engineering

BME 451 LEC,TUT 0.50

Course ID: 015621

Biomechanics of Human Movement

This course introduces students to the biomechanics of the musculoskeletal system, including motor control and rehabilitation engineering. Multibody models in two-dimensional (2D) and three-dimensional (3D) will be used to study the dynamics of normal and pathological motions. Motor control will be included, as well as the identification of body segment parameters and the dynamics of muscles. Applications may include assistive devices, rehabilitation, human gait, occupational biomechanics and other activities. [Offered: W]

Department Consent Required

Prereq: (BME 182 or ME 212 or SYDE 182); Level at least 3A Engineering

BME 461 LAB,LEC 0.50

Course ID: 014445

Biomedical Engineering Design Workshop 2

The first half of a two-term engineering design project continuing the biomedical design workshop sequence. A prototype and interim progress report are presented at the end of the first term. Lecture topics include safety and risk analysis of biomedical technologies. [Offered: F]

Prereq: Level at least 4A Biomedical Engineering.

Antireq: SYDE 461

BME 462 LAB,LEC 0.50

Course ID: 014446

Biomedical Engineering Design Workshop 3

The concluding half of the fourth year Biomedical Engineering Design Workshop. [Offered: W, first offered Winter 2019]

Prereq: 4B Biomedical Engineering.

Antireq: SYDE 462

BME 487 LEC,TUT 0.50

Course ID: 015622

Special Topics in Biomedical Signals

This course deals with selected topics at the undergraduate level in medical imaging and diagnostics, biosignals and neuroscience. (Note: each year at least one elective course will be offered in this theme area. For a current list of offerings, see the Director for Biomedical Engineering.) [Offered: F, W]

Department Consent Required

Prereq: Level at least 3A Engineering

BME 488 LEC,TUT 0.50

Course ID: 015623

Special Topics in Biomechanics

This course deals with selected topics at the undergraduate level in biofluid mechanics, tissue mechanics, sports engineering and rehabilitation engineering. (Note: each year at least one elective course will be offered in this theme area. For a current list of offerings, see the Director for Biomedical Engineering.) [Offered: F, W]

Department Consent Required

Prereq: Level at least 3A Engineering

BME 489 LEC,TUT 0.50

Course ID: 015624

Special Topics in Biomedical Devices

This course deals with selected topics at the undergraduate level in assistive devices, implants, prostheses, orthoses, biomedical technologies, therapeutics and biocompatibility. (Note: each year at least one elective course will be offered in this theme area. For a current list of offerings, see the Director for Biomedical Engineering.) [Offered: F, W]

Department Consent Required

Prereq: Level at least 3A Engineering

BME 499 PRJ 0.50

Course ID: 015626

Elective Biomedical Research Project

A major undergraduate individual biomedical research project carried out as a technical elective (TE) under the supervision of a faculty member. Students are expected to demonstrate initiative and responsibility. An oral presentation of results and a written report are the minimum requirements. The faculty supervisor or department may set other requirements. Students will arrange for a faculty supervisor prior to registration. [Offered: F,W]

Department Consent Required

Prereq: BME 399; Level at least 4A Biomedical Engineering

**BUSINESS
(WILFRID LAURIER UNIVERSITY)****Notes**

1. All BUS courses are offered by the School of Business and Economics (SBE) at Wilfrid Laurier University (WLU). Such courses have course prefix "BU" at WLU, but appear with prefix "BUS" on University of Waterloo (Waterloo) records with "W" attached to the course number (e.g., BU111 at WLU vs. BUS 111W at Waterloo).
2. Waterloo students taking courses at WLU pay tuition fees to Waterloo as part of a special "Cross-Registration Agreement" between the two universities.
3. Only students enrolled in Waterloo undergraduate degree programs are eligible to cross register for BUS courses. These courses are not open to Waterloo Post-Degree or Non-Degree students, including exchange students at Waterloo from another university.
4. BUS courses are normally available to Waterloo students only when there is no equally suitable course available at Waterloo and access is always conditional upon space availability. WLU, of course, gives enrolment priority to its own students.
5. If there are more Waterloo student requests for a BUS course than the WLU SBE can accommodate, priority for enrolment will normally be given to students for whom the course is a degree requirement in their Waterloo academic plan.
6. Waterloo students should attempt to self-enrol on Quest for on-campus sections of BUS courses in the same way they do for Waterloo courses. Consult the web site in 8. for enrolment in Online Learning sections of BUS courses and for procedures to follow when attempts at Quest self-enrolment in on-campus sections have been unsuccessful.
7. Course descriptions for BUS courses can be found in the WLU Undergraduate Calendar. The requisites in that Calendar, of course, are for WLU students. Waterloo students should consult the web site in 8. for requisites that apply to Waterloo students.
8. The website www.uwaterloo.ca/math-business-accounting-programs/current-students/business-courses-wilfrid-laurier-university provides the information below for a large selection of BUS courses (including BUS 111W and 121W), many of which are part of various Waterloo undergraduate degree programs.
 - (a) Terms in which the courses are normally offered (both on campus and Online Learning).
 - (b) Course requisites (i.e., prerequisites, corequisites, antirequisites) for Waterloo students.
 - (c) Enrolment procedures for enrolling in on-campus sections of BUS courses when attempts at Quest self-enrolment have been unsuccessful.
 - (d) Enrolment procedures for Online Learning sections of BUS courses.

9. Enrolment in any course, whether it is a Waterloo course or a WLU course, is not officially confirmed until it appears as part of your class schedule on Waterloo's Quest system.
10. The WLU SBE does not normally waive any of its BUS course prerequisites, nor does it approve requests for class time conflicts.

BUS 00s

BUS ----- LEC 0.00

Course ID: 013926

Business Courses Taught at Wifrid Laurier University

For details regarding Business courses offered at WLU please see notes above.

CANADIAN STUDIES

CDNST 200s

CDNST 201 LEC 0.50

Course ID: 015692

The Indigenous Experience in Canada

An introduction to the Indigenous experience in Canada with a broad overview of history, culture, and contemporary issues. This course highlights the holism of indigenous perspectives through assigned readings, discussions, projects, and sharing of personal experiences.

(Cross-listed with INDG 201)

Offered at St. Paul's College

CDNST 211 LEC 0.50

Course ID: 015693

Canada: Analysis of a Country

An examination of the fundamental dynamics and tensions in Canadian nationhood, including the following oppositions: Indigenous-Settler; French-English; Center-Periphery; Federal-Provincial. Students will also examine the political and institutional strategies that have been used to mediate these oppositions.

Offered at St. Paul's College

CDNST 212 LEC 0.50

Course ID: 015694

Narratives of Canadian Identity

A multidisciplinary examination of alternative narratives of Canadian identity. Drawing on essays, literature, film, and art, students will explore the perennial question of what it means to be Canadian and examine the factors that have driven different answers to that question over time.

Offered at St. Paul's College

CHEMICAL ENGINEERING

Notes

Prerequisite: For all courses in the Department of Chemical Engineering, registration in Chemical Engineering or permission of the Associate Chair (Undergraduate Studies) is required.

CHE 100 LAB,LEC,TST,TUT 0.75

Course ID: 003971

Chemical Engineering Concepts 1

Introduction to basic methods and principles in Chemical Engineering. The fundamentals of engineering calculations (units and dimensions), behaviour of fluids, mass balances, processes and process variables. Laboratory on visual communication: engineering graphics, computer software including spread sheets, computer aided design. Technical communication: word processing software, elements of technical report writing. Aspects of the engineering profession including ethics, safety, and intellectual property. Professional development including résumé skills, interview skills, and preparation for co-op terms.

[Note: 42 hours of Laboratory work during the term. Offered: F]

Prereq: 1A Chemical Engineering

CHE 101 LAB,LEC,TST,TUT 0.50

Course ID: 003972

Chemical Engineering Concepts 2

An extension of the topics covered in CHE 100. Energy balances. Laboratory experiments illustrate the physical principles discussed. (In the Winter term only: brief review of co-op fundamentals.) [Offered: W, S]

Prereq: CHE 100; Level at least 1B Chemical Engineering

CHE 102 LEC,TST,TUT 0.50

Course ID: 003973

Chemistry for Engineers

Chemical principles with applications in engineering. Stoichiometric calculations, properties of gases, properties of liquids and solutions, gas phase chemical equilibrium, ionic equilibrium in aqueous solution, oxidation-reduction reactions, chemical kinetics. [Offered: F]

Prereq: Open only to students in Chemical, Civil, Computer, Electrical, Environmental, Geological, Management, Mechanical, Mechatronics and Software Engineering

CHE 121 LEC,TST,TUT 0.50

Course ID: 011990

Engineering Computation

Introduction to digital computers, hardware and software organization. Programming fundamentals. Algorithms and control structures. Computer communication. Spreadsheets for problem solving, plotting, fitting data, building new functions, and making iterations and loops. Problem solution, plotting, and creating complex programs in a programming environment. Elementary numerical methods (e.g. Taylor series summations, roots of equations, roots of polynomials, system of linear and nonlinear algebraic equations, integration). Applications in Chemical Engineering. [Offered: W, S]

Prereq: Level at least 1B Chemical Engineering.

Antireq: CIVE 121, ECE 150, GENE 121, SYDE 121

CHE 161 LEC,TST,TUT 0.50

Course ID: 011991

Engineering Biology

Introduction to basic concepts of biochemistry and cell biology. Overview of the chemistry of amino acids, carbohydrates, lipids and nucleic acids. Properties and functions of biopolymers. Elements of cell structure and diversity, and relationship of biochemistry with cell metabolism. A focus on biotechnologically relevant examples such as biomimetic engineering design, proteomics, system biology and high throughput biology. [Offered: W, S]

Prereq: Level at least 1B Engineering or Software Engineering

CHE 200s

CHE 200 LEC,TUT 0.50

Course ID: 003949

Equilibrium Stage Operations

Equilibrium between phases; the equilibrium stage concept. Cascades of stages with and without reflux; group methods and stage-by-stage approaches; graphical solutions. Applications in the separation of components by distillation, absorption, stripping, extraction and leaching. [Offered: F, W]

Prereq: 2A Chemical Engineering

CHE 201 SEM 0.00

Course ID: 009212

Seminar

General Seminar.

Prereq: 2A Chemical Engineering

CHE 202 SEM 0.00

Course ID: 009213

Seminar

General Seminar.

Prereq: 2B Chemical Engineering

CHE 211 LEC,TUT 0.50

Course ID: 003952

Fluid Mechanics

Fundamentals of fluid flow. Conservation laws for mass, momentum and mechanical energy. Flow of fluids in conduits. Flow past immersed bodies. Flow through beds of solids, fluidization. Transportation and metering of fluids. Dimensional analysis. [Offered: F, S]

Prereq: 2B Chemical Engineering

CHE 220 LEC,TUT 0.50

Course ID: 003950

Process Data Analysis

Introduction to statistical methods for analyzing and interpreting process data. Introduction to statistical ideas, probability theory, distribution theory, sampling theory, confidence intervals and significance tests. Introduction to regression analysis. Introduction to design of experiments and statistical quality control. [Offered: F, W]

Prereq: 2A Chemical Engineering

CHE 230 LEC,TUT 0.50

Course ID: 003951

Physical Chemistry 1

Thermodynamics: work and heat as forms of energy. First law, internal energy and enthalpy. Heats of chemical and physical changes. Cycles and the second law, entropy. Spontaneity and equilibrium, free energies. Systems of variable composition, chemical equilibrium. Phase equilibrium and the phase rule. Ideal solutions, colligative properties. [Offered: F, W]

Prereq: 2A Chemical Engineering

CHE 231 LEC,TUT 0.50

Course ID: 003953

Physical Chemistry 2

Thermodynamics: ideal solutions; non-ideal solutions, non-electrolytic and electrolytic solutions, phase equilibrium and phase diagrams, reaction equilibrium. Surface phenomena: surface tension, capillarity, properties of small particles, adsorption. Chemical kinetics: rate laws, reaction rates, mechanisms, catalysis, heterogeneous reactions. [Offered: F, S]

Prereq: 2B Chemical Engineering

CHE 241 LEC,TUT 0.50

Course ID: 012020

Materials Science and Engineering

Fundamentals; atomic bonding, crystalline structure, crystal defects, non-crystalline materials; structure and properties of metals, ceramics, glasses, semi-conductors. Amorphous materials, polymers, composites. Processing and concepts of engineering design of materials. [Offered: F, S]

Prereq: 2B Chemical Engineering

CHE 290 LAB 0.25

Course ID: 011992

Chemical Engineering Lab 1

A selection of computer and laboratory exercises refreshing and reinforcing material covered in the previous term. Topics may include: basic microbiology and biotechnology, introductory physical chemistry, mass and energy balances. [Offered: F, W]

Prereq: 2A Chemical Engineering

CHE 291 LAB 0.25

Course ID: 011993

Chemical Engineering Lab 2

A selection of computer and laboratory exercises refreshing and reinforcing material covered in the previous term. Topics may include: physical chemistry, design of experiments and statistics, and equilibrium stage operations. [Offered: F, S]

Prereq: 2B Chemical Engineering

CHE 298 PRJ 0.25

Course ID: 012004

Directed Research Project

Directed research project under the supervision of faculty members. Participation will give students experience in advanced research techniques, with valuable training for those potentially interested in graduate school or industrial research careers. Taken over and above normal course load. Good standing and permission of department required for registration.

[Note: This course graded as CR/NCR. Offered: F, W]

Department Consent Required

CHE 299 PRJ 0.25

Course ID: 012005

Directed Research Project

Directed research project under the supervision of faculty members. Participation will give students experience in advanced research techniques, with valuable training for those potentially interested in graduate school or industrial research careers. Taken over and above normal course load. Good standing and permission of department required for registration.

[Note: This course graded as CR/NCR. Offered: F, S]

Department Consent Required

CHE 301 SEM 0.00

Course ID: 009214

Seminar

General Seminar.

*Prereq: 3A Chemical Engineering***CHE 302 SEM 0.00**

Course ID: 009215

Seminar

General Seminar.

*Prereq: Level at least 3B Chemical Engineering***CHE 312 LEC,TUT 0.50**

Course ID: 013357

Mathematics of Heat and Mass Transfer

Fundamentals of mass transfer: species and mixture velocities, diffusive and convective fluxes, Fick's law and the diffusion coefficient. Vector form of the microscopic (differential) mass balance. Fundamentals of heat transfer: conduction, convection and radiation, Fourier's law and thermal conductivity. Vector form of the microscopic thermal energy balance for solids and incompressible fluids. Mass and heat transfer models leading to ordinary differential equation problems in Cartesian, cylindrical and spherical geometries; types of boundary conditions. Bessel functions. Analytical solution of linear partial differential equations: combination of variables, separation of variables and Sturm-Liouville theory, Laplace transform. Mass and heat transfer models leading to linear partial differential equations: 1D transient diffusion and conduction in Cartesian, cylindrical and spherical geometries; steady-state 2D conduction and diffusion. Heat-mass transfer analogies and dimensionless numbers. [Offered: W,S]

*Prereq: 3A Chemical Engineering***CHE 313 LEC,TUT 0.50**

Course ID: 013358

Applications of Heat and Mass Transfer

Convective heat transfer. Analysis of convective heat transfer in external flows using the boundary layer approach. Analysis of convective heat transfer in internal flows. Empirical correlations for convective heat transfer. Heat transfer with phase change: condensation and boiling. Heat exchanger design. Convective mass transfer. Empirical correlations for convective mass transfer. Mass transfer at fluid-fluid interfaces. Design of continuous differential contactors for absorption/stripping, distillation and liquid-liquid extraction. Analogy between heat, mass and momentum transfer. Dimensional analysis. Simultaneous heat and mass transfer operations. [Offered: F, W]

*Prereq: Level at least 3B Chemical Engineering***CHE 314 LEC,TUT 0.50**

Course ID: 003960

Chemical Reaction Engineering

Review of stoichiometry and chemical kinetics. Homogeneous reactors: isothermal operation; batch; semi-batch; continuous tank; plug flow reactor design. Continuous stirred-tank reactors (CSTRs) in series; plug flow reactor with recycle. Multiple reactions in reactor networks. Temperature effects in adiabatic and non-isothermal reactors. Yield, selectivity and optimal operation of reactors. Heterogeneous catalysis and effectiveness factors in two-phase reactors. [Offered: W, S]

*Prereq: 3A Chemical Engineering***CHE 322 LEC,TUT 0.50**

Course ID: 011995

Numerical Methods for Process Analysis and Design

Systems of linear and non-linear algebraic equations; polynomial and spline interpolation; numerical differentiation and integration; numerical solution of initial value and boundary value ordinary differential equation problems: accuracy and stability, step size control and stiffness; finite differences for the numerical solution of elliptic and parabolic partial differential equations; method of lines, explicit vs. implicit finite-difference methods; introduction to the finite element method (optional).

The course extends material on numerical methods and their implementation in Matlab, covered in CHE 121, to address a variety of models of chemical engineering processes. [Offered: W, S]

Prereq: 3A Chemical Engineering

CHE 330 LEC,TUT 0.50

Course ID: 003957

Chemical Engineering Thermodynamics

Review of fundamentals, including 2nd law and concepts of equilibrium, phase and reaction equilibria, fugacity, exergy. Thermodynamics applied to practical situations. Examples chosen from: fluid flow; power generation; refrigeration; air conditioning and water cooling; liquefaction of gases; equilibria in complex chemical reactions and separation processes; surface phenomena; electrochemical reactions; biological processes. [Offered: W, S]

Prereq: 3A Chemical Engineering

CHE 331 LEC,TUT 0.50

Course ID: 003962

Electrochemical Engineering

Topics and applications of electrochemistry and electrochemical engineering. Industrial process examples. Environmental aspects. Ionic equilibria. Laws of electrolysis. Theory of electrolytes. Transport properties of electrolytes. Reversible cell potentials. Irreversible electrode processes. Thermodynamic and kinetic aspects of corrosion. Common examples of corrosion. Electrochemical energy conversion and storage. [Offered: F, W]

Prereq: Level at least 3B Chemical Engineering

CHE 341 LEC,TUT 0.50

Course ID: 015397

Introduction to Process Control

Laplace transform techniques. Proportional-integral-derivative control. Frequency response methods. Stability analysis. Controller tuning. Process control simulation and computer control systems. Process identification. [Offered: F, W; first offered Fall 2020]

Prereq: Level at least 3B Chemical Engineering or Environmental Engineering

CHE 361 LEC,TUT 0.50

Course ID: 003956

Bioprocess Engineering

Review of elementary aspects of microbiology, biochemistry, molecular biology, and genetic engineering. Introduction of biological systems for the production of commercial goods and services, e.g., foods, pharmaceuticals, chemicals, fuels, diagnostics, waste treatment, and biomaterials. Introduction to design of bioprocess systems, including biosafety and sustainability. Development of reaction kinetics associated with biological systems. Quantification of metabolism. Development of material balances for key constituents in bioreactors operated in different modes, e.g., batch, fed-batch, continuous stirred-tank reactor (CSTR), perfusion, recycle. Introduction to mass and heat transfer considerations for bioreactors. Dynamic simulation of cultures defined by ordinary differential equations. Introduction of downstream processes associated with biological systems and recovery of biological products. [Offered: F, W]

Prereq: Level at least 3B Chemical Engineering or Environmental Engineering

CHE 383 LEC 0.25

Course ID: 015399

Chemical Engineering Design Workshop

An introduction to the engineering design process, including problem definition and needs analysis, critical analysis of problems, alternative solutions, process synthesis, design constraints, and safety and environmental protection in design. This course also develops and enhances team work, project management and technical communication (written and oral). Students in teams work on open-ended problems and apply the formal methods of engineering design. At the conclusion of this course, each student team presents a pre-proposal of the design project that will become the subject of CHE 482 and CHE 483. [Offered: F, W; first offered Fall 2020]

Prereq: 3B Chemical Engineering

CHE 390 LAB 0.50

Course ID: 011996

Chemical Engineering Lab 3

A selection of computer and laboratory exercises and project-based investigations refreshing and reinforcing material covered in the previous term. Topics may include: fluid mechanics, physical chemistry and kinetics, materials properties and testing. [Offered: W, S, first offered Winter 2019]

Prereq: 3A Chemical Engineering

CHE 391 LAB 0.25

Course ID: 011997

Chemical Engineering Lab 4

A selection of computer and laboratory exercises refreshing and reinforcing material covered in the previous term. Topics may include: electrochemistry, heat transfer, mass transfer, fermentation and bioseparations. [Offered: F, W, last offered Winter 2020]

Prereq: Level at least 3B Chemical Engineering

CHE 398 PRJ 0.25

Course ID: 012006

Directed Research Project

Directed research project under the supervision of faculty members. Participation will give students experience in advanced research techniques, with valuable training for those potentially interested in graduate school or industrial research careers. Taken over and above normal course load. Good standing and permission of department required for registration.

[Note: This course graded as CR/NCR. Offered: W, S]

Department Consent Required

CHE 399 PRJ 0.25

Course ID: 012007

Directed Research Project

Directed research project under the supervision of faculty members. Participation will give students experience in advanced research techniques, with valuable training for those potentially interested in graduate school or industrial research careers. Taken over and above normal course load. Good standing and permission of department required for registration.

[Note: This course graded as CR/NCR. Offered: F, W]

Department Consent Required

CHE 400s

CHE 401 SEM 0.00

Course ID: 009216

Seminar

General Seminar.

Prereq: 4A Chemical Engineering

CHE 402 SEM 0.00

Course ID: 009217

Seminar

General Seminar.

Prereq: 4B Chemical Engineering

CHE 420 LEC,TUT 0.50

Course ID: 003964

Introduction to Process Control

Laplace transform techniques. Proportional-integral-derivative control. Frequency response methods. Stability analysis. Controller tuning. Process control simulation and computer control systems. Process identification. [Offered: F, S, last offered Fall 2020]

Prereq: 4A Chemical Engineering or Environmental Engineering

CHE 425 LEC,TUT 0.50

Course ID: 011994

Strategies for Process Improvement and Product Development

A course in practical statistics at a level one step beyond an elementary course. Material includes regression analysis for linear and nonlinear models, analysis of variance, statistical inference, single and multiple comparisons, and an introduction to the design of experiments including single factor designs, multifactor designs, response surface methods, d-optimality (with empirical and mechanistic models), and the analysis of undesigned data. Applications to process improvement, product development and research problems will be explored. Use of statistical analysis software to apply these techniques. [Offered: F, W]

Prereq: Level at least 3B Chemical Engineering.

Antireq: CHE 325

CHE 480 LEC,TUT 0.50

Course ID: 011999

Process Analysis and Design

Development and analysis of process flowsheets and chemical product design. Design and selection of common process equipment such as heat exchangers, pumps, piping, staged separations. Incorporation of pollution prevention and inherently safer design principles. Equipment and project cost estimation. [Offered: F, S]

Prereq: 4A Chemical Engineering

CHE 482 LEC,PRJ 0.50

Course ID: 010016

Chemical Engineering Design Workshop

In this course, students study the design process including: problem definition and needs analysis; process synthesis, process debottlenecking and troubleshooting; safety and environmental protection in design; written and oral communication for design reports. A significant portion of the term work will be devoted to a group design project, culminating in a design proposal that will be presented to the department. [Offered: F, S]

Prereq: 4A Chemical Engineering

CHE 483 LEC,PRJ 0.50

Course ID: 003969

Group Design Project

Student design teams of two to four members work on design projects of industrial scope and importance under the supervision of a faculty member. The projects are a continuation of those initiated in CHE 482. [Offered: W]

Prereq: CHE 482; 4B Chemical Engineering

CHE 490 LAB 0.25

Course ID: 012000

Chemical Engineering Lab 5

A selection of computer and laboratory exercises refreshing and reinforcing material covered in the previous term. Topics may

include: reaction kinetics and reactor engineering, heat and mass transfer unit operations, numerical methods, principles of design and safety. [Offered: F, S]

Prereq: 4A Chemical Engineering

CHE 491 LAB 0.50

Course ID: 015398

Chemical Engineering Lab 5

Project-based experimental investigation of complex systems in main areas of application of chemical engineering. Topics selected from reaction engineering, separation processes, bioprocess engineering, electrochemical engineering, materials engineering and process control. [Offered: W; first offered Winter 2022]

Prereq: 4B Chemical Engineering

CHE 498 PRJ 0.25

Course ID: 003966

Directed Research Project

Directed research project under the supervision of faculty members. Participation will give students experience in advanced research techniques, with valuable training for those potentially interested in graduate school or industrial research careers. Taken over and above normal course load. Good standing and permission of department required for registration.

[Note: This course graded as CR/NCR. Offered: F, S]

Department Consent Required

CHE 499 PRJ 0.50

Course ID: 003970

Elective Research Project

A major undergraduate research project carried out as a technical elective (TE) under the supervision of a faculty member. An oral presentation of results and a written report are the minimum requirements. Other requirements may be set by the faculty supervisor or department. [Offered: F,W,S]

Prereq: One of CHE 398 or 399 or 498

CHE 500s

CHE 500 LEC 0.50

Course ID: 012726

Special Topics in Chemical Engineering

Special courses on advanced topics may be offered from time to time, when resources are available. For current offerings, inquire at the CHE undergraduate office.

Prereq: Level at least 4A Chemical Engineering

CHE 514 LEC 0.50

Course ID: 003997

Fundamentals of Petroleum Production

Fundamentals of surface chemistry, capillary pressure and wettability. Petrophysics, measurement and interpretation of electrical, capillary and flow properties of reservoir rock. Hydrostatic pressure regimes and estimation of oil and gas reserves. Darcy's law and modelling of steady-state and transient incompressible and compressible single-phase flow through porous media. Thermodynamics of petroleum fluids. Material balance for oil and gas reservoirs: subsurface withdrawal and primary production mechanisms. Oil well testing. Two-phase flow in oil reservoirs, relative permeability, Buckley-Leverett theory of linear water flooding and sweep efficiency. Introduction to enhanced oil recovery. [Offered: F]

Prereq: Level at least 3B Chemical, Environmental or Geological Engineering

CHE 516 LEC 0.50

Course ID: 014525

Energy Systems Engineering

Energy systems in society. Review of fossil fuel reserves, production and consumption trends, including unconventional sources such as shale gas, and oil sands. Transportation fuels and alternative fuels; the design of hybrid power trains, fuel cells and batteries. Design considerations of carbon-free energy generation and carbon-neutral technologies, including nuclear, wind, solar and bio-energy. Design of energy storage on a 'utility scale' and portable power sources. Applications of thermodynamics in the design of energy systems, including the Rankin and Brayton cycles. Other energy system topics as appropriate. [Offered: F]

Prereq: Level at least 3B Chemical or Environmental Engineering.

Antireq: ME 459

CHE 522 LEC 0.50

Course ID: 004002

Advanced Process Dynamics and Control

State space methods. Sampled-data systems. Discrete systems. Transform methods. Multivariable control. Computer control. Closed-loop analysis. Design of controllers. Control of complex chemical systems. [Offered: W]

Prereq: 4B Chemical Engineering

CHE 524 LAB,LEC 0.50

Course ID: 004004

Process Control Laboratory

Experiments on process dynamics, control and simulation of processes. Time constant; step and frequency response; controller tuning; multivariable control strategies. Implementation using simulation systems, mainframe computer control, microcomputers. [Offered: W]

Prereq: 4B Chemical Engineering

CHE 541 LEC 0.50

Course ID: 012001

Introduction to Polymer Science and Properties

An overview of basic principles of polymer science and polymer property characterization. Basic principles of polymer molecular weight averages and distributions. Practical aspects of molecular weight determination (e.g., basics of membrane osmometry, laser light scattering, solution viscometry, size exclusion chromatography and its variants, for both linear and branched chains, and homopolymer and copolymer chains). Polymer properties and classification of polymers based on properties (e.g., solution properties, crystallinity, etc.). Overview of polymerization reactions and resultant physical properties. Principles and process technology of step growth polymerization and comparison with free radical polymerizations. [Offered: F]

Prereq: Level at least 3B Chemical Engineering

CHE 543 LEC 0.50

Course ID: 012002

Polymer Production: Polymer Reaction Engineering

Overview of polymer production technology and polymer reaction engineering analysis tools. Examples from chain growth polymerization processes (free radical, ionic, living/controlled radical variants, metal co-ordination catalysis, etc.), different modes of polymer reactor operation (batch, semi-batch, continuous flow stirred-tank reactor (CSTR), tubular, trains of CSTRs), homogeneous (bulk/solution/suspension) and heterogeneous (emulsion/dispersion/co-ordinated/etc.), linear and branched/cross-linked chains. Calculations and mathematical models for rate, copolymer composition, molecular weight and sequence length characteristics, for polymer reactor design/optimization of polymer productivity and quality variables. [Offered: W]

Prereq: Level at least 3B Chemical Engineering

CHE 562 LEC 0.50

Course ID: 004016

Advanced Bioprocess Engineering

Application of process engineering principles to the design and operation of fermentation reactors which are widely used in the pharmaceutical, food, brewing and waste treatment industries. Aspects of mass transfer, heat transfer, mixing and rheology with biochemical and biological constraints. [Offered: W]

Prereq: Level at least 4B Chemical Engineering

CHE 564 LEC 0.50

Course ID: 004018

Food Process Engineering

Applications of unsteady and steady state heat and/or mass transfer operations to processing natural and texturized foods. Design and analysis of sterilization, low temperature preservation, concentration, separation and purification processes. Effects of formulation, additives and processing on organoleptic and nutritional quality. [Offered: W]

Prereq: Level at least 4B Chemical Engineering

CHE 571 LEC 0.50

Course ID: 012003

Industrial Ecology

Industrial Ecology is a rapidly growing field that systematically examines local, regional, and global uses and flows of materials and energy in products, processes, industrial sectors, and economies. It focuses on the potential role of industry in reducing environmental burdens throughout the product life cycle from the extraction of raw materials to the production of goods, to the use of those goods and to the management of the resulting wastes. This course will review the environmental issues associated with chemical industries and the roles of engineers to manage these issues. The principles and philosophy of green chemistry will be addressed including pollution prevention in unit operations. The concepts and practices of environmental life cycle analysis and accounting will be addressed in detail, together with the basics of risk assessment, management and communication. [Offered: F]

Prereq: Level at least 3B Chemical or Environmental Engineering

CHE 572 LEC 0.50

Course ID: 004021

Air Pollution Control

Nature and sources of air pollutants. Transport of pollutants and dispersion modeling for regulatory purposes. Design of industrial particulate capture systems using cyclones, electrostatic precipitators, filters, scrubbers. Design of organic compound emissions control using incineration, biofiltration, adsorption and absorption. Overview of NO_x and SO_x control. Indoor air quality assessment techniques. [Offered: W]

Prereq: Level at least 3B Chemical or Environmental Engineering

CHE 574 LEC 0.50

Course ID: 004023

Industrial Wastewater Pollution Control

Primary focus is on the control and treatment of inorganic aqueous waste from chemical process industries. Waste minimization methods with specific examples such as rinsewater circuit design. Principles and design of treatment methods: chemical treatment, precipitation, coagulation and flocculation, ion exchange and membrane separation. Treatment of organic aqueous waste. [Offered: W]

Prereq: Level at least 3B Chemical or Environmental Engineering

CHEMISTRY**Notes**

- Because of space and equipment limitations in laboratory courses, priority must be given to students whose Academic Plans require those courses.

CHEM 00s

CHEM 1 LEC 0.00

Course ID: 010181

Pre-University Chemistry

Essential preparation for first year chemistry courses. Formulae, nomenclature, stoichiometry, an introduction to thermochemistry, solution chemistry, chemical equilibria, acids, bases, oxidation-reduction reactions, kinetics and bonding.

[Note: Successful completion of this courses fulfils the University admission requirements where high school chemistry is necessary. No University credit.]

Only offered Online

CHEM 100s

CHEM 100 SEM 0.00

Course ID: 014633

Introduction to Chemical Sciences

The Chemist in society: Lectures, workshops, or seminars focusing on academic and professional development [Offered: F]

Prereq: 1A Chemistry, Chemical Physics, Geochemistry, and Medicinal Chemistry students only

CHEM 101 SEM 0.00

Course ID: 014924

Introduction to Biochemical Sciences

The Biochemist in society: Lectures, workshops, or seminars focusing on academic and professional development [Offered: F]

Prereq: 1A Biochemistry students

CHEM 120 LEC,TST,TUT 0.50

Course ID: 004036

Physical and Chemical Properties of Matter

The stoichiometry of compounds and chemical reactions. Properties of gases. Periodicity and chemical bonding. Energy changes in chemical systems. Electronic structure of atoms and molecules; correlation with the chemical reactivity of common elements, inorganic and organic compounds.

[Note: Offered: F, W. Science students must also take CHEM 120L. Successful completion of Grade 12 U Calculus and Vectors and Grade 12 U Chemistry or equivalent courses is recommended]

Also offered Online

CHEM 120L LAB 0.25

Course ID: 004037

Chemical Reaction Laboratory 1

Selected experiments for students taking CHEM 120. [Offered: F]

Coreq: CHEM 120

CHEM 123 LEC,TST,TUT 0.50

Course ID: 004040

Chemical Reactions, Equilibria and Kinetics

Properties of liquids and solutions. Introduction to chemical equilibria. Principles of acid-base equilibria, solubility and electrochemical processes. Chemical kinetics.

[Note: Science students must also take CHEM 123L. Offered: W,S]

Prereq: CHEM 120 or CHE 102

Also offered Online

CHEM 123L LAB 0.25

Course ID: 004041

Chemical Reaction Laboratory 2

Selected experiments for students taking CHEM 123.

[Note: Students who are not taking, or who have not previously taken CHEM 123, will be removed from CHEM 123L.

Offered: W,S]

Prereq: CHEM 120L;

Coreq: CHEM 123

CHEM 140 LAB,LEC 0.50

Course ID: 012688

Introduction to Scientific Calculations

The use of software packages, such as Excel and Mathcad, for basic calculations, data analysis, regression analysis, plotting of scientific graphs, data manipulation, and equation solving will be covered, with an emphasis placed upon chemical and biochemical concepts and applications. [Offered: F,W,S]

Prereq: CHEM 120; Not open to Mathematics students.

CHEM 200s

CHEM 200 LAB,SEM 0.50

Course ID: 015288

Introduction to Laboratory Techniques

This course is an introduction to practical laboratory skills. Laboratory techniques will include: the separation, isolation and purification of compounds (through extraction, reflux, distillation, chromatography, and recrystallization), analysis techniques, and the application of these techniques in synthesis. The subjects covered in this biweekly laboratory provide the foundation for more advanced laboratory courses and the basic training needed for an industrial or research laboratory position. The seminar portion of this course will focus on communication and technical skills; the latter will include analysis of Material Safety Data Sheets (MSDS), use of search engines, and learning of citation formats. [Offered: F]

Prereq: CHEM 123, 123L; Honours Biochemistry, Chemistry or Medicinal Chemistry students only.

CHEM 201 LEC 0.50

Course ID: 014751

Environmental Impact and Management of Resources 1

Introduction to the management of resources used in the production, conversion and disposal/recycling of chemicals. Biobased versus fossil resources. Introduction to the life cycle analysis of a material. Principles of green chemistry. [Offered: F; Based in Bordeaux; online only]

Prereq: Honours Chemistry or Honours Biochemistry; Level at least 2A

Only offered Online

CHEM 209 LEC,TUT 0.50

Course ID: 012080

Introductory Spectroscopy and Structure

The nature of electromagnetic radiation and an elementary outline of quantum mechanics in one dimension. For each of microwave, infrared, Raman, electronic, photoelectron, and nuclear magnetic resonance spectroscopy, the nature of the molecular energy levels involved and the type of molecular information that can be obtained using it are examined. [Offered: F]

Prereq: CHEM 120 or NE 121.

CHEM 212 LEC,TUT 0.50

Course ID: 004048

Structure and Bonding

An introduction to the principles of chemical structure and bonding, with emphasis on their application to inorganic systems. Topics include: atoms, orbitals, and periodicity; localized bonding models; symmetry and group theory; and molecular orbital theory. The subjects treated in this course are foundational components for advanced studies in all areas of chemistry.

[Offered: W,S]

Prereq: CHEM 120, 123; Honours students only

CHEM 217 LEC 0.50

Course ID: 013241

Chemical Bonding

Atomic and molecular structure. Molecular symmetry. Localized bonding models. Molecular orbital theory. Structures of solids. [Not open to students in the following plans: Biochemistry, Chemical Physics, Chemistry, Computational Science (Biochemistry Specialization), Computational Science (Chemistry Specialization), Geochemistry, Science and Business (Biochemistry Specialization), Science and Business (Chemistry Specialization). Offered: F]

Prereq: (CHEM 120 and 123) or NE 121.

Antireq: CHEM 212

Only offered Online

CHEM 220 LEC,TUT 0.50

Course ID: 004052

Intro Analytical Chemistry

Quantitative and analytical chemistry including ionic equilibria, classical and more recent methods. Emphasis on planning and decision-making in the analytical process. [Offered: F]

Prereq: CHEM 123; Honours Science Programs.

Antireq: CHEM 228

CHEM 220L LAB 0.25

Course ID: 004053

Analytical Chemistry Lab 1

Selected experiments for students taking CHEM 220 or 228. [Offered: F]

Prereq: CHEM 123L; Honours Biochemistry, Chemistry, Geochemistry, Medicinal Chemistry, or Science and Business (CHEM, BIOCHEM) students only.

Coreq: CHEM 220 or 228.

Antireq: CHEM 228L

CHEM 221 LEC,TUT 0.50

Course ID: 004054

Multi-Component Analysis

Instrumental analytical chemistry, including traditional and more recent methods. Emphasis on planning and decision-making in the analytical process. [Offered W,S]

Prereq: CHEM 220, 220L.

CHEM 224L LAB,TUT 0.50

Course ID: 004058

Analytical Chemistry Laboratory 2

Extensive lab experience for students who have taken CHEM 220. [Offered: W,S]

Prereq: CHEM 220 and CHEM 220L; Honours Biochemistry, Chemistry, Geochemistry or Medicinal Chemistry students only.

CHEM 228 LEC 0.50

Course ID: 004059

Chemical Analysis

An introduction to methods of quantitative chemical analysis. [Not open to students in the following plans: Biochemistry, Chemical Physics, Chemistry, Geochemistry, Science and Business (Biochemistry Specialization), Science and Business (Chemistry Specialization), Offered: W]

Prereq: CHEM 123.

Antireq: CHEM 220

CHEM 233 LEC,TUT 0.50

Course ID: 004060

Fundamentals of Biochemistry

Chemistry of amino acids, carbohydrates, lipids and nucleic acids, with special emphasis on representative proteins and enzymes, including hemoglobin, cytochrome c and chymotrypsin. [Offered: W,S]

Prereq: CHEM 264 or 262; Honours Biochemistry, Biology, Chemistry or Environmental Science.

Antireq: CHEM 237, NE 224

CHEM 233L LAB 0.25

Course ID: 015418

Fundamentals of Biochemistry Laboratory

Selected experiments for students taking CHEM 233. [Offered: W, S]

Prereq: CHEM 264.

Coreq: CHEM 233.

Antireq: CHEM 237L

CHEM 237 LEC,TST,TUT 0.50

Course ID: 004061

Introductory Biochemistry

An introduction to the chemistry of amino acids, carbohydrates, lipids and nucleic acids. Structure and properties of proteins and enzymes. [Offered: W, S]

Prereq: CHEM 262 or 264 or 266.

Antireq: CHEM 233, NE 224

Also offered Online

CHEM 237L LAB,TUT 0.25

Course ID: 004062

Introductory Biochemistry Laboratory

Selected experiments for students taking CHEM 237. [Offered: W, S]

Coreq: CHEM 237

CHEM 239 LEC 0.50

Course ID: 014752

Introduction to Biological Systems

Introduction to the biology and biochemistry of a selection of plants and microorganisms, with emphasis on the chemical components of living matter (nucleic acids, proteins, carbohydrates, lipids, DNA, RNA, peptides, proteins) and the synthesis and breakdown of complex molecules in plants and microorganisms. [Offered: W; online only]

Prereq: Honours Chemistry or Honours Biochemistry; Level at least 2A.

Antireq: CHEM 233, 237

Only offered Online

CHEM 240 LEC,TUT 0.50

Course ID: 012081

Mathematical Methods for Chemistry

Mathematical techniques useful for chemistry students. Introduction to complex numbers, plus topics chosen from: calculus; differential equations; vector spaces and vector algebra; matrices and determinants; elementary probability theory; basic group theory and symmetry. Applications to problems of chemical interest. [Offered: F]

Prereq: One of MATH 128, 138 or 148; Not open to students in the Faculty of Mathematics

CHEM 250L LAB,SEM 0.25

Course ID: 004063

Physical Chemistry Laboratory 1

Selected experiments for students in year two. [Offered: F]

Prereq: CHEM 140; Honours students only

CHEM 254 LEC,TUT 0.50

Course ID: 004064

Introductory Chemical Thermodynamics

An introduction to the first, second and third laws of thermodynamics and the application of these laws to ideal systems, mixtures, and chemical reactions. Thermodynamic principles are used to study changes in state, including phase changes, and to establish the link between the equilibrium constant and the properties of the substances involved in a chemical reaction. [Offered: W,S]

Prereq: CHEM 123; One of MATH 128, 138, 148; Honours students only.

Antireq: PHYS 258/358/ECE 403

CHEM 262 LEC,TUT 0.50

Course ID: 004029

Organic Chemistry for Engineering

Bonding, structure and nomenclature in organic chemistry. Physical properties and simple reactions associated with the important functional groups.[Offered: F,W]

Prereq: BME 186 or CHE 102 or NE 121; Engineering students only.

Coreq: CHEM 262L (for Chemical Engineering students only).

Antireq: CHEM 264, 266, NE 122

CHEM 262L LAB 0.25

Course ID: 004030

Organic Chemistry Laboratory for Engineering Students

Selected experiments for engineering students taking CHEM 262.[Offered: F,W]

Coreq: CHEM 262 (Engineering students)

CHEM 264 LEC,TUT 0.50

Course ID: 004068

Organic Chemistry 1

Structure and bonding in organic chemistry. Isomerism and stereoisomerism in organic compounds. Acidity of organic compounds and substituent effects on acidity. Reaction mechanisms and energetics. Chemistry of alkanes, haloalkanes, alcohols and ethers, alkenes and alkynes. [Offered: F, S]

Prereq: CHEM 123; Honours Programs only.

Antireq: CHEM 262, 266, NE 122

CHEM 265 LEC,TUT 0.50

Course ID: 004069

Organic Chemistry 2

Nucleophilic addition and substitution at CO carbon. Aromaticity and simple MO theory of conjugated systems. Electrophilic and nucleophilic aromatic substitution reactions. Applications of spectroscopic techniques in organic chemistry. [Offered: W,S]

Prereq: CHEM 264; Honours Science students only.

Antireq: CHEM 267

CHEM 265L LAB 0.25

Course ID: 004070

Organic Chemistry Laboratory 1

Selected experiments for students taking CHEM 265. [Offered: W,S]

Prereq: CHEM 123L; Honours Biochemistry, Chemistry, Medicinal Chemistry, or Science and Business (CHEM, BIOCHEM) students only.

Coreq: CHEM 265

CHEM 266 LEC,TST 0.50

Course ID: 004071

Basic Organic Chemistry 1

Structure, nomenclature and reactions of important classes of organic compounds. Stereochemistry and its role in reaction mechanisms. [Offered: F]

Prereq: CHEM 120, 123.

Antireq: CHEM 262, 264, NE 122

Also offered Online

CHEM 266L LAB 0.25

Course ID: 004072

Organic Chemistry Laboratory

Selected experiments for students taking (or who have taken) CHEM 266.

[Note: Lab alternate weeks. Offered: F]

Prereq: CHEM 123L.

Coreq: CHEM 266

CHEM 267 LEC,TST 0.50

Course ID: 004073

Basic Organic Chemistry 2

A continuation of the concepts of CHEM 266, including material on amines, aromatics, enols and enolates, and nucleophilic addition and substitution at the carbonyl group. Introduction to nuclear magnetic resonance and infrared spectroscopy. [Offered: W]

Prereq: CHEM 262 or 264 or 266 or NE 122.

Antireq: CHEM 265.

Also offered Online

CHEM 267L LAB 0.25

Course ID: 004074

Organic Chemistry Laboratory

Selected experiments for students taking CHEM 267.

[Note: Lab alternate weeks. Offered: W]

Prereq: CHEM 266L.

Coreq: CHEM 267

CHEM 300s**CHEM 301 LEC 0.50**

Course ID: 014753

Environmental Impact and Management of Resources 2

Indices and methods for quantifying the environmental impact of chemical and biochemical processes. Life cycle analysis of processes, starting from the extraction of the required raw materials through to the disposal or recycling of the products. Introduction to regulatory policies. [Offered: W; Based in Bordeaux; online only]

Prereq: CHEM 201; Honours Chemistry or Honours Biochemistry

Only offered Online

CHEM 302 LEC 0.50

Course ID: 014754

Innovation and Project Management

Examples drawn from the chemical industry are used to expose students to a methodology for developing an innovative idea into a well-defined working plan. Students will use the methodology to develop ideas for their fourth-year projects. [Offered: F; online only]

Prereq: Honours Chemistry or Honours Biochemistry; Level at least 2B

Only offered Online

CHEM 310 LEC,TUT 0.50

Course ID: 004078

Transition Element Compounds and Inorganic Materials

The inorganic, organic and solid state chemistry of the d-block elements. The structure and physical properties of coordination compounds and transition metal containing solids. The role of transition metal organometallics in catalysis. [Offered: F]

Prereq: CHEM 212; Honours Science students only

CHEM 310L LAB,SEM 0.50

Course ID: 004079

Inorganic Chemistry Laboratory 2

Synthesis of transition and non-transition metal compounds. Characterization of compounds using IR, UV-VIS and NMR spectroscopy. [Offered: F]

Prereq: CHEM 123L; Honours Chemistry, Chemical Physics or Medicinal Chemistry students only.

CHEM 313 LEC 0.50

Course ID: 004083

Main Group and Solid State Chemistry

This course provides a detailed examination of the structure and bonding in main group and solid state compounds, including valence bond and molecular orbital theory for describing electronic structures, Hückel and extended Hückel approximations.

Structures of simple solids, including close packing of spheres and derived ionic lattice types; aspects of chemical crystallography, Bravais lattices, point groups, space groups, crystal planes, and X-ray diffraction; Ionic interactions in gases and solution; the thermodynamics of acid-base interactions; descriptive chemistry and characterization of main group element compounds. [Offered: W]

Prereq: CHEM 212

CHEM 313L LAB 0.25

Course ID: 011572

Inorganic Chemistry Laboratory 1

Introduction to synthetic inorganic chemistry. [Offered: W]

Prereq: CHEM 123L; Honours Chemistry or Medicinal Chemistry students only.

CHEM 323 LEC 0.50

Course ID: 004089

Analytical Instrumentation

Detailed study of selected instruments and instrumental methods. Introduction to chemometrics and to computer interfacing. [Offered: F]

Prereq: CHEM 221; CHEM 224L; Level at least 3A Honours Science programs

CHEM 331 LEC,TUT 0.50

Course ID: 012194

Fundamentals of Metabolism 1

Thermodynamics of metabolism. Metabolism of carbohydrates and lipids. Chemistry of oxidative phosphorylation and photosynthesis. Emphasis is put on the role and chemical mechanisms of the enzymes in these processes [Offered: F]

Prereq: CHEM 233 or CHEM 239, 265.

Antireq: CHEM 333

CHEM 333 LEC,TUT 0.50

Course ID: 004091

Metabolism 1

Metabolism of carbohydrates, lipids and amino acids. [Offered: F]

Prereq: CHEM 233 or 237 or NE 224 and CHEM 265 or 267.

Antireq: CHEM 331

CHEM 335L LAB,TUT 0.50

Course ID: 004092

Advanced Biochemistry Laboratory

Selected experiments for students having completed or concurrently taking CHEM 331. Topics to be covered include: NMR, allostery, enzymology, electrophoresis, carbohydrates, lipids, photosynthesis, and respiration. [Offered: F,W]

Prereq: CHEM 233 or 237.

Coreq: (CHEM 331 or 333) and 357

CHEM 339 LEC 0.50

Course ID: 014755

Methods and Tools for Biosyntheses

Biochemical reactions involved in respiration, fermentation, cell metabolism. Enzymatic reactions and their use in major industrial processes for transforming or producing chemicals. Biodigesters and bioreactors. Critical analysis of various processes using energy and mass balances. [Offered: F; online only]

Prereq: CHEM 233 or 239; Honours Chemistry or Honours Biochemistry

Only offered Online

CHEM 340 LAB,LEC,TUT 0.50

Course ID: 012563

Introductory Computational Chemistry

Introduction to the theory and practice of computational methods used in chemistry. Use of molecular modeling software to investigate the electronic structure and geometry of molecules, to calculate potential energy surfaces for chemical reactions, and to predict and understand the behaviour of chemical systems. [Offered: W]

Prereq: CHEM 140; CHEM 209; CHEM 212 or 264

CHEM 350 LEC,TUT 0.50

Course ID: 004093

Chemical Kinetics

Basic chemical kinetics; treatment of kinetic data; complex reaction mechanisms; fast reactions; the canonical ensemble and the canonical partition function; statistical mechanics applied to chemistry; statistical theory of reaction rates. [Offered: W]

Prereq: CHEM 254, one of CHEM 240, MATH 227, MATH 228; Honours Programs only.

CHEM 350L LAB 0.50

Course ID: 004094

Physical Chemistry Laboratory 2

Selected experiments for students in year three. [Offered: F]

Prereq: CHEM 250L; Honours Science

CHEM 356 LEC,TUT 0.50

Course ID: 004067

Introductory Quantum Mechanics

Historical background; the differential equation approach to quantum mechanics; treatments of solvable problems such as the particle-in-a-box, harmonic oscillator, rigid rotator and the hydrogen atom; introduction to approximation methods for more complicated systems.

[Note: Formerly CHEM 256. Offered: F]

Prereq: CHEM 240 or MATH 228 or AMATH 250.

Antireq: PHYS 234

CHEM 357 LEC,TUT 0.50

Course ID: 004101

Physical Biochemistry

The use of diffusion, ultracentrifugation, osmotic pressure, electrophoresis and X-ray diffraction to study the properties of biopolymers. Hyperbolic and allosteric enzyme kinetics, inhibition and regulation. Some spectroscopies important to the life sciences. [Offered: W]

Prereq: CHEM 123, MATH 128; One of CHEM 233, 237, 239, NE 224

CHEM 360 LEC,TUT 0.50

Course ID: 004107

Organic Chemistry 3

Enolate alkylation, condensation, conjugate addition and pericyclic reactions. FMO theory, organometallics and transition metal-catalyzed C-C bond formation. [Offered: W]

Prereq: CHEM 265; Honours Programs only

CHEM 360L LAB 0.50

Course ID: 004108

Senior Organic Chemistry Laboratory

Selected microscale synthetic experiments for students in Year Three Chemistry and Biochemistry programs, including spectroscopic identification of organic compounds. [Offered: W]

Prereq: CHEM 265, 265L; Honours Biochemistry, Chemistry, or Medicinal Chemistry students only.

Coreq: CHEM 360

CHEM 363 LEC 0.50

Course ID: 004110

Organic Process Chemistry

This course is an introduction to the important aspects of Process Chemistry for the industrial production of pharmaceutically active organic compounds. Topics covered include: industrial organic synthesis and process design, scaling to kilogram quantities, green chemistry principles, process safety and hazard identification, industrial separation and purification, and meeting quality guidelines and regulations. [Offered: F or W]

Prereq: CHEM 265

CHEM 370 LEC,TUT 0.50

Course ID: 004190

Introduction to Polymer Science

Basic definitions and polymer nomenclature, molecular weight averages and distributions, constitutional and configurational isomerism, rubber elasticity, step-growth and free radical chain growth polymerizations, emulsion polymerization. [Offered: F]

Prereq: CHEM 254, (CHEM 265 or 267).

Antireq: CHE 542, MNS 322, NE 333

CHEM 381 LEC 0.50

Course ID: 012199

Bioorganic Chemistry

Review of stereochemistry, racemic and enantioselective syntheses of amino acids, peptide synthesis, development of peptides into drugs, physical properties and structures of monosaccharides, reactions of monosaccharides, glycoside synthesis, structures of disaccharides and polysaccharides, synthesis of oligosaccharides, physical properties and synthesis of nucleosides, nucleotides, and nucleic acids, nucleotides and nucleic acids as drugs, general drug development. [Offered: W]

Prereq: CHEM 233, 265

CHEM 382L LAB,TUT 0.50

Course ID: 012200

Advanced Organic Synthesis Laboratory

A laboratory course intended for students in the Medicinal Chemistry Specialization of the Honours Chemistry plan. The purpose of this course is to introduce students to advanced laboratory techniques used in synthetic organic chemistry. [Offered: F]

Prereq: CHEM 360, 360L; Medicinal Chemistry students only.

CHEM 383 LEC,TUT 0.50

Course ID: 013361

Medicinal Chemistry

This course discusses the drug discovery process and drug synthesis. Topics include enzymes and receptors, hit and lead discovery, lead optimization, QSAR, prodrugs, drug delivery, drug metabolism, mechanisms of selected drugs and laboratory and process scale synthesis of selected drugs. [Formerly CHEM 482; Offered F]

Prereq: (CHEM 233 or 237), 360;

Antireq: CHEM 482

CHEM 392A PRJ 0.75

Course ID: 004116

Research Project 1

This course is only for exchange students wishing to carry out a research project.

Department Consent Required

CHEM 392B PRJ 0.75

Course ID: 004117

Research Project 2

This course is only for exchange students wishing to carry out a research project.

Department Consent Required

Prereq: CHEM 392A

CHEM 400s**CHEM 400 LEC 0.50**

Course ID: 015287

Special Topics in Chemistry

A selection of current and advanced topics of interests in many areas of Chemistry For a list of offerings see the Academic Advisor or check the Chemistry website, program electives page. [Formerly CHEM 410, 420, 440, 450, 460 and 470; Offered: F, W]

Prereq: Level at least 3A

CHEM 404 LEC,TUT 0.50

Course ID: 004119

Physicochemical Aspects of Natural Waters

Properties of water; chemicals in the environment; environmental fate of inorganic and organic pollutants; basic phenomena affecting the fate of water pollutants (vapor pressure; activity, solubility, partitioning, diffusion, sorption); acids and bases in water; dissolved carbon dioxide; trace metals in water. [Offered: F or W]

Prereq: Level at least 3A; CHEM 120, 123

CHEM 430 LEC 0.50

Course ID: 004152

Special Topics in Biochemistry

For a current list of offerings see the Undergraduate Officer.

[Note: Instructor may elect to use the third lecture hour for a tutorial or not at all. [Offered: F,W. Formerly CHEM 434]

Prereq: Level at least 3A; CHEM 331 or CHEM 333

CHEM 432 LEC,TUT 0.50

Course ID: 004150

Metabolism 2

Properties and metabolism of porphyrins, purines, pyrimidines and biogenic amines. Biosynthesis and mode of action of selected cofactors. Structure-function relationships of enzymes. Regulation of enzyme activity. [Offered: F]

Prereq: CHEM 331 or 333

CHEM 433 LEC,TUT 0.50

Course ID: 004151

Advanced Biochemistry

Nitrogen fixation. Assimilation of nitrogen. Amino acid metabolism. Metabolic regulation. Proteolytic enzymes, ubiquitin. Blood coagulation. Signal transduction and amplification. Biochemistry of nitric oxide. Biochemistry of vision. [Offered: W]

Prereq: CHEM 331 or 333

CHEM 464 LEC 0.50

Course ID: 004182

Spectroscopy in Organic Chemistry

Elucidation and identification of organic structures by contemporary spectroscopic techniques. [Offered: F]

Prereq: CHEM 265

CHEM 479 LEC 0.50

Course ID: 014756

Preparation of Biobased Compounds and Materials

Catalysis and biocatalysis. "Green solvent" and solvent-free reactions. Biobased synthesis of polymers and amphiphiles. Bioreactions in chemical synthesis. [Offered: F; online only]

Prereq: CHEM 339; Honours Chemistry or Honours Biochemistry

Only offered Online

CHEM 481 LEC,TUT 0.50

Course ID: 013360

Rational Design of Potential Drug Candidates

This course provides an introduction to strategies for design of potential drug candidates. It builds upon molecular modelling principles introduced in CHEM 340 and will apply them to specific problems in drug design. Topics include: conformational analysis, molecular mechanics, and molecular dynamics; computational studies of drug-receptor interactions, docking of small organic molecules to biological receptors, and alteration of molecular structures for improvement of bioactivity.

Prereq: (CHEM 233 or 237), 340/340L, 360

CHEM 491A PRJ 0.50

Course ID: 014757

Biobased Chemistry Research Project 1

Student teams work on the projects defined in CHEM 302 (Innovation and Project Management). [Offered: F]

Prereq: CHEM 302; Honours Chemistry or Honours Biochemistry.

Antireq: CHEM 494A/B

CHEM 491B PRJ 0.50

Course ID: 014758

Biobased Chemistry Research Project 2

Students work individually on extending the scope of the team projects started in CHEM 491A. [Offered: W]

Prereq: CHEM 491A.

Antireq: CHEM 494A/B

CHEM 494A PRJ 0.50

Course ID: 004194

Research Project

Laboratory work on a senior year research project. Enrolment into this course requires permission of the CHEM 494 co-ordinator. See the CHEM 494 coordinator for course details. No credit or grade will be provided for this course until the two-term sequence CHEM 494A/B has been completed. CHEM 494A/B may not be taken concurrently without prior

permission of the CHEM 494 co-ordinator.

Prereq: Level at least 4A Honours Chemistry, Biochemistry, Chemical Physics, Geochemistry, or Materials & Nanosciences students only

CHEM 494B PRJ 0.50

Course ID: 009910

Research Project

A continuation of CHEM 494A. No credit or grade will be provided for this course until the two-term sequence CHEM 494A/B has been completed. CHEM 494A/B may not be taken concurrently without prior permission of the CHEM 494 co-ordinator.

Prereq: CHEM 494A

CHEM 495 PRJ 2.50

Course ID: 010356

Advanced Research Project

This course is only for exchange students wishing to carry out an advanced research project during the fall term.

Department Consent Required

Prereq: Exchange students only

CHEM 496 PRJ 2.50

Course ID: 010357

Advanced Research Project

This course is only for exchange students wishing to carry out a research project during the winter term.

Department Consent Required

Prereq: Exchange students only

CHEM 497 PRJ 2.50

Course ID: 010358

Advanced Research Project

This course is only for exchange students wishing to carry out a research project during the spring term.

Department Consent Required

Prereq: Exchange students only

CHINESE

Notes

1. Students who are interested in the Chinese language courses should be aware that the completion of at least three courses in a subject is recommended for a minimum working knowledge of the language. The Chinese and East Asian culture courses may provide useful background for students intending to spend time in the Far East.
2. Students who have previous experience with or who have studied the Chinese language at the elementary or secondary school level should not enrol in first-year level courses of the same language. Such students should consult the Renison Registrar's Office regarding the appropriate level to enter.
3. Two tracks of introductory courses are offered. China 101R and 102R are beginning level sequenced courses designed for complete beginners who have little or no background in Chinese. China 120R is designed for advanced beginners who have some Chinese background either in speaking or writing Chinese characters. The pinyin system of pronunciation and simplified form of Chinese characters are used in all the Chinese courses offered.
4. Students seeking entry into Chinese courses who have not previously taken a course in Chinese at Renison University College must complete a Placement Application Form (PDF). Renison reserves the right to allocate students to the appropriate class based on this assessment.
5. Students are not permitted to enrol in more than one Chinese language course at the same time.
6. Renison University College reserves the right to refuse admission to, and/or credit for, any of its language courses to a student who has, in Renison's view, a level of competence unsuited to the course(s).

CHINA 100s

CHINA 101R LAB,LEC,TUT 0.50

Course ID: 004201

First-Year Chinese 1

An introductory course for students who have little or no prior background in writing, speaking, or understanding any dialect of the Chinese language to develop basic listening, speaking, reading, and writing skills. Practical oral and written exercises provide a firm grammatical foundation for further study.

[Note: CHINA 101R is not open to speakers of any Chinese dialect.]

Antireq: CHINA 120R

CHINA 102R LAB,LEC 0.50

Course ID: 004202

First-Year Chinese 2

With the completion of the study of the rudiments of phonetics (as provided in CHINA 101R), the emphasis in this course shifts to grammar and character writing. Vocabulary will be expanded to between 500 and 700 words.

[Note: CHINA 102R is not open to students with native, near-native, or similar advanced ability.]

Prereq: CHINA 101R.

Antireq: CHINA 120R

CHINA 120R LAB,LEC,TUT 0.50

Course ID: 010373

Advanced First-Year Chinese

Equivalent to 101R and 102R but covered in one term. This introductory Chinese course is designed for two major groups of students who have different initial advantages in learning Chinese: 1) students who have substantial aural-oral proficiency but limited ability in reading and writing Chinese characters and 2) those who know characters but cannot speak Mandarin (Putonghua).

[Note: CHINA 120R is not open to students with native, near-native, or similar advanced ability.]

Antireq: CHINA 101R, 102R

CHINA 200s

CHINA 200R LAB,LEC 0.50

Course ID: 013652

Preliminary Second-Year Chinese

This course expands the vocabulary and sentence patterns for students who have acquired 400 Chinese characters. Attention is paid to grammar, vocabulary, and discourse by interweaving cultural norms and customs. Reading comprehension is emphasized, encouraging the transition from pinyin to characters.

Prereq: CHINA 102R

CHINA 201R LAB,LEC 0.50

Course ID: 004203

Second-Year Chinese 1

Development of speaking, writing, reading, and listening skills. This course and its follow-up (CHINA 202R) include a survey of grammar, complex sentences, and logical stress.

Prereq: CHINA 102R or 120R.

Antireq: CHINA 211R, 212R

CHINA 202R LAB,LEC 0.50

Course ID: 004204

Second-Year Chinese 2

The study of Chinese characters receives more emphasis. Grammar instruction includes comparisons and different kinds of complements. The course includes topics of interest to students illustrating cultural differences between China and the West. Upon completion of CHINA 201R and 202R, the student should have a reading vocabulary of 1,600 Chinese characters and have learnt about 300 key sentence patterns.

Prereq: CHINA 201R.

Antireq: CHINA 211R, 212R

CHINA 300s**CHINA 301R LAB,LEC 0.50**

Course ID: 012321

Third-Year Chinese 1

A course to consolidate, expand, and deepen the understanding of lexical items and sentence patterns. Besides introducing more vocabulary and grammar, this course concentrates on complex sentences and paragraphs not emphasized in earlier textbooks.

Prereq: CHINA 202R.

Antireq: CHINA 211R, 212R

CHINA 302R LAB,LEC 0.50

Course ID: 012322

Third-Year Chinese 2

A continuation of China 301R to further students' ability to comprehend and communicate at a higher level in Chinese. In addition, the course introduces aspects of Chinese society, highlighting traditional and contemporary cultural life.

Prereq: CHINA 301R.

Antireq: CHINA 211R, 212R

CHINA 310R LAB,LEC 0.50

Course ID: 012323

Chinese for Business Settings

A course to develop comprehension, speaking, reading, and writing of Mandarin specifically related to the Chinese business environment. This course is designed for students who are already familiar with Chinese characters and Mandarin tonality.

Prereq: CHINA 302R.

Antireq: CHINA 211R, 212R

CHINA 320R LAB,LEC 0.50

Course ID: 012324

Chinese in Mass Media

A course to develop Chinese language skills in conversation, reading, writing, and critical thinking in both practical and cultural situations through contemporary films, television programs, newspapers, magazines, and literary works. Selected important issues and themes in Chinese culture and history are considered.

Prereq: CHINA 302R

CHINA 390R LEC 0.50

Course ID: 014243

Introduction to Professional Translation (Chinese to English)

This course is for students with a strong command of Chinese and English who seek to learn the basics of professional translation between the two languages. Focus is on translation involving government and business documents, as well as news stories.

Prereq: CHINA 320R

CHINA 391R LEC,RDG,SEM 0.50

Course ID: 015126

Special Topics

This course deals with advanced topics in Chinese language and literature. Students are expected to have at least an intermediate level of language proficiency.

[Note: This is a repeatable course, subject to different content; it may be completed a total of five times.]

Prereq: CHINA 202R

CULTURAL IDENTITIES

CI 100s

CI 100 LEC 0.50

Course ID: 015676

Cultural Identities Today

This course examines the influence of cultural background and affiliations on personal identity. Students gain fundamental skills in understanding, analyzing, and interpreting the role that culture plays in the world today, with special attention paid to the Canadian context.

Antireq: ARTS 190 (LEC 001) taken Fall 2017

CI 200s

CI 250 LEC 0.50

Course ID: 015678

Truth - Reconciliation - Story

Modern societies have had to confront terrible histories of human rights abuses, where one group has sought to oppress and/or eliminate another because of ethnic, religious, or political differences. Truth and reconciliation commissions, or similar mechanisms, have shown the power stories have to honour people's experiences and integrate them into dominant narratives of identity. This course will examine how cultural production (film, literature, and the arts) helps to make sense of these violent histories and the cultural values and practices that allowed them to happen.

CI 300s

CI 300 LEC 0.50

Course ID: 015677

Theories of Cultural Identities

Students examine the work of various theorists, both historical and modern, who have contributed to the intellectual framework within which culture and cultural expression can be studied in order to deepen their ability to conduct critical inquiry into the formation of cultural identity.

CIVIL ENGINEERING

CIVE 100s

CIVE 100 LAB,LEC,TST,TUT 0.80

Course ID: 014943

Civil Engineering Concepts

An introduction to the fundamental methods, principles and skills of civil engineering. Fundamentals of technical communication, the engineering design process and problem solving. Completion of a pre-design study and report for a civil engineering project. Independent and team work. Fundamentals of engineering computation: units, data collection, measurement, and error analysis. Field surveying (automatic level, engineer's transit, differential Global Positioning System (GPS), total station). Laboratory on engineering graphics auto-computer assisted diagnosis (AutoCAD) and computational software (Excel, Matlab). Aspects of the engineering profession (code of ethics, negligence, misconduct, role of the Professional Engineers Ontario (PEO), etc.), diversity in the workplace, and professional development. Preparation for the University of Waterloo co-operative education program (Co-operative Education and Career Action (CECA), résumé writing, job search and interview skills). [Offered: F]

Prereq: 1A Civil Engineering

CIVE 104 LEC,TST,TUT 0.25

Course ID: 014944

Mechanics 1

Newtonian mechanics. Force systems; vectors, forces and moments; equilibrium and free body diagrams. Mechanics of simple structures. [Offered: F]

Prereq: Level at least 1A Civil, Environmental or Geological Engineering.

Antireq: PHYS 115

CIVE 105 LEC,TST,TUT 0.75

Course ID: 014945

Mechanics 2

Distributed forces, centroids and moment of inertia. Introduction to foundations and fluid statics. Basic structural analysis. Plane trusses. Beam diagrams. Stress-strain-temperature relationships. Behaviour of members in tension, compression and bending. Thin-walled pressure vessels. Friction. [Offered: W,S]

Prereq: CIVE 104; Level at least 1B Civil, Environmental or Geological Engineering

CIVE 115 LEC,TUT 0.25

Course ID: 014946

Linear Algebra

Linear systems of equations, matrices and determinants. Introduction to the eigenvalue problem. Applications. [Offered: F]

Prereq: Level at least 1A Civil, Environmental or Geological Engineering.

Antireq: MATH 114, 115, 125, 136/146

CIVE 121 LAB,LEC,TST 0.50

Course ID: 010660

Computational Methods

Introduction to computer programming, examples of efficient numerical algorithms for basic scientific computations. Programming and problem solving concepts introduced in the course will be incorporated into group projects involving Civil, Environmental, or Geological Engineering applications. The language of instruction will be Matlab. [Offered: W, S]

Prereq: Level at least 1B Civil Engineering, Environmental Engineering or Geological Engineering.

Antireq: CHE 121, ECE 150, GENE 121, SYDE 121

CIVE 153 LAB,LEC,TST,TUT 0.50

Course ID: 011496

Earth Engineering

This course studies earth materials and processes from an engineering point of view through case histories and problem sets. The course develops a geological knowledge for applications to any physical environment and provides an appreciation of the impact of engineering work on the environment. Topics include: mineral and rock identification, the rock cycle, structural geology and tectonics, geology of Canada, effects of water, ice and wind. Students are also introduced to the concept of geologic time, topographic and geologic maps, and the basic principles and tools used to determine geologic history. [Offered: S; Offered as: CIVE 153 (W), ENVE 153 (S), GEOE 153 (S)]

Prereq: Level at least 1B Civil Engineering students only

(Cross-listed with EARTH 153, ENVE 153, GEOE 153)

CIVE 199 SEM 0.00

Course ID: 013155

Seminar

The engineer society. Principles, methods and practice of Civil Engineering. Informal lectures. [Offered: W]

Prereq: Level at least 1B Civil Engineering students only

CIVE 200s

CIVE 204 LEC,TST,TUT 0.50

Course ID: 004211

Solid Mechanics 1

Three-dimensional force systems, moments, couples, and resultants. Three-dimensional equilibrium problems. Shear stresses in beams. Plastic bending. Beam deflection. Torsion of shafts and thin-walled closed sections. Shear, bending moment, and deflection diagrams for beams. Compound stress and stress transformations. Design concepts. [Offered: F]

Prereq: CIVE 105; Level at least 2A Civil Engineering or 2B Geological Engineering

CIVE 205 LEC,TST,TUT 0.50

Course ID: 004212

Solid Mechanics 2

Frames, arches and suspended structures. Stress and strain transformations. Strain energy. Energy methods. Virtual work. Buckling of columns. [Offered: S]

Prereq: CIVE 204, 221; 2B Civil Engineering or 3A Geological Engineering

CIVE 221 LEC,TST,TUT 0.50

Course ID: 004214

Advanced Calculus

Calculus of functions of several variables. Differentiation: partial derivatives of implicit and explicit functions, applications including optimizations. Integration: multiple integrals in various co-ordinate systems with applications; Vector calculus: vector fields, line integrals, surface integrals, and applications. Numerical integration and differentiation. [Offered: F]

Prereq: MATH 118; Level at least 2A Civil Engineering or Geological Engineering.

Antireq: MATH 217, ENVE 225

CIVE 222 LEC,TST,TUT 0.50

Course ID: 004215

Differential Equations

An introduction to linear and partial differential equations. Standard methods of solution, applications to physical and engineering problems, linear equations with constant coefficients, basic systems of differential equations, partial differential equations. Applications. [Offered: S]

Prereq: CIVE 221; 2B Civil Engineering.

Antireq: MATH 218, ENVE 223

CIVE 224 LEC,TST,TUT 0.50

Course ID: 004219

Probability and Statistics

Role of Probability in engineering and decision-making under uncertainty. Data analysis. Basic probability concepts. Probability distributions. Functions of random variables. Estimation theory. Empirical determination of distribution models. Regression analysis. Introduction to risk. [Offered: F]

Prereq: MATH 116; Level at least 2A Civil Engineering.

Antireq: ENVE 224

CIVE 230 LEC,TST,TUT 0.50

Course ID: 011493

Engineering and Sustainable Development

This course introduces the concept of sustainability and how it applies to decision-making in Civil Engineering. The course begins by defining sustainability, both practically and technically, and describing the concepts of systems and systems interactions. Quantitative methods and measures of effectiveness are derived and applied to components of sustainability: air quality, water quality, energy, transportation and solid waste. Economic concepts and their applicability to sustainability are described for both developed and developing countries. [Offered: S]

Prereq: CIVE 224; Level at least 2B Civil Engineering.

Coreq: CIVE 392

CIVE 241 LEC,TST,TUT 0.50

Course ID: 014954

Transport Principles and Applications

Application of scientific principles to the planning, design, maintenance and management of transportation systems. The basic principles of transportation engineering for contemporary urban transportation modes - auto, transit, cycling and walking - and intercity modes - rail and air. Transportation economics, environmental impacts, and demand estimation. [Offered: F]

Prereq: Level at least 2A Civil Engineering.

Coreq: CIVE 224

CIVE 265 LAB,LEC,TST,TUT 0.50

Course ID: 004221

Structure and Properties of Materials

A basic course in structure, behaviour and uses of engineering materials. Topics include monotonic and cyclic stress-strain behaviour of metals. Phase diagrams. Diffusion, nucleation and growth of grains. Metallurgy and mechanical properties of irons and steels. Structure and mechanical properties of wood, cements and concrete. Fracture, fatigue and corrosion. Three lab sessions. [Offered: F]

Prereq: 2A Civil Engineering

CIVE 280 LAB,LEC,TST,TUT 0.50

Course ID: 004222

Fluid Mechanics

An introduction to fluid mechanics. Fluid properties. Review of fluid statics. Buoyancy. Bernoulli equation. The momentum equation and applications. Laminar and turbulent flow. Dimensionless numbers. Closed conduit flow including friction losses. Pipe network analysis. Pump systems. Four lab sessions. [Offered: S]

Prereq: CIVE 105, 221; 2B Civil Engineering.

Antireq: ENVE 280

CIVE 291 LAB 0.50

Course ID: 004223

Survey Camp

Introduction to surveying, length measurements, levelling, transit surveys.

Prereq: Civil Engineering or Geological Engineering

CIVE 298 SEM 0.00

Course ID: 009219

Seminar

The engineer in society. Principles, methods and practice of Civil Engineering. Informal lectures. [Offered: F, W]

CIVE 299 SEM 0.00

Course ID: 009220

Seminar

The engineer in society. Principles, methods and practice of Civil Engineering. Informal lectures. [Offered: F, S]

Prereq: 2B Civil Engineering

CIVE 300s

CIVE 303 LEC,TST,TUT 0.50

Course ID: 004227

Structural Analysis 1

Analysis of statically indeterminate structures using force and displacement methods. Influence lines for indeterminate structures. Introduction to the matrix stiffness method. Computer applications using commercial structural analysis software. [Offered: W]

Prereq: CIVE 205; 3A Civil Engineering

CIVE 306 LEC,TUT 0.50

Course ID: 004228

Mechanics of Solids 3

Membrane stresses in shells. Buckling. Beams on elastic foundations. Plane elasticity. Torsion of non-circular sections. [Offered: F]

Prereq: CIVE 205; Level at least 3B Civil Engineering

CIVE 310 LEC,TST,TUT 0.75

Course ID: 014960

Introduction to Structural Design

Introduction to structural systems. Systems for carrying gravity and lateral loads in buildings. Structural design concepts. Analysis and design of concrete beams and one-way slabs. Design of steel beams and tension members. Comparison of steel and concrete framing systems. [Offered: F, first offered Fall 2018]

Prereq: CIVE 205; 3A Civil Engineering

CIVE 332 LEC,TST,TUT 0.50

Course ID: 011495

Civil Systems and Project Management

Introduction to conceptual planning, construction, management, optimization and life-cycle performance assessment of civil engineering systems including capital projects. Fundamentals of decision theory including concepts of risk, uncertainty, utility, probability, value of information and game theory. Tools for supporting decision making process, including linear and integer programming, network models, optimization, and Monte Carlo simulation. Risk- and cost-benefit analysis of public projects and their impact on sustainability and quality of life. [Offered: W]

Prereq: CIVE 221, 222, 224, Level at least 3A Civil Engineering.

Antireq: ENVE 335, MSCI 331, SYDE 411

CIVE 341 LEC,TST,TUT 0.50

Course ID: 014955

Transportation Engineering Applications

Traffic engineering and travel forecasting. Evaluation, design and management of urban transport systems through advanced traffic control techniques. Quantitative methods for evaluating investments in transportation infrastructure or operational changes. [Offered: W]

Prereq: CIVE 224, 241; 3A Civil Engineering

CIVE 343 LAB,LEC,TUT 0.50

Course ID: 004251

Traffic Simulation Modelling and Applications

Fundamental knowledge on the principles and applications of traffic simulations. System theory, traffic flow dynamics, stochastic simulation methods. Calibration and validation of simulation models and interpretation and analysis of simulation output. Applications of state-of-the-art computer simulation software packages for solving real traffic engineering problems, involving scenario analysis, prediction, and optimization. [Offered: F]

Prereq: CIVE 224, 241, 341; Level at least 3B Civil Engineering

CIVE 353 LAB,LEC,TST,TUT 0.50

Course ID: 004233

Geotechnical Engineering 1

An introduction to geologic processes. Subsurface exploration. Classification systems. Weight-Volume relationships. Soil mechanics principles including state of stress, ground water flow, consolidation and shear strength. Six lab sessions. [Offered: W, S]

Prereq: CIVE 153 or (EARTH 121, 121L) or (level at least 3A Civil or Environmental or Geological Engineering) or (level at least 3A Earth Science/Hydrogeology Specialization)

CIVE 354 LEC,TST,TUT 0.50

Course ID: 004234

Geotechnical Engineering 2

Foundation engineering. Earth pressure theories. Retaining walls. Anchors. Shallow and deep foundations. Braced trenches and excavations. Slope stability. [Offered: F, W]

Prereq: CIVE 353; Level at least 3B Civil, Environmental or Geological Engineering

CIVE 375 LAB,LEC,TST,TUT 0.50

Course ID: 004235

Environmental Engineering Principles

Water quality, air pollution, fate and transport of contaminants in natural and engineered systems, and pollution prevention. Solid and hazardous waste management. Water and wastewater treatment systems and design principles. Four lab sessions. [Offered: F]

Prereq: CHE 102, CIVE 280; 3A Civil or Geological Engineering.

Antireq: ENVE 375

CIVE 382 LAB,LEC,TST,TUT 0.50

Course ID: 014961

Hydrology and Open Channel Flow

Introduction to the water cycle, flood frequency analysis, design storms. Analysis of hydrographs and rainfall-runoff response mechanisms in urban and natural systems. Mass continuity and water budgets at the watershed scale. Impact of land use change on hydrologic response. Quantification of open channel flow; subcritical and supercritical flow regimes. Dynamic forces on submerged structures and low/scour beneath bridges. [Offered: F, W]

Prereq: CIVE 105, (CIVE or ENVE 224), (CIVE or ENVE 280); 2B Environmental, 3A Civil or 3B Geological Engineering

CIVE 392 LEC,TST,TUT 0.50

Course ID: 014962

Economics and Life Cycle Analysis

Project financing, life-cycle analysis, time value of money, sensitivity analyses, tax, financial implications of infrastructure projects, quantitative decision making, financial aspects of a business plan. [Offered: S]

Prereq: MATH 116; Level at least 2B Civil, 3A Environmental or Geological Engineering.

Antireq: MSCI 261, SYDE 262

CIVE 398 SEM 0.00

Course ID: 009221

Seminar

The engineer in society. Principles, methods and practice of Civil Engineering. Informal lectures. [Offered: W, S]

Prereq: 3A Civil Engineering

CIVE 399 SEM 0.00

Course ID: 009222

Seminar

The engineer in society. Principles, methods and practice of Civil Engineering. Informal lectures. [Offered: F, W]

Prereq: 3B Civil Engineering

CIVE 400s**CIVE 400 LEC,PRJ 0.50**

Course ID: 004238

Civil Engineering Project 1

Students must undertake an independent Civil Engineering design project during the last two terms of their program. The purpose of the project is to demonstrate students' abilities to practise in a Civil Engineering capacity in their chosen area of expertise, using knowledge gained from their academic and employment experiences. The first part of the project (CIVE 400) will include problem identification, generation and selection of solutions and time management. Incorporation of technical and economic issues in the solution for the project will be required. If applicable, ecological, social and political issues must also be considered. A basic requirement of the proposed solution is that it must be compatible with the principles of sustainability. Requirements include: proposal, progress report, oral presentation and a final report containing recommendations for part two of the project, CIVE 401. [Offered: S]

Prereq: Level at least 4A Civil Engineering.

Antireq: ENVE 400/430

CIVE 401 PRJ 0.50

Course ID: 004239

Civil Engineering Project 2

A continuation of CIVE 400. The final design of the major Civil Engineering project proposed in CIVE 400 will be undertaken. The purpose of this phase of the project is to carry out a detailed technical design of the solution proposed in CIVE 400. Requirements of this part of the two-term project include an oral presentation and a final report. [Offered: W]

Prereq: 4B Civil Engineering students only.

Antireq: ENVE 401/431

CIVE 413 LEC,TST,TUT 0.50

Course ID: 004244

Structural Steel Design

Advanced coverage of design of structural steel members and connections, building on CIVE 310. Design of laterally-unsupported beams, compression members and beam-columns. Plate girders. Connections. Special topics in design of structural steel or other metals. [Offered: S]

Prereq: CIVE 310; Level at least 4A Civil Engineering

CIVE 414 LEC,TUT 0.50

Course ID: 004245

Structural Concrete Design

Advanced analysis and design of concrete members for flexure. Beam shear analysis and design. D-region shear design. Column design. Special topics. [Offered: S]

Prereq: CIVE 313; Level at least 4A Civil Engineering

CIVE 415 LEC,TUT 0.50

Course ID: 004246

Structural Systems

Geometries, loads, safety and serviceability, structural idealizations. Building design and bridge design. Proportioning of components and structures in concrete, steel, masonry and wood. [Offered: W]

Prereq: CIVE 313, 413; 4B Civil Engineering

CIVE 422 LEC,TUT 0.50

Course ID: 004247

Finite Element Analysis

This course focuses on the development of the basic fundamentals of the finite element method with applications in fluid flow, mass transport, solid mechanics and structures. Topics include: discrete problems, matrix methods, variational principle, method of weighted residuals, element shapes, and interpolation functions. [Offered: W]

Prereq: ENVE 223 or CIVE 222, CIVE 303; Level at least 4B Civil, Environmental or Geological Engineering.

Antireq: ME 559.

CIVE 440 LEC,TUT 0.50

Course ID: 004249

Transit Planning and Operations

The historical evolution of transit in cities; the technological innovations which made transit possible; and transit mode definitions. Models of transit vehicle motion are presented; transit travel times under different travel regimes are derived. Transit scheduling methods are shown. System operational characteristics are defined and quantitative measures of effectiveness are introduced. Transit network planning objectives are identified; actual geometries are qualitatively and quantitatively analyzed. Transit ownership structures and economics are discussed; contemporary ITS applications are presented. Methods for selecting appropriate transit modes are covered. [Offered: W]

Prereq: CIVE 342 or ENVS 278; Level at least 3B Civil Engineering

(Cross-listed with PLAN 478)

CIVE 460 LEC,TUT 0.50

Course ID: 004253

Engineering Biomechanics

Introduction to engineering technologies applicable to the field of biomechanics. Specific topics covered may include biological growth, form and function; biomaterials; kinematics and neurology of gait; biotribology; joint anatomy, function and repair; occupational biomechanics; trauma prevention. [Offered: W]

Prereq: CIVE 127 or ENVE 127 or ME 219 or SYDE 281/286

CIVE 484 LEC,TUT 0.50

Course ID: 007637

Physical Infrastructure Planning

The need for infrastructure and environmental assessments; the impacts of infrastructure on urban form; core infrastructure concepts; economics of infrastructure costs, finance and pricing. Infrastructure evaluation and management methods.

*Prereq: Level at least 3A Civil, Environmental or Geological Engineering
(Cross-listed with PLAN 484)*

CIVE 486 LEC,TST,TUT 0.50

Course ID: 004258

Hydrology

Basic components of the hydrologic cycle. Introduction to frequency analysis and time series analysis. Rainfall-runoff relationships. Unit hydrograph theory. Hydrologic and hydraulic routing. Introduction to hydrologic design: design storms and storm water management. Rural and urban simulation models. [Offered: F, S]

Prereq: CIVE 224 or ENVE 224; Level at least 3B Civil, Environmental or Geological Engineering

CIVE 491 LEC,TST 0.50

Course ID: 004259

Engineering Law and Ethics

Background (Charter of Rights and Freedoms), Contracts, Torts (Negligent Malpractice), Forms of Carrying on Business, Professional Practice (Professional Engineers Act, Joint Practice Rules, Professional Misconduct and Sexual Harassment), Alternate Dispute Resolution, Construction Liens, Intellectual Property (Patents, Trade Marks, Copyrights and Industrial Designs), Labour Relations and Employment Law, Environmental Law. [Offered: S]

Prereq: 4A Civil Engineering.

Antireq: AFM 231/LS 283, BUS 231W, ENVS 201 GENE 411, ME 401, MTHEL 100/COMM 231

CIVE 497 LEC,TUT 0.50

Course ID: 010164

Special Topics in Civil Engineering

A special course on advanced topics in Civil Engineering is offered from time to time, when resources are available. For the current offering, inquire at the Department.

Instructor Consent Required

CIVE 498 SEM 0.00

Course ID: 009223

Seminar

The engineer in society. Principles, methods and practice of Civil Engineering. Informal lectures. [Offered: F, S]

Prereq: 4A Civil Engineering

CIVE 499 SEM 0.00

Course ID: 009224

Seminar

The engineer in society. Principles, methods and practice of Civil Engineering. Informal lectures. [Offered: W]

Prereq: 4B Civil Engineering

CIVE 500s

CIVE 505 LEC,TUT 0.50

Course ID: 004242

Structural Dynamics

Dynamics of discrete and continuous structures. Free and forced vibrations of single and multi-degree of freedom systems. Shock loads, earthquake loads, response spectra. Analysis and design of frames for shock and earthquake loads. [Offered: W]

Prereq: CIVE 222, 303; Level at least 3B Civil Engineering

CIVE 507 LEC,TUT 0.50

Course ID: 004243

Building Science and Technology

The building process. Loadings: gravity, wind, thermal, moisture, fire. Enclosure design: walls, windows, roof. Subgrade construction. Energy related considerations. [Offered: W]

Prereq: CIVE 313, 413; 4B Civil Engineering students only

CIVE 512 LEC,TUT 0.50

Course ID: 010038

Rehabilitation of Structures

This course deals with the assessment, rehabilitation and/or strengthening of building and bridge infrastructure. Topics include damage mechanisms, instrumentation and non-destructive test methods, conventional repair techniques, innovative repair and strengthening techniques with composites. Case studies provide students with the opportunity to learn from field applications. The laboratory portion involves test methods used to evaluate repair and strengthening measures. [Offered: W]

Prereq: CIVE 265, 310, 414

CIVE 542 LAB,LEC 0.50

Course ID: 004250

Pavement Structural Design

Pavement design, soil identification, subgrade design, base courses, flexible pavement design, design and testing of asphaltic concrete mixes, surface treatments. [Offered: S]

Prereq: CIVE 353; Level at least 3B Civil or Geological Engineering

CIVE 554 LEC,TST,TUT 0.50

Course ID: 004252

Geotechnical Engineering 3

Simulation of geotechnical consulting practice. Students are required to complete several projects, based on actual case studies, which require problem identification, evaluation of geotechnical data, analysis, design and report preparations. [Offered: W]

Prereq: CIVE 353, 354; Level at least 4A Civil, Environmental or Geological Engineering

CIVE 583 LAB,LEC 0.50

Course ID: 004257

Design of Urban Water Systems

Design of water supply and distribution systems. Design of waste and storm water collection systems. Storm water management. The course consists of 24 hours of lectures and a subdivision design project. The emphasis is on computer aided design and sustainability, using commonly used software packages. [Offered: W]

Prereq: ENVE 375 or CIVE 375, CIVE 381, CIVE 486; 4B Civil, Environmental or Geological Engineering.

Antireq: ENVE 401/431

CIVE 596 LEC,TUT 0.50

Course ID: 004261

Construction Engineering

Topics in construction engineering and management including methods of delivering construction, contractual relationships, prevailing construction practices, construction equipment, concrete form design, concrete, steel, and masonry construction, introduction to trenchless technology, construction safety, planning and scheduling of repetitive construction, cash flow analysis, and construction project control. [Offered: S]

Prereq: Level at least 4A Civil, Environmental or Geological Engineering

CLASSICAL STUDIES

Notes

1. *Students should consult with the departmental Undergraduate Advisor for the latest information on course offerings. Some courses are offered in rotation.*
2. *Classical Studies courses are taught in English. See Greek and Latin for courses in the Classical languages.*

CLAS 100s

CLAS 100 LEC 0.50

Course ID: 004262

An Introduction to Classical Studies

An introduction to Greek and Roman civilization, focusing on six key aspects of the discipline of classical studies: history, literature, philosophy, myth and religion, art and architecture, and classical archaeology.

Prereq: No more than 0.50 CLAS units

CLAS 103 LEC 0.50

Course ID: 009519

Colossos - The Major Figures of Classical Antiquity

An introductory study of the achievements of ancient Greece and/or Rome through some of their major figures. Each year two figures will be featured. These may include Homer, Pericles, Socrates, Alexander the Great, Cleopatra, Julius Caesar, Augustus, Nero, Seneca, Hadrian, and Constantine.

[Note: This is a repeatable course, subject to different content; it may be completed a total of two times.]

CLAS 104 LEC 0.50

Course ID: 012910

Classical Mythology

A study of Greco-Roman mythology and legend, with special emphasis on the Olympian gods and the figure of the hero. Topics may include myths of creation, the rise of the gods, divine myths, the tales surrounding the cities of Troy, Mycenae and Thebes and the heroes Herakles, Perseus and Theseus.

Also offered Online

CLAS 105 LEC 0.50

Course ID: 011784

Introduction to Medieval Studies

An introduction to Medieval European civilization focusing on essential aspects of the discipline: history, literature, philosophy, religion, art, architecture and archaeology, law, and science and technology.

(Cross-listed with MEDVL 105)

CLAS 200s

CLAS 201 LEC 0.50

Course ID: 004266

Ancient Greek Society

A survey of the civilization of Classical Greece, featuring such topics as the individual (male and female), political institutions, art, religion, philosophy, literature, social life and leisure activities.

CLAS 202 LEC 0.50

Course ID: 004267

Ancient Roman Society

A survey of the civilization of the Roman Republic and Empire, featuring such topics as the individual (male and female), political institutions, art, religion, philosophy, literature, social life and leisure activities.

CLAS 205 LEC 0.50

Course ID: 004280

Medieval Society

A survey of medieval civilization featuring such topics as the individual (male and female), political institutions, art, architecture, religion, philosophy, literature, social life and leisure activities.

(Cross-listed with MEDVL 205)

CLAS 210 DIS,LEC 0.50

Course ID: 006241

History of Ancient Law

A historical introduction to law in the ancient world. Babylonian, Assyrian, Hittite, and Roman law, legal practices, and concepts will be examined.

(Cross-listed with HIST 210, LS 235)

CLAS 220 LEC 0.50

Course ID: 015494

Philosophy of Friendship

Friendship is an essential part of a happy life. Ancient western philosophers made friendship one of the cornerstones of their ethics. This course is an exploration of their views on problems such as the necessity of friendship, its nature, its species, and its relationship to happiness and the political community.

Antireq: PHIL 403 taken Winter 2007, Fall 2009, Winter 2013, Winter 2017

(Cross-listed with PHIL 220J)

Offered at St. Jerome's University

CLAS 221 LEC 0.50

Course ID: 003396

Introduction to Archaeology

An introduction to the working assumptions, analytic approaches, and integrative and descriptive methods of archaeological anthropology.

(Cross-listed with ANTH 201)

CLAS 230 LEC 0.50

Course ID: 009520

Classical Roots of English Vocabulary

This course offers an introduction to the etymology of the English language, in particular that part which has been derived from Latin and ancient Greek; the main focus will be the most important Classical roots from which the vocabulary of the life sciences and other academic disciplines derives.

CLAS 231 LEC 0.50

Course ID: 011785

Survey of Greek Literature

A survey, through English translation, of Greek literature from the earliest times to the Byzantine period. Material studied may include the genres of epic, tragedy, comedy, history, poetry and philosophy through the works of Homer, Euripides, Aristophanes, Thucydides, and Aristotle.

Prereq: Level at least 2A

CLAS 232 LEC 0.50

Course ID: 011786

Survey of Roman Literature

A survey, through English translation, of Latin literature from the earliest times to the medieval period. Material studied may include the genres of epic, tragedy, comedy, history, poetry and philosophy through the works of Vergil, Catullus, Petronius, Livy, and Augustine.

Prereq: Level at least 2A

CLAS 237 DIS,LEC 0.50

Course ID: 006279

The Ancient Near East and Egypt

A study of the civilizations of the ancient Near East focusing on Mesopotamia (Sumer and Akkad, the Babylonian Dynasty, and the Third Dynasty of Ur), Hatti, Assyria, Egypt, and Persia.

Prereq: Level at least 2A

(Cross-listed with HIST 237)

Offered at St. Jerome's University

CLAS 241 LEC 0.50

Course ID: 005478

Survey of Greek Art and Architecture

A survey of Greek art and architecture from the earliest times to the coming of the Romans. Material studied may include the art of the Bronze Age, the development of Greek sculpture, the evolution of the Acropolis at Athens and the change in art and architecture after Alexander the Great.

Prereq: Level at least 2A

(Cross-listed with FINE 241)

CLAS 242 LEC 0.50

Course ID: 005480

Survey of Roman Art and Architecture

A survey of Roman art and architecture from the earliest times to the age of Constantine the Great. Material studied may include the art of the Etruscans, the evolution of Roman portraiture, innovations in architectural materials and forms, the use of art and architecture by the Emperors and the change to Late Antique art.

Prereq: Level at least 2A

(Cross-listed with FINE 242)

CLAS 251 LEC 0.50

Course ID: 004278

Greek History

A survey of ancient Greek history, from the Bronze Age to Alexander the Great, emphasizing particularly its political and military aspects.

Prereq: Level at least 2A

(Cross-listed with HIST 242)

CLAS 252 LEC 0.50

Course ID: 004279

Roman History

A survey of ancient Roman history, from the Republic to the Empire, emphasizing particularly its political and military aspects.

Prereq: Level at least 2A

(Cross-listed with HIST 252)

CLAS 261 LEC 0.50

Course ID: 007248

Great Works: Ancient and Medieval

A historical survey of ancient and medieval philosophy in the Western tradition.

Antireq: PHIL 250A

(Cross-listed with PHIL 283)

Also offered Online

CLAS 300s**CLAS 311 LEC 0.50**

Course ID: 004287

Sex and Gender in the Ancient World

This course examines a variety of issues around sexuality and gender relations in antiquity, including sexual mores and behaviours; literary, artistic, and philosophical constructs of gender; the roots of misogyny; and the legal and social restrictions placed on women in most ancient societies.

Prereq: One course in CLAS

CLAS 321 LEC 0.50

Course ID: 003446

Archaeology of Complex Cultures

Cultural development from the agricultural revolution to the rise of literacy. Special attention to the development of agriculture as a means of subsistence and to the rise of early civilization. Areas and periods of emphasis will vary from year to year.

Prereq: ANTH 201/CLAS 221

(Cross-listed with ANTH 321)

CLAS 325 LEC 0.50

Course ID: 004290

Greek and Roman Religion

An examination of the religious beliefs and cult practices of the classical world. Topics include prayer and sacrifice; divination and oracles; temples, priests and festivals; mystery cults and their relation to Christianity.

[Note: This course fulfils an Area 1B requirement for Religious Studies majors.]

Prereq: One of CLAS 100, 104, 201, 202

(Cross-listed with RS 315)

CLAS 326 LEC 0.50

Course ID: 015266

The Body, Dress, and Religion

From clothing to hairstyles to tattoos, dress can express beliefs, aspects of identity, and power. This course examines dress in a variety of religions from ancient Greece to the modern era. The course includes attention to the look and feel of dress on the body, conflicts that can arise over dress and religion, as well as the role of dress in the formation and maintenance of religious communities.

[Note: The course fulfils an Area 3B requirement for Religious Studies majors.]

Prereq: Level at least 2A

(Cross-listed with RS 327)

CLAS 327 LEC 0.50

Course ID: 011787

Astrology and Magic

An examination of the theory and practice of astrology and magic in the classical and medieval worlds. Topics include the relationship of astrology and magic to traditional Greco-Roman religion and Christianity, occult practices and the people who performed them.

Prereq: One of CLAS 100, 104, 201, 202

CLAS 331 LEC 0.50

Course ID: 012911

Advanced Studies in Ancient Literature

An in-depth examination, through English translation, of a genre(s), author(s) or selected topic(s) in Greek and/or Roman literature. Material studied may include the genres of epic, tragedy, comedy, lyric, and satire, and authors such as Homer, Virgil, Sophokles, Seneca, Aristophanes, Menander, Plautus, Sappho, Pindar, Catullus, and Horace.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: CLAS 231 or 232

CLAS 341 LEC 0.50

Course ID: 012914

Advanced Studies in Greek Art and Architecture

An advanced survey of the art and architecture from a selected time period of Greek history. Material studied may include the art and architecture of the Aegean Bronze Age, and the Archaic, Classical and Hellenistic periods. Archaeological, historical and cultural issues specific to each time period will be discussed through the important media of the day.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: CLAS 241/FINE 241

(Cross-listed with FINE 341)

CLAS 342 LEC 0.50

Course ID: 012915

Advanced Studies in Roman Art and Architecture

An advanced survey of the art and architecture from a selected time period of Roman History. Material studied may include the art and architecture of the Etruscans, the Roman Republic and the Roman Empire. Archaeological, historical and cultural issues specific to each time period will be discussed through the important media of the day.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: CLAS 242/FINE 242
(Cross-listed with FINE 342)

CLAS 351 LEC 0.50

Course ID: 012912

Advanced Studies in Greek History

An advanced study of aspects of Greek history, through the examination of a specific time period, event(s) or theme(s). Topics studied may include the Archaic Age and the rise of the Polis, the Persian Wars, the Peloponnesian War, conflict in the 4th c. BCE, the history of the Hellenistic period and Greek social history. [This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: CLAS 251/HIST 242

CLAS 352 LEC 0.50

Course ID: 012913

Advanced Studies in Roman History

An advanced study of aspects of Roman history, through the examination of a specific time period, event(s) or theme(s). Topics studied may include the Punic Wars, the end of the Republic, the Julio-Claudian Dynasty, history of the High Empire, later Roman history and Roman social history.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: CLAS 252/HIST 252

CLAS 361 LEC 0.50

Course ID: 007324

History of Ancient Philosophy

In this course, students will examine one or more important figures, periods, or issues in ancient philosophy. Plato and Aristotle are among the philosophers who may be covered.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Prereq: 0.50 units in PHIL

(Cross-listed with PHIL 380)

Also offered Online

CLAS 384 LEC 0.50

Course ID: 004300

Science and Technology of Ancient Greece and Rome

A study of scientific thought and achievements in such areas as astronomy, biology, anatomy and medicine, and of the technological skills which produced and distributed raw materials, manufactured goods and agricultural products.

Prereq: One of CLAS 201, 202, 251, 252 or a first year Engineering course or a first year CHEM/EARTH/PHYS course or a second year BIOL/SCI course

CLAS 390 FLD 0.50

Course ID: 004301

Classical Studies Abroad

This course features a combination of academic study and firsthand investigation of museums and ancient sites, normally in Greece and/or Italy.

[Note: This is a concentrated study course (block format) normally offered in a Spring Term. This is a repeatable course, subject to different content; it may be completed a total of four times. This course incurs extra costs for the student above and beyond the registration fee in the form of travel, room and board, and incidental costs.]

Department Consent Required

Prereq: At least 1.5 Units in CLAS and/or GRK and/or LAT

CLAS 400s

CLAS 461 SEM 0.50

Course ID: 011189

Studies in Ancient Philosophy

Special topics in ancient philosophy, as announced by the department.

Prereq: Level at least 3A

(Cross-listed with PHIL 403)

CLAS 486 SEM 0.50

Course ID: 009523

Senior Seminar

Each Fall and Winter term a senior seminar on some aspect of Greek or Roman civilization will be offered.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: CLAS 251, 252; CLAS 231 or 232; CLAS 241 or 242

CLAS 490A SEM 0.50

Course ID: 004315

Senior Honours Thesis

Students wishing to undertake a Senior Honours Thesis in their fourth year should consult the Department's Undergraduate Officer.

Department Consent Required

CLAS 490B RDG 0.50

Course ID: 004316

Senior Honours Thesis

Continuation of the Senior Honours Thesis.

Department Consent Required

CLAS 492 SEM 0.50

Course ID: 004317

Directed Study

Under exceptional circumstances, and only with the prior approval of the Department, a student may substitute an individualized course of study at the senior level. Such circumstances might include, for example, the student's participation in an approved archaeological dig. For further details, consult the Department.

Department Consent Required

CHURCH MUSIC AND WORSHIP

CMW 200s

CMW 201 PRA 0.25

Course ID: 012289

Worship Practicum 1

Skills development and practice in planning and leading Christian worship, including such activities as choosing and accompanying hymns, song-leading, teaching new music, the use of instrumental music, reading scripture, leading prayer, movement, and gesture.

[Note: Offered on a credit/no credit basis]

Instructor Consent Required

CMW 202 PRA 0.25

Course ID: 012290

Worship Practicum 2

A continuation of CMW 201. Skills development and practice in planning and leading Christian worship, including such activities as choosing and accompanying hymns, song-leading, teaching new music, the use of instrumental music, reading scripture, leading prayer, movement, and gesture.

[Note: Offered on a credit/no credit basis]

Instructor Consent Required

CMW 300s

CMW 363 LEC 0.50

Course ID: 007051

The Christian Hymn

The origins of the Christian hymn and its development up to the present. The course considers the hymn as theological, poetic, musical, cultural, and spiritual expression, and the use of hymns in a variety of worship settings.

[Note: This course fulfils an Area 2C requirement for Religious Studies majors.]

(Cross-listed with MUSIC 363, RS 357)

CMW 364 LEC 0.50

Course ID: 007052

Worship and its Music

The nature of worship and the role of music within worship in historical, theological, and cultural perspective. Field trips to services of various traditions.

[Note: This course fulfils an Area 2C requirement for Religious Studies majors.]

(Cross-listed with MUSIC 364, RS 358)

CMW 390 LEC 0.50

Course ID: 013525

Special Topics in Church Music and Worship

Term courses will be offered from time to time as announced. Topics will be dependent on research and/or instructional interests of faculty.

COGNITIVE SCIENCE

COGSCI 300s

COGSCI 300 LEC 0.50

Course ID: 014722

Intelligence in Machines, Humans, and Other Animals

A comparison of the representations and processes that produce intelligent performance, such as problem-solving, learning, and language in natural and artificial systems.

Prereq: PHIL/PSYCH 256

(Cross-listed with PHIL 356)

COMBINATORICS AND OPTIMIZATION

Notes

Fourth-year courses which require an 80% average as a prerequisite are held with corresponding graduate courses. Students with averages below 80% may enrol in these courses with the permission of the instructor.

CO 200s

CO 227 LEC 0.50

Course ID: 003887

Introduction to Optimization (Non-Specialist Level)

A broad introduction to the field of optimization, discussing applications, and solution techniques. Mathematical models for real life applications; algorithms: Simplex, Cutting Plane, and Branch & Bound; linear programming duality. [Offered: F,W]

Prereq: One of MATH 106, 114, 115, 136, 146.

Antireq: CO 250/350, 352, 255/355

CO 250 LEC 0.50

Course ID: 003895

Introduction to Optimization

A broad introduction to the field of optimization, discussing applications and solution techniques. Mathematical models for real life applications; algorithms; aspects of computational complexity; geometry; linear programming duality, focusing on the development of algorithms. [Offered: F,W,S]

Prereq: One of MATH 106 with a grade of at least 70%, MATH 115, 136, 146.

Antireq: CO 227, 352, 255/355

Also offered at St. Jerome's University

Also offered Online

CO 255 LEC 0.50

Course ID: 003897

Introduction to Optimization (Advanced Level)

Linear optimization: feasibility theorems, duality, the simplex algorithm. Discrete optimization: integer linear programming, cutting planes, network flows. Continuous optimization: local and global optima, feasible directions, convexity, necessary optimality conditions.

[Note: CO 255 may be substituted for CO 250/350 whenever the latter is a requirement in an Honours plan. Offered: W]

Prereq: MATH 235 or 245, 237 or 247.

Antireq: CO 227, CO 250, CO 350, 352, 355

CO 300s

CO 327 LEC 0.50

Course ID: 003890

Deterministic OR Models (Non-Specialist Level)

An applications-oriented course that illustrates how various mathematical models and methods of optimization can be used to solve problems arising in business, industry and science. [Offered: W,S]

Prereq: One of CO 227, 250/350, 352, 255/355.

Antireq: CO 370

CO 330 LEC 0.50

Course ID: 003891

Combinatorial Enumeration

The algebra of formal power series. The combinatorics of the ordinary and exponential generating series. Lagrange's Implicit Function Theorem, applications to the enumeration of permutations, functions, trees and graphs. Integer partitions, geometric methods, enumerating linear transformations. Introduction to the pattern algebra, applications to the enumeration of strings. Lattice paths, Wiener-Hopf factorization. Enumeration under symmetries. [Offered: F]

Prereq: MATH 239 or 249

CO 331 LEC 0.50

Course ID: 003892

Coding Theory

A first course in error-correcting codes. Linear block codes, Hamming-Golay codes and multiple error-correcting BCH codes are studied. Various encoding and decoding schemes are considered. [Offered: W]

Prereq: MATH 225 or 235 or 245

CO 342 LEC 0.50

Course ID: 003893

Introduction to Graph Theory

An introduction to some of the key topics in graph theory: connectivity, planarity and matchings. Connectivity: Menger's Theorem, 3-connected graphs. Planarity: Kuratowski's Theorem, uniqueness of planar embeddings. Matchings: Review of Konig's Theorem, Tutte's Theorem. [Offered: F,S]

Prereq: MATH 239 or 249

CO 351 LEC 0.50

Course ID: 003896

Network Flow Theory

Review of linear programming. Shortest path problems. The max-flow min-cut theorem and applications. Minimum cost flow problems. Network simplex and primal-dual algorithms. Applications to problems of transportation, distribution, job assignments and critical-path planning. [Offered: F,S]

Prereq: One of CO 250/350 or 352 or 255/355.

CO 353 LAB,LEC 0.50

Course ID: 011442

Computational Discrete Optimization

Formulations of combinatorial optimization problems, greedy algorithms, dynamic programming, branch-and-bound, cutting plane algorithms, decomposition techniques in integer programming, approximation algorithms.

Prereq: One of CO 250/350 or 352 or 255/355.

CO 367 LAB,LEC 0.50

Course ID: 003898

Nonlinear Optimization

A course on the fundamentals of nonlinear optimization, including both the mathematical and the computational aspects. Necessary and sufficient optimality conditions for unconstrained and constrained problems. Convexity and its applications. Computational techniques and their analysis. [Offered: F]

Prereq: (One of CO 250/350, 352, 255/355) and MATH 128 with a grade of at least 70% or MATH 138 or 148

CO 370 LAB,LEC 0.50

Course ID: 003899

Deterministic OR Models

An applications-oriented course that illustrates how various mathematical models and methods of optimization can be used to solve problems arising in business, industry and science. [Offered: F,W]

Prereq: CO 250/350 or 352 or 255/355.

Antireq: CO 327

CO 372 LAB,LEC 0.50

Course ID: 011736

Portfolio Optimization Models

Computational optimization methodologies underlying portfolio problems in finance. Computational linear algebra, determining derivatives, quadratic and nonlinear optimization. The efficient frontier problem. Applications of optimization in finance such as volatility surface determination and global minimization for Value-at-Risk. [Offered: F,W]

Prereq: (AFM 272/ACTSC 291 or ACTSC 371 or BUS 393W or ECON 371) and (CO 250/350 or CO 227 with a grade of at least 70% or CO 352 or CO 255/355).

Antireq: CO 370 taken prior to Winter 2004

CO 380 LEC 0.50

Course ID: 003901

Mathematical Discovery and Invention

A course in problem solving. 100 problems are studied. Problems are taken mainly from the elementary parts of algebra, geometry, number theory, combinatorics and probability.

[Note: Offered in the spring term of even years.]

Prereq: MATH 135 or 145, 106 or 136 or 146, 138 or 148; Level at least 3A

CO 400s

CO 430 LEC 0.50

Course ID: 003902

Algebraic Enumeration

The algebra of Laurent series and Lagrange's Implicit Function Theorem, enumerative theory of planar embeddings (maps). The ring of symmetric functions: Schur functions, orthogonal bases, inner product, Young tableaux and plane partitions. Non-intersecting paths, sieve methods, partially ordered sets and Mobius inversion, strings with forbidden substrings, the Cartier-Foata commutation monoid. Introduction to the group algebra of the symmetric group, enumerative applications of $sl(2)$. [Offered: W]

Prereq: CO 330; Cumulative overall average of at least 80%

CO 434 LEC 0.50

Course ID: 003903

Combinatorial Designs

Pairwise orthogonal latin squares. Transversal designs and finite planes. Balanced incomplete block designs, group divisible designs and pairwise balanced designs. Symmetric designs and Hadamard matrices. Recursive constructions. Wilson's fundamental construction.

Prereq: PMATH 336 or 346 or 347; Cumulative overall average of at least 80%

CO 439 LEC 0.50

Course ID: 003906

Topics in Combinatorics

An undergraduate seminar in combinatorics. The primary objective is to study current work in specific areas of combinatorics. Course content may vary from term to term.

CO 440 LEC 0.50

Course ID: 003907

Topics in Graph Theory

An in-depth study of one or two topics in graph theory. Course content may vary from term to term. Topics may include planar graphs, extremal graph theory, directed graphs, enumeration, algebraic graph theory, probabilistic graph theory, connectivity, graph embedding, colouring problems.

Prereq: CO 342

CO 442 LEC 0.50

Course ID: 003908

Graph Theory

Connectivity (Menger's Theorem, ear decomposition, and Tutte's Wheels Theorem) and matchings (Hall's Theorem and Tutte's Theorem). Flows: integer and group-valued flows, the flow polynomial, the 6-flow theorem. Ramsey theory: upper and lower bounds, explicit constructions. External graph theory: Turan's theorem, the Erdos-Gallai theorem. Probabilistic methods. [Offered: F]

Prereq: CO 342, MATH 235 or 245; Cumulative overall average of at least 80%

CO 444 LEC 0.50

Course ID: 003909

Algebraic Graph Theory

An introduction to the methods of and some interesting current topics in algebraic graph theory. Topics covered will include vertex-transitive graphs, eigenvalue methods, strongly regular graphs and may include graph homomorphisms, Laplacians or knot and link invariants.

Prereq: MATH 239 or 249, PMATH 336 or 346 or 347; Cumulative overall average of at least 80%

CO 446 LEC 0.50

Course ID: 013337

Matroid Theory

This is an introductory course on matroid theory, with particular emphasis on graphic matroids and on topics that are applicable to graph theory. The topics include: matroid intersection and partition, graphic matroids, matroid connectivity, regular matroids, and representable matroids. Applications include: matching, disjoint paths, disjoint spanning trees, the 8-flow theorem for graphs, planarity testing, and recognizing totally unimodular matrices. [Offered: S]

Prereq: CO 342; Cumulative overall average of at least 80%

CO 450 LEC 0.50

Course ID: 003910

Combinatorial Optimization

Characterizations of optimal solutions and efficient algorithms for optimization problems over discrete structures. Topics include network flows, optimal matchings, T-joins and postman tours, matroid optimization. [Offered: F]

Prereq: CO 351 or 255/355; Cumulative overall average of at least 80%

CO 452 LEC 0.50

Course ID: 003911

Integer Programming

Formulation of problems as integer linear programs. Solution by branch-and-bound and cutting plane algorithms. Introduction to the theory of valid inequalities and polyhedral combinatorics.

Prereq: CO 351 or 255/355; Cumulative overall average of at least 80%

CO 453 LEC 0.50

Course ID: 003912

Network Design

Network design under constraints on cost, capacity, distance and reliability. Approximation algorithms. The set covering problem. Tree solutions: spanning trees, Steiner trees, Gomory-Hu trees, optimum communication spanning trees. Connectivity, survivability and reliability. Network design with concentrators: the terminal layout problem. Location problems on networks.

Prereq: MATH 229 or 239 or 249 and (one of CO 227, 250/350, 255/355, CO 352)

CO 454 LEC 0.50

Course ID: 003913

Scheduling

An overview of practical optimization problems that can be posed as scheduling problems. Characterizations of optimal schedules. Simple and efficient combinatorial algorithms for easy problems. A brief overview of computational complexity, definition of P, NP, NP-Complete and NP-hard. Integer programming formulations, the Traveling Salesman Problem, heuristics, dynamic programming and branch-and-bound approaches. Polynomial-time approximation algorithms. [Offered: S]

Prereq: MATH 229 or 239 or 249 and (one of CO 227, 250/350, 255/355, CO 352)

CO 456 LEC 0.50

Course ID: 003914

Introduction to Game Theory

A broad introduction to game theory and its applications to the modeling of competition and cooperation in business, economics and society. Two-person games in strategic form and Nash equilibria. Extensive form games, including multi-stage games. Coalition games and the core. Bayesian games, mechanism design and auctions.

Prereq: MATH 229 or 239 or 249 and (one of CO 227, 250/350, 255/355, CO 352)

CO 459 SEM 0.50

Course ID: 010046

Topics in Optimization

An undergraduate seminar in optimization. The primary objective is to study recent work in specific areas of optimization. Course content may vary from term to term.

Instructor Consent Required

CO 463 LEC 0.50

Course ID: 010047

Convex Optimization and Analysis

An introduction to the modern theory of convex programming, its extensions and applications. Structure of convex sets, separation and support, subgradient calculus for convex functions, Fenchel conjugacy and duality, Lagrange multipliers. Ellipsoid method for convex optimization. [Offered: W]

Prereq: (CO 255/355 or 367), (AMATH/PMATH 331 or PMATH 351); Cumulative overall average of at least 80%

CO 466 LEC 0.50

Course ID: 003917

Continuous Optimization

Numerical algorithms for nonlinear optimization. Newton, variable-metric, quasi-Newton and conjugate gradient methods. Obtaining derivatives. Convexity. Trust region methods. Constrained optimization including optimality conditions, sequential quadratic programming, interior point and active set strategies.

Prereq: (CO 367 and one of CO 250/350, 352) or CO 255/355; Cumulative overall average of at least 80%

CO 471 LEC 0.50

Course ID: 011364

Semidefinite Optimization

Optimization over convex sets described as the intersection of the set of symmetric, positive semidefinite matrices with affine spaces. Formulations of problems from combinatorial optimization, graph theory, number theory, probability and statistics, engineering design, and control theory. Theoretical and practical consequences of these formulations. Duality theory and algorithms.

Prereq: MATH 239 or 249, AMATH/PMATH 331 or PMATH 351, CO 255/355; Cumulative overall average of at least 80%

CO 480 LEC 0.50

Course ID: 003918

History of Mathematics

An in-depth examination of the origins of mathematics, beginning with examples of Babylonian mathematics. Topics may include Pythagorean triples, solution of equations, estimation of pi, duplication of the cube, trisection of an angle, the Fibonacci sequence, the origins of calculus.

[Note: Offered in the spring term of odd years.]

Prereq: MATH 135 or 145, 106 or 136 or 146, 138 or 148; Level at least 3A

CO 481 LEC,TST 0.50

Course ID: 011497

Introduction to Quantum Information Processing

Basics of computational complexity; basics of quantum information; quantum phenomena; quantum circuits and universality; relationship between quantum and classical complexity classes; simple quantum algorithms; quantum Fourier transform; Shor factoring algorithm; Grover search algorithm; physical realization of quantum computation; error-correction and fault-tolerance; quantum key distribution. [Offered: W]

Prereq: One of MATH 114, 115, 235, 245; Level at least 4A

(Cross-listed with CS 467, PHYS 467)

CO 485 LEC 0.50

Course ID: 010137

The Mathematics of Public-Key Cryptography

An in-depth study of public-key cryptography. Number-theoretic problems: prime generation, integer factorization, discrete logarithms. Public-key encryption, digital signatures, key establishment, secret sharing. Proofs of security. [Offered: F]

Prereq: One of PMATH 334, 336, 345, 346, 347; Cumulative overall average of at least 80%

CO 487 LEC 0.50

Course ID: 010136

Applied Cryptography

A broad introduction to cryptography, highlighting the major developments of the past twenty years. Symmetric ciphers, hash functions and data integrity, public-key encryption and digital signatures, key establishment, key management. Applications to Internet security, computer security, communications security, and electronic commerce. [Offered: W]

Prereq: MATH 135 or 145, STAT 206 or 220 or 230 or 240; Level at least 3A

CO 499 RDG 0.50

Course ID: 003920

Reading in Combinatorics and Optimization

Reading course as announced by the department.

Department Consent Required

Notes

COMM courses are normally restricted to students enrolled in the Faculty of Mathematics in specified plans. For Math students, COMM courses count as non-math courses.

COMM 100s

COMM 101 LEC,TUT 0.50

Course ID: 013541

Introduction to Business 1

This course introduces students to the Canadian and International business environment, including forms of ownership, capital markets, and various organizational structures and management theories. Students will participate in a capital market competition and will be introduced to the case method of learning.

Antireq: AFM 131/ARBUS 101, BUS 111W

COMM 102 LEC,TUT 0.50

Course ID: 013542

Introduction to Business 2

This course is a continuation of COMM 101, introducing students to the functional areas of business including: marketing, finance, production, and human resources. Students will also be introduced to major themes in international business.

Prereq: COMM 101.

Antireq: BUS 121W

COMM 103 LEC 0.50

Course ID: 014062

Principles of Economics

This course provides an introduction to the basic concepts and tools of micro and macro economic analysis of individuals, businesses, and government in the global world. Topics may include consumers, producers, market structures, national income accounting, unemployment, and inflation.

Prereq: Mathematics/CPA students only.

Antireq: ECON 101, 102

(Cross-listed with ECON 100)

COMM 200s

COMM 231 LEC 0.50

Course ID: 006938

Commercial and Business Law for Mathematics Students

The Judicial Process, Contract Law, Agency, Bankruptcy, Negotiable Instruments, Law of Banking, Insurance Law, Partnership Law, Company Law, Torts, Real Estate Law.

Antireq: AFM 231/LS 283, ECE 290; (For Mathematics students only) BUS 231W, CIVE 491, ENVS 201, GENE 411, ME 401, MTHEL 100

COMM 300s

COMM 321 LEC 0.50

Course ID: 012745

Intermediate Accounting for Finance

This intermediate level accounting course will focus on the usage of financial information from a management perspective.

Prereq: AFM 101 or BUS 127W/227W; Mathematics/Financial Analysis and Risk Management students only.

Antireq: AFM 291, BUS 387W

COMM 400s**COMM 400 LEC 0.50**

Course ID: 006943

Entrepreneurship, Technology and the Emerging Information Economy

A study of the spirit of entrepreneurship in the technology industry, opportunities emerging in the new information economy, and the implementation issues associated with starting an entrepreneurial venture in today's rapidly changing environment. Many of the concepts covered will also be applicable to careers in the technology industry or in information-based companies, where "intrapreneurship" is an emerging theme. Approximately one-half of the class time will involve guest lectures by entrepreneurs actively involved in the business community.

[Note: COMM 400 would serve as an excellent sequel to ECON 220 which focuses on identifying markets for viable entrepreneurial ideas, but ECON 220 is not a prerequisite.]

Prereq: Level at least 3A.

Antireq: BUS 440W, MTHEL 400

COMM 421 LAB,LEC 0.50

Course ID: 012747

Financial Statement Analysis

This advanced course in financial statement analysis provides a framework for using financial statement data in a variety of business analysis and valuation contexts.

Prereq: COMM 321 or BUS 387W; Mathematics/Financial Analysis and Risk Management students only.

Coreq: ACTSC 372.

Antireq: AFM 492, BUS 417W

COMM 431 LEC 0.50

Course ID: 012954

Project Management

This course will introduce students to approaches, techniques and terminology used in project management. In particular, students will learn project planning principles, product and process metrics, people and organizational issues, task allocation and scheduling, monitoring and control, change management, and methods for cost estimation and risk assessment. Students will also be introduced to current project management tools, and will manage their own term project.

Prereq: AFM 102, MSCI 211; Level at least 3A

COMM 432 LEC 0.50

Course ID: 012955

Electronic Business

This course will introduce students to approaches, techniques and terminology used in electronic business. Students will also study issues in disciplines related to electronic business. They will review a number of sites and identify efficient e-commerce analysis, design and development techniques. Students will be introduced to current electronic business tools and standards, and will construct their own simple electronic business site.

Prereq: BUS 352W, CS 330 or 490; Level at least 3A.

Antireq: AFM 443

COMM 433 LEC 0.50

Course ID: 015389

Income Tax for Finance students

The course is designed to provide the student with broad overview of the Canadian income tax system as it relates to corporations and individuals. [Offered: F,S]

Prereq: COMM 321; Not open to Mathematics/CPA students.

Antireq: AFM 361, BUS 357W

CO-OPERATIVE WORK TERM**COOP 00s****COOP 1 WRK 0.50**

Course ID: 011509

Co-operative Work Term

Supervised and evaluated (as specified by the student's faculty) work term employment in business, industry, government, education or social services.

Department Consent Required

COOP 2 WRK 0.50

Course ID: 011510

Co-operative Work Term

Supervised and evaluated (as specified by the student's faculty) work term employment in business, industry, government, education or social services.

Department Consent Required

COOP 3 WRK 0.50

Course ID: 011511

Co-operative Work Term

Supervised and evaluated (as specified by the student's faculty) work term employment in business, industry, government, education or social services.

Department Consent Required

COOP 4 WRK 0.50

Course ID: 011512

Co-operative Work Term

Supervised and evaluated (as specified by the student's faculty) work term employment in business, industry, government, education or social services.

Department Consent Required

COOP 5 WRK 0.50

Course ID: 011513

Co-operative Work Term

Supervised and evaluated (as specified by the student's faculty) work term employment in business, industry, government, education or social services.

Department Consent Required

COOP 6 WRK 0.50

Course ID: 011514

Co-operative Work Term

Supervised and evaluated (as specified by the student's faculty) work term employment in business, industry, government, education or social services.

Department Consent Required

COOP 7 WRK 0.50

Course ID: 011515

Co-operative Work Term

Supervised and evaluated (as specified by the student's faculty) work term employment in business, industry, government, education or social services.

Department Consent Required

COOP 8 WRK 0.50

Course ID: 011516

Co-operative Work Term

Supervised and evaluated (as specified by the student's faculty) work term employment in business, industry, government, education or social services.

Department Consent Required

COOP 9 WRK 0.50

Course ID: 011517

Co-operative Work Term

Supervised and evaluated (as specified by the student's faculty) work term employment in business, industry, government, education or social services.

Department Consent Required

COOP 10 WRK 0.50

Course ID: 011518

Co-operative Work Term

Supervised and evaluated (as specified by the student's faculty) work term employment in business, industry, government, education or social services.

Department Consent Required

COOP 11 WRK 0.50

Course ID: 012308

Co-operative Work Term

Supervised and evaluated (as specified by the student's faculty) work term employment in business, industry, government, education or social services.

Department Consent Required

COOP 12 WRK 0.50

Course ID: 012568

Co-operative Work Term

Supervised and evaluated (as specified by the student's faculty) work term employment in business, industry, government, education or social services.

Department Consent Required

Notes

1. Courses in Croatian are offered through the Department of Germanic and Slavic Studies.
2. CROAT and CI courses count towards the new Minor in Cultural Identities (CI); for further information, please ask the Germanic and Slavic Studies undergraduate advisor.
3. Please also see REES and RUSS course offerings for interest in Slavic languages, linguistics, cultures, history, literature, and film.

CROAT 100s

CROAT 101 LAB,LEC 0.50

Course ID: 004344

Elementary Croatian I

For students with little or no knowledge of Croatian. The basic elements of Croatian grammar with emphasis on oral practice and pronunciation are stressed.

[Note: CROAT 101 is not open to students with native, near-native or similar advanced ability.]

Also offered Online

CROAT 102 LAB,LEC 0.50

Course ID: 004346

Elementary Croatian II

A continuation of CROAT 101.

[Note: CROAT 102 is not open to students with native, near-native or similar advanced ability.]

Prereq: CROAT 101

Also offered Online

CROAT 200s

CROAT 201 LAB,LEC 0.50

Course ID: 004347

Intermediate Croatian I

This course is a continuation of Elementary Croatian. It offers extensive practice in both the spoken and written language. Vocabulary building, comprehension, and pronunciation are stressed.

Prereq: CROAT 102

CROAT 202 LAB,LEC 0.50

Course ID: 004348

Intermediate Croatian II

A continuation of CROAT 201.

Prereq: CROAT 201

CROAT 400s

CROAT 496 RDG 0.50

Course ID: 004356

Special Topics in Croatian Studies

COMPUTER SCIENCE

Notes

1. The phrase "Computer Science students" refers to students enrolled in any Honours plan offered through the David R. Cheriton School of Computer Science. Software Engineering, Computing and Financial Management, and Bachelor of Computer Science (Data Science) students are considered Computer Science students. Students enrolled in the BMath (Data Science) plan are not considered Computer Science students.

Due to course restrictions on upper-year courses, students pursuing a Computer Science minor many need to enrol as Computer Science students for part of their undergraduate studies and should contact a CS advisor for more information.

2. First-year CS courses are available to all students with the exception of CS 100, which is not open to Math faculty students and most Engineering students, and CS 137 and 138, which are only available to Software Engineering students.
3. Upper-year CS courses are divided into two streams.
Courses with middle digits 4 to 9, e.g., 350 are designed specifically for Computer Science students. Some courses are open to all Math faculty students, but most are restricted to Computer Science students only.
Courses with middle digits 0 to 3, e.g., 230 are designed for a broader audience, including students pursuing the Computing Technology option. These courses are not available to Computer Science students.
4. In exceptional circumstances, student who are not Computer Science students may be allowed to take restricted CS courses. For more information, students should contact a CS advisor. Engineering students are not usually allowed to take restricted CS courses that have an Engineering equivalent available. When space is limited for restricted CS courses, Computer Science students are given priority.
5. Computer Science relies on student pre-enrolment data to determine the demand for courses. Every effort is made to accommodate students who choose classes during the pre-enrolment period, though space may be limited for some courses. Students who do not pre-enrol may be unable to take their preferred courses.
6. The terms in which courses are offered may change. For up-to-date information, students should check the "Schedule of Classes."
7. A CS course may not be taken for credit if it is the prerequisite of another CS course that has already been passed.
8. Students who have demonstrated exceptionally strong academic performance can take graduate-level courses if there is enough space and they get approval from both the instructor and a CS advisor. Undergraduates are not allowed to enrol in 600-level courses when an equivalent 400-level exists.
9. An enriched version of a Computer Science course, with an "E" suffix, may be substituted for the regular version of that course in any plan requirement or course prerequisite, or for any other calendar purpose. Whenever a Computer Science course is an antirequisite for another course, the enriched version is also an antirequisite for that course. A student may not receive credit for both the enriched version and the regular version of any Computer Science course.

Undergraduate students who take graduate courses that do not count towards their undergraduate degree can sometimes use these courses to satisfy graduate study requirements. For more information, students should see the "Accelerated Master's Academic Plans in Computer Science" section.

CS 100s

CS 100 LEC 0.50

Course ID: 004360

Introduction to Computing through Applications

Using personal computers as effective problem solving tools for the present and the future. Effective use of spreadsheets to process, manipulate, and visualize numeric and textual information. Introduction to the Internet, World Wide Web, HTML, and XML. Algorithms underlying the functional components of web search engines and their influence on data access. Using wikis to publish, reshape, and organize data collaboratively. [Offered: F,W,S]

Prereq: Not open to Mathematics, Biomedical, Chemical, Civil, Computer & Electrical, Environmental, Geological, Management, Mechanical, Mechatronics, Nanotechnology & Systems Design Eng students.

Antireq: All second, third or fourth year CS courses or equivalents

Only offered Online

CS 105 LAB, LEC, TST 0.50

Course ID: 015054

Introduction to Computer Programming 1

An introduction to the fundamentals of computer programming through media computation. Students will learn to write interactive graphical programs. Fundamental language concepts such as variables, conditionals, loops, functions, and arrays. Programming concepts such as coding style, modular design, testing, and debugging. Media concepts such as 2D graphics drawing, input, animation, and image processing. [Offered: F]

Prereq: Not open to Mathematics students.

Antireq: BME 121, CS 115, 135, 137, 145, CHE 121, CIVE 121, ECE 150, GENE 121, NE 111, MSCI 121, PHYS 236, SYDE 121

CS 106 LAB,LEC,TST 0.50

Course ID: 015055

Introduction to Computer Programming 2

A continuation of the introduction to computer programming begun in CS 105. The use of programming, in conjunction with libraries, as a means of solving practical problems in art, design, and data processing. Basic text processing, manipulation of images and sound, handling and visualization of tabular and hierarchical data. Introductions to user interfaces, physical simulation, and object-oriented programming. [Offered: W]

Prereq: CS 105; Not open to Mathematics students.

Antireq: BME 121, CS 115, 135, 137, 145, CHE 121, CIVE 121, ECE 150, GENE 121, NE 111, MSCI 121, SYDE 121

CS 115 LAB,LEC,TST,TUT 0.50

Course ID: 012765

Introduction to Computer Science 1

An introduction to the fundamentals of computer science through the application of elementary programming patterns in the functional style of programming. Function definition and application. Tracing via substitution. Design, testing, and documentation. Recursive data definitions. Lists and trees. Functional and data abstraction.

[Note: See Note 2 above. Offered: F,W,S]

Antireq: BME 121, CS 135, 137, 138, 145, CHE 121, CIVE 121, ECE 150, GENE 121, NE 111, MSCI 121, PHYS 236, SYDE 121

CS 116 LAB,LEC,TST,TUT 0.50

Course ID: 012766

Introduction to Computer Science 2

This course builds on the techniques and patterns learned in CS 115 while making the transition to use of an imperative language. Generative and structural recursion. Mutation (assignment) and its role in an imperative language. Primitive types and basic I/O. Sequencing, selection, looping. Function definition and use. File and console I/O. Issues in computer science. [Offered: F,W,S]

Prereq: CS 115 or 135.

Antireq: CS 136, 137, 138, 146, PHYS 239

CS 135 LAB,LEC,TST,TUT 0.50

Course ID: 012040

Designing Functional Programs

An introduction to the fundamentals of computer science through the application of elementary programming patterns in the functional style of programming. Syntax and semantics of a functional programming language. Tracing via substitution. Design, testing, and documentation. Linear and nonlinear data structures. Recursive data definitions. Abstraction and encapsulation. Generative and structural recursion. Historical context.

[Note: See Note 2 above. Offered: F,W]

Antireq: BME 121, CS 115, 137, 138, 145, CHE 121, CIVE 121, ECE 150, GENE 121, MSCI 121, NE 111, PHYS 236, SYDE 121

CS 136 LAB,LEC,TST,TUT 0.50

Course ID: 012041

Elementary Algorithm Design and Data Abstraction

This course builds on the techniques and patterns learned in CS 135 while making the transition to use an imperative language. It introduces the design and analysis of algorithms, the management of information, and the programming mechanisms and methodologies required in implementations. Topics discussed include iterative and recursive sorting algorithms; lists, stacks, queues, trees, and their application; abstract data types and their implementations.

[Note: See Note 2 above. Offered: F,W,S]

Prereq: At least 90% in CS 115 or at least 70% in CS 116 or at least 60% in CS 135 or CS 145.

Antireq: CS 137, 138, 146, PHYS 239

CS 137 LAB,LEC,TST,TUT 0.50

Course ID: 012886

Programming Principles

Review of fundamental programming concepts and their application. Procedures and parameter passing. Arrays and structures. Recursion. Sorting. Pointers and simple dynamic structures. Space and time analysis of designs. Design methodologies.

[Offered: F]

Prereq: Software Engineering students only

CS 138 LAB,LEC,TST,TUT 0.50

Course ID: 012887

Introduction to Data Abstraction and Implementation

Software abstractions via elementary data structures and their implementation; encapsulation and modularity; class and interface definitions; object instantiation; recursion; elementary abstract data types, including sequences, stacks, queues, and trees; implementation using linked structures and arrays; vectors and strings; memory models; automatic vs. dynamic memory management.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: W]

Prereq: CS 137

CS 145 LAB,LEC,TST,TUT 0.50

Course ID: 012767

Designing Functional Programs (Advanced Level)

CS 145 is an advanced-level version of CS 135.

[Note: See Note 2 above. This course may be substituted for CS 135 in any degree plan or for prerequisite purposes. Offered: F]

Department Consent Required

Antireq: CS 115, 135, 137, 138

CS 146 LAB,LEC,TST,TUT 0.50

Course ID: 013657

Elementary Algorithm Design and Data Abstraction (Advanced Level)

CS 146 is an advanced-level version of CS 136.

[Note: See Note 2 above. This course may be substituted for CS 136 in any degree plan or for prerequisite purposes. Students who receive a good grade in CS 135 may contact the instructor of CS 146 to seek admission without the formal prerequisites. Offered: W]

Prereq: CS 145 with a grade of at least 75%.

Antireq: CS 116, 136, 137, 138.

CS 200 LAB,LEC,TST 0.50

Course ID: 004372

Concepts for Advanced Computer Usage

Important concepts underlying major personal computer application categories; methodologies for learning and evaluating software; operating system and hardware design from the user's point of view, with implications for maintaining a personal computer. Students are encouraged to use their own personal computer for assignments. Social media and the effect of technology on society are explored throughout the course. [Offered: W,S]

Prereq: Not open to Computer Science students

CS 230 LAB,LEC,TST,TUT 0.50

Course ID: 004374

Introduction to Computers and Computer Systems

Basic computer architecture, organization, system services, and software. Typology of processors, memory, I/O devices and their performance.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: W,S]

Prereq: One of CS 116, 136, 138, 146; Not open to Computer Science students.

Antireq: BME 292, CS 241, 251, SYDE 192

CS 231 LAB,LEC,TST,TUT 0.50

Course ID: 015400

Algorithmic Problem Solving

The study of the steps required to solve real-world problems on a computer, including problem specification, choice of algorithmic paradigm, analysis, and implementation. Topics include exhaustive search, divide and conquer, greedy, and dynamic programming approaches.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: S]

Prereq: One of CS 116, 136, 138, 146; Not open to Computer Science students.

Antireq: BME 122, CS 341, ECE 250, MSCI 240, MTE 140, SYDE 223

CS 234 LAB,LEC,TST 0.50

Course ID: 004375

Data Types and Structures

Top-down design of data structures. Using representation-independent data types. Introduction to commonly used data types, including lists, sets, mappings, and trees. Selection of data representation.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: F,S]

Prereq: One of CS 116, 136, 138, 146; Not open to Computer Science students.

Antireq: BME 122, CS 240, ECE 250, MSCI 240, MTE 140, SYDE 223

CS 240 LAB,LEC,TST,TUT 0.50

Course ID: 004377

Data Structures and Data Management

Introduction to widely used and effective methods of data organization, focusing on data structures, their algorithms, and the performance of these algorithms. Specific topics include priority queues, sorting, dictionaries, data structures for text processing.

[Note: Enrolment is restricted; see Note 1 above. Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: F,W,S]

Prereq: (CS 245 or SE 212), (one of CS 241, 246, 247), (one of STAT 206, 230, 240); Computer Science and BMath (Data Science) students only.

Antireq: BME 122, CS 234, ECE 250, MSCI 240, MTE 140, SYDE 223

CS 240E LAB,LEC,TST,TUT 0.50

Course ID: 015405

Data Structures and Data Management (Enriched)

Enriched version of CS 240.

[Note: See notes 1 and 9 above. CS 240E may be substituted for CS 240 wherever the latter is a requirement. Enrolment is restricted. Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: As permitted by demand and available resources.]

Prereq: (A grade of 85% or higher in one of CS 245 or SE 212), (a grade of 85% or higher in one of CS 246 or 241), (one of STAT 206, 230, or 240); Computer Science students only.

Antireq: CS 234, ECE 250

CS 241 LAB,LEC,TST,TUT 0.50

Course ID: 004378

Foundations of Sequential Programs

The relationship between high-level languages and the computer architecture that underlies their implementation, including basic machine architecture, assemblers, specification and translation of programming languages, linkers and loaders, block-structured languages, parameter passing mechanisms, and comparison of programming languages.

[Note: Enrolment is restricted; see Note 1 above. Lab is not scheduled and students are expected to find time in open hours to complete their work. CS 251 is a recommended corequisite. Offered: F,W,S]

Prereq: (CS 138 or 246) or (a grade of 85% or higher in one of CS 136 or 146); Computer Science and BMath (Data Science) students only.

Antireq: CS 230

CS 241E LAB,LEC,TST,TUT 0.50

Course ID: 015406

Foundations of Sequential Programs (Enriched)

Enriched version of CS 241.

[Note: See notes 2 and 9 above. CS 241E may be substituted for CS 241 wherever the latter is a requirement. Enrolment is restricted. Lab is not scheduled and students are expected to find time in open hours to complete their work. CS 251 is a recommended corequisite. Offered: As permitted by demand and available resources]

Prereq: A grade of 85% or higher in one of CS 136, 146, or 138; Computer Science students only.

Antireq: CS 230, GENE 344

CS 245 LEC,TST,TUT 0.50

Course ID: 011405

Logic and Computation

Propositional and predicate logic. Soundness and completeness and their implications. Unprovability of formulae in certain systems. Undecidability of problems in computation, including the halting problem. Reasoning about programs. Correctness proofs for both recursive and iterative program constructions.

[Note: Enrolment is restricted; see Note 1 above. Offered: F,W,S]

Prereq: (One of CS 136, 138, 146), MATH 135; Honours Mathematics students only.

Antireq: PMATH 330, SE 212

CS 245E LEC,TST,TUT 0.50

Course ID: 015407

Logic and Computation (Enriched)

Enriched version of CS 245.

[Note: See notes 1 and 9 above. CS 245E may be substituted for CS 245 wherever the latter is a requirement. Enrolment is restricted. Offered: As permitted by demand and available resources.]

Prereq: A grade of 85% or higher in one of CS 136 or 146; Computer Science students only.

Antireq: SYDE 322

CS 246 LAB,LEC,TST,TUT 0.50

Course ID: 004380

Object-Oriented Software Development

Introduction to object-oriented programming and to tools and techniques for software development. Designing, coding, debugging, testing, and documenting medium-sized programs: reading specifications and designing software to implement them; selecting appropriate data structures and control structures; writing reusable code; reusing existing code; basic performance issues; debuggers; test suites.

[Note: Enrolment is restricted; see Note 1 above. Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: F,W,S]

Prereq: CS 146 or a grade of 60% or higher in CS 136 or 138; Honours Mathematics students only.

Antireq: CS 247, MSCI 342, SYDE 322

CS 246E LAB,LEC,TST,TUT 0.50

Course ID: 015408

Object-Oriented Software Development (Enriched)

Enriched version of CS 246.

[Note: See notes 1 and 9 above. CS 246E may be substituted for CS 246 wherever the latter is a requirement. Enrolment is restricted. Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: As permitted by demand and available resources.]

Prereq: A grade of 85% or higher in one of CS 136 or 146; Computer Science students only.

Antireq: SYDE 322

CS 247 LAB,LEC,TST,TUT 0.50

Course ID: 013805

Software Engineering Principles

Systematic methods for designing, coding, testing, and documenting medium-sized programs. Major topics include abstraction, modularity, software modeling, object-oriented programming and design, generic programming, testing and debugging.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: S]

Prereq: CS 241; Software Engineering students only.

Antireq: CS 246, MSCI 342, SYDE 322

CS 251 LAB,LEC,TST 0.50

Course ID: 004382

Computer Organization and Design

Overview of computer organization and performance. Basics of digital logic design. Combinational and sequential elements. Data representation and manipulation. Basics of processor design. Pipelining. Memory hierarchies. Multiprocessors.

[Note: Students enrolled in CS/DHW should enrol in ECE 222. Enrolment is restricted; see Note 1 above. Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: F,W,S]

Prereq: One of CS 136, 138, 146; Computer Science and BMath (Data Science) students only.

Antireq: BME 292, ECE 222, ME 262, MTE 262, SYDE 192

CS 300s

CS 330 LEC,TST 0.50

Course ID: 004385

Management Information Systems

An introduction to information systems and their strategic role in business. Topics include types of information systems, organizational requirements, systems development strategies, decision support systems, data and information management, and information systems management, control and implementation. [Offered: F,W,S]

Prereq: One of CS 106, 116, 136, 138, 146; Level at least 2B; Not open to Computer Science students.

Antireq: AFM 241, BUS 415W, 486W, CS 480/490, MSCI 441

CS 335 LEC,TST 0.50

Course ID: 013658

Computational Methods in Business and Finance

An introduction to numerical methods for business and finance. Floating-point arithmetic, interpolation. Methods for portfolio optimization and contingent-claims valuation. Solution of nonlinear equations. Monte Carlo methods, lattice methods, simulation of hedging strategies. [Offered: F,W]

Prereq: (One of CS 116, 136, 138, 146); MATH 136 or 146, MATH 237 or 247, STAT 231 or 241; Not open to Computer Science students.

Antireq: AMATH 242/ CS 371, CS 370, MTE 204

CS 338 LAB,LEC 0.50

Course ID: 004390

Computer Applications in Business: Databases

A user-oriented approach to the management of large collections of data. Methods used for the storage, selection and presentation of data. Common database management systems.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: F,W,S]

Prereq: One of CS 230, 231, 234, 246, 330; Not open to Computer Science students.

Antireq: CS 348, 448, ECE 456, MSCI 346

CS 341 LAB,LEC,TST 0.50

Course ID: 004392

Algorithms

The study of efficient algorithms and effective algorithm design techniques. Program design with emphasis on pragmatic and mathematical aspects of program efficiency. Topics include divide and conquer algorithms, recurrences, greedy algorithms, dynamic programming, graph search and backtrack, problems without algorithms, NP-completeness and its implications.

[Note: Enrolment is restricted; see Note 1 above. Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: F,W,S]

Prereq: CS 240 and (MATH 239 or 249); Computer Science and BMath (Data Science) students only.

Antireq: CS 231, ECE 406

CS 343 LAB,LEC,TST 0.50

Course ID: 011417

Concurrent and Parallel Programming

An introduction to concurrent and parallel programming, with an emphasis on language constructs. Major topics include: exceptions, coroutines, atomic operations, critical sections, mutual exclusion, semaphores, high-level concurrency, deadlock, interprocess communication, process structuring, shared memory and distributed architectures. Students will learn how to structure, implement and debug concurrent programs.

[Note: Enrolment is restricted; see Note 1 above. Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: F,W]

Prereq: CS 350 or SE 350; Computer Science students only.

Antireq: MTE 241

CS 348 LAB,LEC,TST 0.50

Course ID: 004417

Introduction to Database Management

The main objective of this course is to introduce students to fundamentals of database technology by studying databases from three viewpoints: those of the database user, the database designer, and the database administrator. It teaches the use of a database management system (DBMS) by treating it as a black box, focusing only on its functionality and its interfaces. Topics include: introduction to database systems, relational database systems, database design methodology, SQL and interfaces, database application development, concept of transactions, ODBC, JDBC, database tuning, database Administration, and current topics (distributed databases, data warehouses, data mining).

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: F,W,S]

Prereq: CS 240; Computer Science and BMath (Data Science) students only.

Antireq: CS 338, ECE 356, 456, MSCI 346

CS 349 LAB,LEC,TST 0.50

Course ID: 011727

User Interfaces

An introduction to contemporary user interfaces, including the basics of human-computer interaction, the user interface design/evaluation process, the event abstraction, user interface components, specification of user interfaces, and the architectures within which user interfaces are developed. Implementation and evaluation of a typical user interface is considered.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: F,W,S]

Prereq: CS 241 and (one of MATH 115, 136, 146); Computer Science students only

CS 350 LAB,LEC,TST 0.50

Course ID: 011416

Operating Systems

An introduction to the fundamentals of operating system function, design, and implementation. Topics include concurrency, synchronization, processes, threads, scheduling, memory management, file systems, device management, and security.

[Note: Enrolment is restricted; see Note 1 above. Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: F,W,S]

Prereq: CS 240, 241, 246, (CS 251 or ECE 222); Computer Science students only.

Antireq: ECE 254, MTE 241, SE 350

CS 360 LEC 0.50

Course ID: 004398

Introduction to the Theory of Computing

Models of computers including finite automata and Turing machines. Basics of formal languages with applications to the syntax of programming languages. Alternate characterizations of language classes. Proving unrecognizability. Unsolvable problems and their relevance to the semantics of programming.

[Note: Enrolment is restricted; see Note 1 above. Offered: F,W,S]

Prereq: CS 240, 241 and (MATH 239 or 249); Computer Science students only.

Antireq: CS 365

CS 365 LAB,LEC 0.50

Course ID: 011347

Models of Computation

Finite automata and regular expressions. Pushdown automata and context-free grammars. Turing machines and undecidability. Time and space complexity. Diagonalization and hierarchies. CS 365 covers the material in CS 360 at an accelerated pace plus additional topics in computational complexity.

[Note: CS 365 may be substituted for CS 360 in any degree plan or for prerequisite purposes; enrolment is restricted; see Note 1 above. Offered: W]

Prereq: CS 240, 241 and (MATH 239 or 249); Computer Science students only.

Antireq: CS 360

CS 370 LAB,LEC,TST 0.50

Course ID: 004400

Numerical Computation

Principles and practices of basic numerical computation as a key aspect of scientific computation. Visualization of results. Approximation by splines, fast Fourier transforms, solution of linear and nonlinear equations, differential equations, floating point number systems, error, stability. Presented in the context of specific applications to image processing, analysis of data, scientific modeling.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: F,W,S]

Prereq: (One of MATH 118, 119, 128, 138, 148), (one of MATH 106, 114, 115, 136, 146), (one of CS 231, 234, 241, 246).

Antireq: AMATH 242/CS 371, CS 335, MTE 204

CS 371 LAB,LEC 0.50

Course ID: 011363

Introduction to Computational Mathematics

A rigorous introduction to the field of computational mathematics. The focus is on the interplay between continuous models and their solution via discrete processes. Topics include: pitfalls in computation, solution of linear systems, interpolation, discrete Fourier transforms and numerical integration. Applications are used as motivation.

[Note: This course may be substituted for CS 370 in any degree plan or for prerequisite purposes; lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: W,S]

Prereq: (One of CS 116, 136, 138, 146), MATH 235 or 245, 237 or 247.

Antireq: CS 335, 370, MTE 204

(Cross-listed with AMATH 242)

CS 383 STU 0.50

Course ID: 015143

Computational Digital Art Studio

An upper-level studio course to create computational projects that function as art works and aesthetic experiences. Students will work in interdisciplinary teams to combine computer science principles with fine art technical and conceptual skills. [Offered: W]

Prereq: CS 240, FINE 229, 257

(Cross-listed with FINE 383)

CS 398 LEC 0.50

Course ID: 011409

Topics in Computer Science

See the Course Offerings List for topics available.

Prereq: CS 240 and (CS 246 or 247); Computer Science students only

CS 399 RDG 0.50

Course ID: 011410

Readings in Computer Science

Reading course as announced by the department.

Prereq: CS 240 and (CS 246 or 247); Computer Science students only

CS 430 LEC,TST 0.50

Course ID: 004404

Applications Software Engineering

An investigation into the role and function of software engineering practice in the construction of computer based systems. Topics include: requirements and specification; documentation techniques; analysis and design; implementation; testing and maintenance; management issues. [Offered: F,W]

Prereq: CS 330; Level at least 3A; Not open to Computer Science students.

Antireq: CS 446/ECE 452, SE 464

CS 431 LEC 0.50

Course ID: 015547

Data-Intensive Distributed Analytics

Introduces non-CS major students to infrastructure for data-intensive analytics, with a focus on abstractions, frameworks, and algorithms that allow developers to distribute computation across many machines. Topics include core concepts (partitioning, replication, locality, consistency), computational models (MapReduce, dataflows, stream processing, bulk-synchronous parallel), and applications. [Offered: W]

Prereq: (CS 231 or 234 or 341) and (CS 251 or 330); Not open to Computer Science students.

Antireq: CS 451

CS 432 LEC,TST 0.50

Course ID: 004405

Business Systems Analysis

Survey of organization and management theory. Systems theory and the systems approach. Systems design. Database concepts. Implementation and evaluation of computer based information systems. [Offered: F,S]

Prereq: CS 330; Level at least 3A; Not open to Computer Science students.

Antireq: AFM 341, CS 445/ECE 451, MSCI 444, SE 463

CS 436 LAB,LEC,TST 0.50

Course ID: 004407

Networks and Distributed Computer Systems

An introduction to networks, protocols, and distributed systems. Layered models, resource management, naming, addressing and routing, reliable communication, security, and higher-level services.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: W]

Prereq: One of CS 230, 241, 246, 251; Not open to Computer Science students.

Antireq: CS 454, 456, ECE 428, 454

CS 442 LAB,LEC,TST 0.50

Course ID: 004410

Principles of Programming Languages

An exposure to important concepts and issues in contemporary programming languages. Data types, abstraction, and polymorphism. Program structure. Lambda calculus and functional programming, logic programming, object-oriented programming. Semantics of programming languages. Critical comparison of language features and programming methodologies using examples drawn from a variety of programming languages including Lisp, Prolog, ML, Ada, Smalltalk, Icon, APL, and Lucid. Programming assignments involve the use of some of these languages.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: W]

Prereq: CS 240; Computer Science students only

CS 444 LAB,LEC,TST 0.50

Course ID: 004412

Compiler Construction

Phases of compilation. Lexical analysis and a review of parsing. Compiler-compilers and translator writing systems. LEX and YACC. Scope rules, block structure, and symbol tables. Runtime stack management. Parameter passage mechanisms. Stack

storage organization and templates. Heap storage management. Intermediate code. Code generation. Macros.

[Note: This course involves project work. Offered: W]

Prereq: CS 350 or SE 350; Computer Science students only

CS 445 LAB,LEC,TST,TUT 0.50

Course ID: 004413

Software Requirements Specification and Analysis

Introduces students to the requirements definition phase of software development. Models, notations, and processes for software requirements identification, representation, analysis, and validation. Cost estimation from early documents and specifications.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: F,W]

Prereq: CS 350; Computer Science students only.

Antireq: SE 463

(Cross-listed with ECE 451)

CS 446 LAB,LEC,TST,TUT 0.50

Course ID: 004414

Software Design and Architectures

Introduces students to the design, implementation, and evolution phases of software development. Software design processes, methods, and notation. Implementation of designs. Evolution of designs and implementations. Management of design activities.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: W,S]

Prereq: CS 350; Computer Science students only.

Antireq: CS 430, SE 464

(Cross-listed with ECE 452)

CS 447 LAB,LEC,TST,TUT 0.50

Course ID: 004416

Software Testing, Quality Assurance and Maintenance

Introduces students to systematic testing of software systems. Software verification, reviews, metrics, quality assurance, and prediction of software reliability and availability. Related management issues.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: W]

Prereq: CS 350; Computer Science students only.

Antireq: SE 465

(Cross-listed with ECE 453)

CS 448 LAB,LEC,TST 0.50

Course ID: 012300

Database Systems Implementation

The objective of this course is to introduce students to fundamentals of building a relational database management system. The course focuses on the database engine core technology by studying topics such as storage management (data layout, disk-based data structures), indexing, query processing algorithms, query optimization, transactional concurrency control, logging and recovery.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: W]

Prereq: CS 348 and (CS 350 or SE 350); Computer Science students only

CS 449 LAB,LEC,TST 0.50

Course ID: 013910

Human-Computer Interaction

An introduction to the fundamental theories, methods, and research in the design and evaluation of novel computational artifacts designed to meet real-world human needs.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work.]

Prereq: CS 240, 241; Level at least 3B; Computer Science students only.

Antireq: SYDE 348

CS 450 LAB,LEC,TST 0.50

Course ID: 004418

Computer Architecture

The course is intended to provide the student with an appreciation of modern computer design and its relation to system architecture, compiler technology and operating system functionality. The course places an emphasis on design based on the measurement of performance and its dependency on parallelism, efficiency, latency and resource utilization.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: W]

Prereq: (CS 245 or SE 212) and (CS 350 or SE 350); Computer Science students only.

Antireq: ECE 429

CS 451 LEC,TST 0.50

Course ID: 015315

Data-Intensive Distributed Computing

Introduces students to infrastructure for data-intensive computing, with a focus on abstractions, frameworks, and algorithms that allow developers to distribute computations across many machines. Topics include core concepts (partitioning, replication, locality, consistency), computational models (MapReduce, dataflows, stream processing, bulk-synchronous parallel), and applications. [Offered: F,S]

Prereq: CS 341, 348 and (CS 350 or SE 350); Computer Science and BMath (Data Science) students only

CS 452 LAB,LEC,TST 0.50

Course ID: 004419

Real-time Programming

Intended to give students experience with tools and techniques of real-time programming, this course includes not only issues of microcomputer architecture and a real-time programming language and operating system, but also hands-on experience programming a microcomputer for applications such as process control, data acquisition and communication.

[Note: This course involves project work. Offered: W,S]

Prereq: CS 350 or SE 350; Computer Science students only

CS 454 LAB,LEC,TST 0.50

Course ID: 004420

Distributed Systems

An introduction to distributed systems, emphasizing the multiple levels of software in such systems. Specific topics include fundamentals of data communications, network architecture and protocols, local-area networks, concurrency control in distributed systems, recovery in distributed systems, and clock synchronization.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: W,S]

Prereq: CS 350 or SE 350; Computer Science students only.

Antireq: ECE 454

CS 456 LAB,LEC,TST 0.50

Course ID: 010167

Computer Networks

An introduction to network architectures and protocols, placing emphasis on protocols used in the Internet. Specific topics include application layer protocols, network programming, transport protocols, routing, multicast, data link layer issues, multimedia networking, network security, and network management. [Offered: F,W,S]

Prereq: CS 350; Computer Science students only.

Antireq: CS 436, ECE 358, 428

CS 457 LAB,LEC,TST 0.50

Course ID: 004422

System Performance Evaluation

Basic techniques of system performance evaluation. Specific topics include: performance modeling, discrete event simulation, verification and validation of simulation models, analysis of simulation output, analysis of single server queue and queueing networks, modeling of computer systems, networks, and other queueing or non-queueing systems.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work.]

Prereq: (CS 246 or 247) and (one of STAT 206, 231, 241); Computer Science students only

CS 458 LAB,LEC,TST 0.50

Course ID: 012980

Computer Security and Privacy

Security and privacy issues in various aspects of computing. Specific topics include: comparing security and privacy, program security, writing secure programs, controls against program threats, operating system security, formal security models, network security, Internet application security and privacy, privacy-enhancing technologies, database security and privacy, inference, data mining, security policies, physical security, economics of security, and legal and ethical issues.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: F,W,S]

Prereq: CS 350 or SE 350. Computer Science students only.

Antireq: ECE 458

CS 462 LEC,TST 0.50

Course ID: 004424

Formal Languages and Parsing

Languages and their representations. Grammars --Chomsky hierarchy. Regular sets and sequential machines. Context-free grammars -- normal forms, basic properties. Pushdown automata and transducers. Operations on languages. Undecidable problems in language theory. Applications to the design of programming languages and compiler construction.

Prereq: CS 360 or 365; Computer Science students only

CS 466 LEC,TST 0.50

Course ID: 004426

Algorithm Design and Analysis

Algorithmic approaches and methods of assessment that reflect a broad spectrum of criteria, including randomized algorithms, amortized analysis, lower bounds, approximation algorithms, and on-line algorithms. Particular examples will be chosen from different areas of active research and application. [Offered: F,S]

Prereq: CS 341; Computer Science students only

CS 467 LEC,TST 0.50

Course ID: 011497

Introduction to Quantum Information Processing

Basics of computational complexity; basics of quantum information; quantum phenomena; quantum circuits and universality; relationship between quantum and classical complexity classes; simple quantum algorithms; quantum Fourier transform; Shor factoring algorithm; Grover search algorithm; physical realization of quantum computation; error-correction and fault-tolerance; quantum key distribution. [Offered: W]

Prereq: One of MATH 114, 115, 235, 245; Level at least 4A

(Cross-listed with CO 481, PHYS 467)

CS 475 LAB,LEC,TST 0.50

Course ID: 011444

Computational Linear Algebra

Basic concepts and implementation of numerical linear algebra techniques and their use in solving application problems. Special methods for solving linear systems having special features. Direct methods: symmetric, positive definite, band, general sparse structures, ordering methods. Iterative methods: Jacobi, Gauss-Seidel, SOR, conjugate gradient. Computing and using orthogonal factorizations of matrices. QR and SVD methods for solving least squares problems. Eigenvalue and singular value decompositions. Computation and uses of these decompositions in practice.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: S]

Prereq: AMATH 242/CS 371 or CS 370.

Antireq: CS 372, 472

CS 476 LAB,LEC,TST 0.50

Course ID: 003352

Numeric Computation for Financial Modeling

The interaction of financial models, numerical methods, and computing environments. Basic computational aspects of option pricing and hedging. Numerical methods for stochastic differential equations, strong and weak convergence. Generating correlated random numbers. Time-stepping methods. Finite difference methods for the Black-Scholes equation. Discretization, stability, convergence. Methods for portfolio optimization, effect of data errors on portfolio weights.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Students who receive a good grade in CS 335 may contact the instructor of CS 476 to seek admission without the formal prerequisites. Offered: W]

Prereq: (AMATH 242/CS 371 or CS 370) and STAT 231/241

CS 480 LAB,LEC,TST 0.50

Course ID: 015515

Introduction to Machine Learning

Introduction to modeling and algorithmic techniques for machines to learn concepts from data. Generalization: underfitting, overfitting, cross-validation. Tasks: classification, regression, clustering. Optimization-based learning: loss minimization, regularization. Statistical learning: maximum likelihood, Bayesian learning. Algorithms: nearest neighbour, (generalized) linear regression, mixtures of Gaussians, Gaussian processes, kernel methods, support vector machines, deep learning, sequence learning, ensemble techniques. Large scale learning: distributed learning and stream learning. Applications: Natural language processing, computer vision, data mining, human computer interaction, information retrieval.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: F,W,S]

Prereq: CS 341 and (STAT 206 or 231 or 241); Computer Science and BMath (Data Science) students only.

CS 482 LEC,TST,TUT 0.50

Course ID: 004434

Computational Techniques in Biological Sequence Analysis

Computer science principles and algorithms in biological sequence analysis. Topics include algorithms for sequence comparison, for large-scale database search in biological databases, for sequence assembly, for evolutionary tree reconstruction, for identifying important features in DNA and RNA sequences, and underlying computational techniques for understanding strings and trees and for making probabilistic inferences. [Offered: W]

Prereq: CS 341, STAT 241 or at least 60% in STAT 231

CS 484 LAB,LEC,TST 0.50

Course ID: 013912

Computational Vision

Introduction to image and vision understanding by computer. Camera-system geometry, image formation and lighting, and image acquisition. Basic visual processes for recognition of edges, regions, lines, and surfaces. Processing of stereo images, and motion in image sequences. Object recognition. Applications of computer-vision systems.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work.]

Prereq: (AMATH 242/CS 371 or CS 370) and STAT 230 or 240; Computer Science students only

CS 485 LEC,TST 0.50

Course ID: 013911

Statistical and Computational Foundations of Machine Learning

Extracting meaningful patterns from random samples of large data sets. Statistical analysis of the resulting problems. Common algorithmic paradigms for such tasks. Central concepts: VC-dimension, margins of a classifier, sparsity and description length, other types of regularization. Performance guarantees: generalization bounds, data dependent error bounds and computational complexity of learning algorithms. Common paradigms: neural networks, kernel methods and support-vector machines, boosting, nearest neighbor classifiers. Applications to data mining.

Prereq: CS 341 and (STAT 206 or 230 or 240); Computer Science and BMath (Data Science) students only

CS 486 LAB,LEC,TST 0.50

Course ID: 004435

Introduction to Artificial Intelligence

Goals and methods of artificial intelligence. Methods of general problem solving. Knowledge representation and reasoning. Planning. Reasoning about uncertainty. Machine learning. Multi-agent systems. Natural language processing.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: F,W,S]

Prereq: CS 341 or SE 240; Computer Science and BMath (Data Science) students only.

Coreq: STAT 206 or 231 or 241.

CS 487 LAB,LEC,TST 0.50

Course ID: 004436

Introduction to Symbolic Computation

An introduction to the use of computers for symbolic mathematical computation, involving traditional mathematical computations such as solving linear equations (exactly), analytic differentiation and integration of functions, and analytic solution of differential equations.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: W]

Prereq: CS 231 or 234 or 240; Honours Mathematics only

CS 488 LAB,LEC,TST 0.50

Course ID: 004437

Introduction to Computer Graphics

Software and hardware for interactive computer graphics. Implementation of device drivers, 3-D transformations, clipping, perspective, and input routines. Data structures, hidden surface removal, colour shading techniques, and some additional topics will be covered.

[Note: This course involves project work. Offered: F,W,S]

Prereq: (CS 341 or SE 240) and (CS 350 or SE 350) and (CS 370 or 371); Computer Science students only

CS 489 LEC 0.50

Course ID: 010044

Advanced Topics in Computer Science

See the Course Offerings List for topics available.

Prereq: Level at least 3B; Computer Science students only

CS 490 LEC,TST 0.50

Course ID: 004433

Information Systems Management

The integration of business and technical considerations in the design, implementation and management of information systems. Topics include: IS planning and development; business, management, executive, and strategic information systems, including case studies of selected large- scale systems; decision support systems; end-user training and development; systems security, disaster planning and recovery. Practical examples of information systems in industry. [Offered: W,S]

Prereq: CS 350 or SE 350; Computer Science students only.

Antireq: BUS 415W, 486W

CS 492 LEC,TST 0.50

Course ID: 004438

The Social Implications of Computing

This course is designed to consider the problems encountered by individuals, organizations and society as computer technology is adopted, with a view towards assessing possible courses of action. [Offered: W,S]

Prereq: CS 240; Computer Science students only

CS 493 LEC,PRJ 0.50

Course ID: 015545

Team Project 1

Students work in teams on substantial open-ended computer science problems as part of the CS 493/494 course sequence. Lectures describe project management fundamentals and ethical and legal issues in computing. Students form teams, select projects, define project goals, perform risk assessment, establish a project plan, and develop a prototype. Possible project topics can include development of software systems, analysis of extensions to existing systems across the field, and experimental computer science.[Offered: F]

Prereq: CS 341, 350; Computer Science students only. Not open to Software Engineering students.

CS 494 LEC,PRJ 0.50

Course ID: 015546

Team Project 2

Students work in teams on substantial open-ended computer science problems as part of the CS 493/494 course sequence. Lectures describe project management fundamentals and ethical and legal issues in computing. Students form teams, select projects, define project goals, perform risk assessment, establish a project plan, and develop a prototype. Possible project topics can include development of software systems, analysis of extensions to existing systems across the field, and experimental computer science. [Offered: F]

Prereq: CS 493; Computer Science students only. Not open to Software Engineering students.

CS 497 LEC 0.50

Course ID: 012280

Multidisciplinary Studies in Computer Science

See the Course Offerings list for topics available.

Prereq: Level at least 3B; Computer Science students only

CS 499R RDG 0.50

Course ID: 004444

Readings in Computer Science

Reading course as announced by the department.

Department Consent Required

Prereq: Level at least 3B; Computer Science students only

CS 499T PRJ 0.50

Course ID: 012560

Honours Thesis

The student will undertake new analysis, synthesis, measurement, or experimentation to produce a document that demonstrates a depth of understanding of a topic that goes beyond what is obtained in a standard undergraduate education.

[Note: Offered for CR/NCR only. CS 499R is recommended. A detailed thesis proposal and names of a supervisor and reader are required.]

Department Consent Required

Prereq: Computer Science students only

DIGITAL ARTS COMMUNICATION

DAC 200s

DAC 201 LEC 0.50

Course ID: 011680

Designing Digital Images and Interaction

This course draws on multiple theoretical perspectives to introduce students to the fundamental principles of multi-modal communication design in its social context. Students will analyze, design, and produce images and interactivity for use in a variety of digital platforms, including e-learning and business applications.

Prereq: Digital Arts Communication Minor students only.

Antireq: GBDA 101

(Cross-listed with ENGL 203)

DAC 202 LEC 0.50

Course ID: 011681

Designing Digital Video

This course introduces students to the principles of designing time-based multi-modal communication in a social context. Students will analyse, design, and produce video for use in a variety of digital platforms, including e-learning and business applications.

Prereq: Digital Arts Communication Minor students only.

Antireq: GBDA 201, 202.

(Cross-listed with ENGL 204)

DAC 203 LEC 0.50

Course ID: 013106

Designing with Digital Sound

In this course, students will be introduced to sound analysis and production. Students will learn to record, edit, and implement sound in a variety of linear and non-linear media forms, with emphasis on film and video games.

Prereq: Digital Arts Communication Minor students only.

Antireq: DAC 203/301, FINE/GBDA 229

(Cross-listed with ENGL 304)

DAC 204 LEC 0.50

Course ID: 015490

Introduction to Game Design

This course explores the fundamentals of game design. It focuses on the essentials shared by all games that are fundamental for a game designer working in any medium, from sports to board games to computer and video games. Although the focus of the course is on designing, prototyping, and testing non-digital games, digital games will be discussed in class to provide students with a broad theoretical and conceptual understanding of the field of game design and development along with practical exercises to train for creating a game.

Prereq: Digital Arts Communication Minor students only.

Antireq: DAC 300/ENLG 303/SPCOM 300 taken Fall 2016

DAC 300 LEC 0.50

Course ID: 011682

Special Topics in Digital Design

In this course students will learn advanced digital design theory. They will participate in workshops with professional designers, develop specialized digital materials and contribute signature work to their Digital Portfolio.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: Digital Arts Communication Minor students only

(Cross-listed with ENGL 303, SPCOM 300)

DAC 302 LEC 0.50

Course ID: 014124

Digital Storytelling

This course teaches students the principles and practices of telling stories using Machinima: 2D and 3D computer game engines used to design and produce short movies. Students will learn to develop and present story ideas, create storyboards, write short scripts, and then render their narratives using a variety of digital techniques and tools.

[Note: No programming skills are required for this course.]

Prereq: Digital Arts Communication Minor students only.

Antireq: DAC 400/DAC 300/ENGL 403 taken in spring 2011

DAC 305 LEC 0.50

Course ID: 013325

Design and User Experience of Interactive Games

This course introduces fundamental design skills for two-dimensional interactive video games and provides the theoretical knowledge of the emotional and cognitive effects of video game play. Students will understand the importance of user experience assessment for video games as part of iterative design and development. Students will learn to theorize, design, prototype, and test digital games with a special focus on exploring the impact that video games have on human experience.

Prereq: Digital Arts Communication Minor students only

DAC 307 LEC 0.50

Course ID: 014125

Digital Display Systems

This course focuses on the creative, technical, and artistic challenges inherent to creating visual content (film, photos, graphics) for the increasingly ubiquitous out-of-home digital displays. The size, configuration, placement, and functions of these public digital displays require new artistic and technical techniques to fully exploit their capabilities. In the course, students will explore the design affordances of several types of public digital display as well as produce dynamic, interactive content for them.

Prereq: Digital Arts Communication Minor students only

DAC 308 LEC 0.50

Course ID: 014126

Cinematic Art and Practice

This course explores cinematic representation from an audio-visual production perspective. Students will learn an explicit and replicable theoretical vocabulary for analyzing cinematic technique, as well as engage in practice by creating videographic "essays" that analyze, interrogate, and extend forms of cinematic representation. Students will engage in production workshops and have access to video and audio editing software.

[Note: No prior experience of audio, film, or video production is required.]

Prereq: Digital Arts Communication Minor students only

DAC 309 LEC 0.50

Course ID: 014521

User Experience Design

This course introduces students to the theory and practice of user experience design as it applies to the design of interactive digital media. Topics will include user-centred design, personas, iterative testing, prototyping, information gathering interviews, and contextual inquiry.

Prereq: Digital Arts Communication Minor students only.

Antireq: DAC 300/ENGL 303 taken in Winter 2013 or Winter 2014; GBDA 210

DAC 329 LEC 0.50

Course ID: 012415

Digital Presentations

In this course, students will be introduced to design and production of digital business presentations. They will develop specialized digital materials and contribute work to their Digital Portfolio.

Prereq: Digital Arts Communication Minor students only

(Cross-listed with SPCOM 329)

DAC 400s**DAC 400 PRJ 0.50**

Course ID: 011683

Digital Design Research Project

Students work in small groups under the supervision of a faculty researcher on an ongoing, large-scale, digital design project.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: Digital Arts Communication Minor students only

(Cross-listed with ENGL 403)

DAC 401 PRJ 0.50

Course ID: 015614

The Digital Design Profession

This course teaches students to prepare for one of their most pressing challenges upon graduation: to choose and then enter the digital design profession that fits best with their personal and career goals. Design thinking strategies and tools provide the framework for this exploration. Throughout the course, students will create a variety of career preparatory materials - such as a career and competency ePortfolio, a behaviour-based interview protocol, an "odyssey plan" - as they engage in workshops, group discussions, interviews, and professional reflections.

Prereq: Digital Arts Communication Minor students only.

Antireq: DAC 400/ENGL 403 taken in Winter 2017

DAC 403 LEC 0.50

Course ID: 012584

Special Topics in Speech Communication and Technology

In this course students will learn advanced digital design theory as it applies to speech communication. They will develop specialized digital materials and contribute work to their Digital Portfolio.

Prereq: Digital Arts Communication Minor students only

Notes

Laboratory sessions and rehearsal periods may be added to any course at the discretion of the instructor.

DRAMA 100s

DRAMA 100 WSP 0.50

Course ID: 004661

Introduction to Theatre

This course introduces students to the processes of text-based theatre creation and production. Students produce an existing play text by developing and implementing an original conceptual approach. Prior experience in theatre-making is not required.

[Note: Formerly DRAMA 101B.]

Antireq: DRAMA 101B

DRAMA 102 WSP 0.50

Course ID: 004662

Introduction to Performance

This workshop course introduces students to the creative processes of performance in a range of formal and informal settings. Emphasis is placed on the student's development as a performer. Prior performance experience is not required.

(Cross-listed with SPCOM 102)

DRAMA 200s

DRAMA 200 LEC 0.50

Course ID: 004660

Theatre and Performance in Context

Students experience, analyze, and interpret a range of works of theatre and performance. Close attention is paid to the original circumstances in which these works were produced, the ways in which they have reflected and influenced the communities that produced them, and their relevance to current performance practice and research.

[Note: Formerly DRAMA 101A.]

Antireq: DRAMA 101A

DRAMA 206 WSP 0.50

Course ID: 014896

Production Participation 1

Students work with faculty, staff, and visiting artists to explore and develop basic proficiency in specific areas of performance creation. Areas include research, conception, writing, direction, design, performance, production, stage management, production management, publicity, dramaturgy, critique, and documentation.

Department Consent Required

DRAMA 207 WSP 0.50

Course ID: 014918

Production Participation 2

Students work with faculty, staff, and visiting artists to explore and develop basic proficiency in specific areas of performance creation. Areas include research, conception, writing, direction, design, performance, production, stage management, production management, publicity, dramaturgy, critique, and documentation.

Department Consent Required

DRAMA 220 WSP 0.50

Course ID: 012417

Performance Studies

This workshop course in performance studies explores performance as a way of knowing. It investigates performance as artistic practice and as a means of understanding historical, social and cultural practices, including drama/theatre texts, poetry, narratives and texts of everyday life.

Prereq: Level at least 2A; Theatre and Performance majors and minors only
(Cross-listed with SPCOM 220)

DRAMA 221 WSP 0.50

Course ID: 004663

Performing Text

Students explore techniques to analyze, interpret, and perform texts.

Prereq: DRAMA 102/SPCOM 102

DRAMA 222 WSP 0.50

Course ID: 004664

Performing the Body

Students explore techniques to access and develop the body as a resource for performance.

Prereq: DRAMA 102/SPCOM 102

DRAMA 243 LAB,LEC 0.50

Course ID: 004668

Technical Production 1

Students develop basic proficiency in the technical elements of live theatre and performance production, including carpentry, lighting, projection, sound, wardrobe, and properties. Students apply these concepts in a departmental production.

Prereq: DRAMA 100/101B

DRAMA 244 LAB 0.50

Course ID: 004669

Technical Production 2

Students develop intermediate proficiency in the technical elements of live theatre and performance production, including carpentry, lighting, projection, sound, wardrobe, and properties. Students apply these concepts in a departmental production.

Prereq: DRAMA 100/101B, 243

DRAMA 246 SEM 0.50

Course ID: 014897

Design for Performance

Students explore historical and current perspectives on the principles of design for performance.

Prereq: Level at least 2A

DRAMA 248 SEM 0.50

Course ID: 014914

Management for the Arts

Students explore a broad range of arts management concepts. Assignments take students' individual interests into account.

Prereq: Level at least 2A

DRAMA 278 LEC,SEM 0.50

Course ID: 011907

Theatre and Technology

Students explore the development of theatre technologies and their significance in historical and current performance contexts.

[Note: Formerly DRAMA 405.]

Prereq: Level at least 2A.

Antireq: DRAMA 405

DRAMA 280 SEM 0.50

Course ID: 014906

Theatre and Performance in Canada

Students explore theatre and performance in Canada in its historical, political, and cultural contexts.

Prereq: Level at least 2A

DRAMA 282 SEM 0.50

Course ID: 014884

Gender and Performance

Students explore representations of gender on stage, in the media, and in politics.

Prereq: Level at least 2A.

Antireq: DRAMA 491 (Section 001) taken Winter 2013

DRAMA 284 WSP 0.50

Course ID: 014885

Site-Specific Performance

Students explore performance sites as resources for creation.

Prereq: Level at least 2A

DRAMA 286 SEM 0.50

Course ID: 014907

Early English Theatre

Students explore the early development and continuing relevance of English language theatre and performance practices.

Prereq: Level at least 2A

DRAMA 288 SEM 0.50

Course ID: 014886

Language, Theatre, and Performance

Students explore the relationship between language and meaning in historical and contemporary theatre and performance.

Prereq: Level at least 2A

DRAMA 300s**DRAMA 300 SEM 0.50**

Course ID: 014887

Theories of Theatre and Performance

Students study and critique a range of existing works of theatre and performance in the context of related commentary, paying close attention to concepts of knowledge, experience, and positionality.

Prereq: Theatre and Performance students only.

Coreq: DRAMA 101A/200

DRAMA 301 WSP 0.50

Course ID: 004678

Performance Creation

Students study, apply, and critique a range of processes for making theatre and performance, paying close attention to the relationship between the approach to creation and the significance of works in the communities where they are performed.

Prereq: Theatre and Performance students only.

Coreq: DRAMA 101A/200

DRAMA 306 WSP 0.50

Course ID: 004680

Production Participation 3

Students work at an intermediate level with faculty, staff, and visiting artists to explore and increase proficiency in specific areas of performance creation. Areas include research, conception, writing, direction, design, performance, production, stage management, production management, publicity, dramaturgy, critique, and documentation.

Department Consent Required

Prereq: Theatre and Performance students only.

Antireq: DRAMA 316

DRAMA 307 WSP 0.50

Course ID: 004681

Production Participation 4

Students work at an intermediate level with faculty, staff, and visiting artists to explore and increase proficiency in specific areas of performance creation. Areas include research, conception, writing, direction, design, performance, production, stage management, production management, publicity, dramaturgy, critique, and documentation.

Department Consent Required

Prereq: Theatre and Performance students only.

Antireq: DRAMA 317

DRAMA 316 WSP 1.00

Course ID: 014888

Production Participation 5

Students work at an intermediate level with faculty, staff, and visiting artists to explore and increase proficiency through extensive contributions to specific areas of performance creation. Areas include research, conception, writing, direction, design, performance, production, stage management, production management, publicity, dramaturgy, critique, and documentation.

Department Consent Required

Prereq: Theatre and Performance students only.

Antireq: DRAMA 306

DRAMA 317 WSP 1.00

Course ID: 014889

Production Participation 6

Students work at an intermediate level with faculty, staff, and visiting artists to explore and increase proficiency through extensive contributions to specific areas of performance creation. Areas include research, conception, writing, direction, design, performance, production, stage management, production management, publicity, dramaturgy, critique, and documentation.

Department Consent Required

Prereq: Theatre and Performance students only.

DRAMA 321 WSP 0.50

Course ID: 004688

Approaches to Acting with Text

Students apply conceptual and theoretical approaches to acting in traditions emphasizing the text as a resource for performance.

Prereq: DRAMA 221 or 222

DRAMA 322 WSP 0.50

Course ID: 004689

Approaches to Acting with the Body

Students apply conceptual and theoretical approaches to performance in traditions emphasizing the body as a resource for performance.

Prereq: DRAMA 221 or 222

DRAMA 326 WSP 0.50

Course ID: 004692

Performing the Voice

Students explore techniques to access and develop the voice as a resource for performance.

*Prereq: DRAMA 102/SPCOM 102; one of DRAMA 221, DRAMA 222, SPCOM 223; Level at least 3A
(Cross-listed with SPCOM 326)*

DRAMA 331 WSP 0.50

Course ID: 004694

Design Theory and Practice

Students apply conceptual and theoretical approaches to design in the areas of set/space, light, projection, and costume.

*Prereq: DRAMA 101A/200, 243, 244, 246
(Cross-listed with FINE 335)*

DRAMA 343 SEM 0.50

Course ID: 004698

Stage Management

Students explore approaches to stage management for theatre and performance.

*Department Consent Required
Prereq: DRAMA 243, 244, 248*

DRAMA 361 WSP 0.50

Course ID: 004706

Approaches to Directing

Exploration of the director's task in its practical, theoretical and historical aspects.

Prereq: DRAMA 101A/200, 243, 244. Theatre and Performance students only

DRAMA 366 WSP 0.50

Course ID: 014900

Writing for Performance

Students explore techniques for analyzing, interpreting, and creating texts for theatre and performance.

Prereq: Level at least 3A.

Antireq: DRAMA 490 (Section 002) taken in Fall 2011

DRAMA 368 WSP 0.50

Course ID: 014902

Collaborative Creation

Students explore techniques for collaborative creation in theatre and performance.

Prereq: DRAMA 101A/200, 243, 244.

Antireq: DRAMA 490 (Section 001) taken in Fall 2012

DRAMA 371 LEC 0.50

Course ID: 004708

Theatre History 1

Theatre history from Classical Greece to the Renaissance.

DRAMA 372 LEC 0.50

Course ID: 004709

Theatre History 2

Theatre history from the Classical French and English Restoration periods to the present era.

DRAMA 374 SEM 0.50

Course ID: 014890

Sustainability in Performance

Students explore the interchange between artistic practice and current topics in sustainability research.

Prereq: Level at least 3A

DRAMA 376 SEM 0.50

Course ID: 011182

Political Theatre and Performance

Students explore the relationships among form, political engagement, culture, and agency in theatre and performance.

[Note: Formerly DRAMA 402.]

Prereq: Level at least 3A.

Antireq: DRAMA 402

DRAMA 378 SEM 0.50

Course ID: 014891

Black Theatre and Performance

Students explore the relationship of black theatre and performance to artistic and public life in North America.

Prereq: Level at least 3A.

Antireq: DRAMA 491 (Section 001) taken in Winter 2012

DRAMA 379 LAB,SEM 0.50

Course ID: 014892

Virtual Theatre and Performance

Students explore and create theatre and performance in virtual reality.

Prereq: Level at least 3A

DRAMA 386 LEC 0.50

Course ID: 005166

Shakespeare 1

A study of the plays written before 1599-1600, excluding Julius Caesar.

Prereq: Level at least 3A

(Cross-listed with ENGL 362)

Also offered Online

DRAMA 387 LEC 0.50

Course ID: 005167

Shakespeare 2

A study of the plays written after 1599-1600, including Julius Caesar.

Prereq: Level at least 3A

(Cross-listed with ENGL 363)

Also offered Online

DRAMA 400s**DRAMA 400 WSP 1.50**

Course ID: 014893

Collaborative Performance Project

Students work at an advanced, independent level with faculty, staff, and visiting artists to create and reflect upon a major, collaborative performance project. As core members of the creative team, students engage in all areas of project creation, including research, conception, writing, direction, design, performance, production, stage management, production management, publicity, dramaturgy, critique, and documentation.

Department Consent Required

Prereq: One of DRAMA 206, 207, 306, 307, 316, 317; Theatre and Performance students only.

Antireq: DRAMA 406, 410, 416

DRAMA 406 WSP 0.50

Course ID: 004715

Production Participation 7

Students work at an advanced, independent level with faculty, staff, and visiting artists to create and reflect upon a major, collaborative performance project. Students engage in all areas of project creation, including research, conception, writing, direction, design, performance, production, stage management, production management, publicity, dramaturgy, critique, and documentation.

Department Consent Required

Prereq: One of DRAMA 206, 207, 306, 307, 316, 317; Theatre and Performance students only.

Antireq: DRAMA 400, 416

DRAMA 407 WSP 0.50

Course ID: 004716

Production Participation 8

Students work at an intermediate level with faculty, staff, and visiting artists to explore and increase proficiency in specific areas of performance creation. Areas include research, conception, writing, direction, design, performance, production, stage management, production management, publicity, dramaturgy, critique, and documentation.

Department Consent Required

Prereq: One of DRAMA 206, 207, 306, 307, 316, 317; Theatre and Performance students only.

Antireq: DRAMA 410, 417

DRAMA 409 LEC 0.50

Course ID: 004717

Theatre Criticism

Study and practice of the criticism of theatre production and performance.

[Note: May be subject to priority enrolment. There is a course fee of \$150 to pay for the cost of theatre tickets and transportation to and from theatres.]

Prereq: Level at least 4A Theatre and Performance or Speech Communication majors in the Performance Studies area of concentration only

DRAMA 410 WSP 1.50

Course ID: 014898

Collaborative Performance Project

Students work at an advanced, independent level with faculty, staff, and visiting artists to create and reflect upon a major, collaborative performance project. As core members of the creative team, students engage in all areas of project creation, including research, conception, writing, direction, design, performance, production, stage management, production management, publicity, dramaturgy, critique, and documentation.

Department Consent Required

Prereq: One of DRAMA 206, 207, 306, 307, 316, 317; Theatre and Performance students only.

Antireq: DRAMA 400, 407, 417

DRAMA 416 WSP 1.00

Course ID: 014894

Production Participation 9

Students work at an advanced, independent level with faculty, staff, and visiting artists to create and reflect upon a major, collaborative performance project. Through extensive contributions to production, students engage in all areas of project creation, including research, conception, writing, direction, design, performance, production, stage management, production management, publicity, dramaturgy, critique, and documentation.

Department Consent Required

Prereq: One of DRAMA 206, 207, 306, 307, 316, 317; Theatre and Performance students only.

Antireq: DRAMA 400, 406

DRAMA 417 WSP 1.00

Course ID: 014895

Production Participation 10

Students work at an advanced, independent level with faculty, staff, and visiting artists to create and reflect upon a major, collaborative performance project. Through extensive contributions to production, students engage in all areas of project creation, including research, conception, writing, direction, design, performance, production, stage management, production management, publicity, dramaturgy, critique, and documentation.

Department Consent Required

Prereq: One of DRAMA 206, 207, 306, 307, 316, 317; Theatre and Performance students only.

Antireq: DRAMA 407, 410

DRAMA 440 LEC,SEM,WSP 0.50

Course ID: 011906

Performative Inquiry and Practice

This course explores how to create, perform and analyze performance texts, here defined as including drama/theatre texts, poetry, narratives, and the texts of everyday life. Through readings and creative investigation, students will explore the links between the participant, the researcher, the site and the impulse of inquiry.

Prereq: Level at least 3A

(Cross-listed with SPCOM 440)

DRAMA 490 SEM,WSP 0.50

Course ID: 004723

Selected Seminars in Drama & Theatre Arts

Seminars in special areas of drama and theatre.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Department Consent Required

DRAMA 491 SEM,WSP 0.50

Course ID: 010105

Selected Seminars in Drama & Theatre Arts

Seminars in special areas of drama and theatre.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Department Consent Required

DRAMA 499A LEC 0.50

Course ID: 004740

Senior Seminar

This course is designed to give the student an opportunity to complete a comprehensive presentation in her/his major area of concentration.

[Note: A grade for DRAMA/SPCOM 499A will be submitted only after the completion of DRAMA/SPCOM 499B.]

Department Consent Required

Prereq: Level at least 4A Honours Theatre and Performance

(Cross-listed with SPCOM 499A)

DRAMA 499B LEC 0.50

Course ID: 004741

Senior Seminar

This course is designed to give the student an opportunity to complete a comprehensive presentation in her/his major area of concentration. Second part of DRAMA/SPCOM 499.

Department Consent Required

Prereq: Level at least 4A Honours Theatre and Performance

(Cross-listed with SPCOM 499B)

DUTCH

Notes

1. Courses in Dutch are offered through the Department of Germanic and Slavic Studies.
2. DUTCH and CI courses count towards the new Minor in Cultural Identities (CI); for further information, please ask the Germanic and Slavic Studies undergraduate advisor.

DUTCH 100s

DUTCH 101 LAB,LEC 0.50

Course ID: 004742

Elementary Dutch I

The basic elements of Dutch grammar with emphasis on oral practice and pronunciation. Introduction to aspects of Dutch

culture.

[Note: DUTCH 101 is not open to students with native, near-native or similar advanced ability.]

Also offered Online

DUTCH 102 LAB,LEC 0.50

Course ID: 004743

Elementary Dutch II

A continuation of DUTCH 101.

[Note: DUTCH 102 is not open to students with native, near-native or similar advanced ability.]

Prereq: DUTCH 101

Also offered Online

DUTCH 200s

DUTCH 201 LEC 0.50

Course ID: 004744

Intermediate Dutch I

This course will be conducted partly in Dutch and offers advanced study in grammar, composition, and conversation. Special emphasis will be given to comprehension and practice in the spoken language.

[Note: DUTCH 201 is not open to students with native, near-native or similar advanced ability.]

Prereq: DUTCH 102

DUTCH 202 LEC 0.50

Course ID: 004746

Intermediate Dutch II

A continuation of DUTCH 201.

[Note: DUTCH 202 is not open to students with native, near-native or similar advanced ability.]

Prereq: DUTCH 201

EARTH SCIENCES

EARTH 100s

EARTH 121 LEC 0.50

Course ID: 004819

Introductory Earth Sciences

This course explores the geological processes of the Earth's interior and surface. These include volcanism, earthquakes, mountain building, glaciation and weathering. Students will gain an appreciation of how these processes have controlled the evolution of our planet and the role of geology in meeting society's current and future demand for sustainable energy and mineral resources.

[Note: EARTH 121L is recommended. Offered: F]

Antireq: CIVE 153, EARTH 153, ENVE 153, GEOE 153

Also offered Online

EARTH 121L LAB 0.25

Course ID: 004820

Introductory Earth Sciences Laboratory

For students taking EARTH 121. Laboratory exercises on selected topics from EARTH 121 lectures. [Offered: F]

EARTH 122 LEC 0.50

Course ID: 004821

Introductory Environmental Sciences

This course presents a broad overview of earth system processes and their influence on humans. Course emphasis is placed on anthropogenic impacts on natural systems, the impacts of geologic, biologic, and atmospheric processes on humans, and the effects of human activities on the environment. Course topics include sustainable development and the availability and use of natural resources, principles of ecology and environmental science, biogeochemical cycles, climate and climate change, soils and food supply, energy systems, surface water and groundwater, waste generation and management, pollution, and catastrophic natural processes.

[Note: EARTH 122L is recommended. Offered: W]

Antireq: ENVS 195

EARTH 122L LAB 0.25

Course ID: 004822

Introductory Environmental Sciences Laboratory

For students taking EARTH 122. Laboratory exercises on selected topics from EARTH 122 lectures. [Offered: W]

EARTH 123 LEC,TUT 0.50

Course ID: 004823

Introductory Hydrology

Introduction to the main components of the hydrologic cycle including precipitation processes, evapotranspiration, soil water and groundwater flow, and surface water features. Emphasis will be placed on the atmospheric and geologic processes controlling water movement in the cycle at the global and local scales. Examples related to environmental impacts of urbanization and land-use management will be stressed. [Offered: F]

EARTH 153 LAB,LEC,TST,TUT 0.50

Course ID: 011496

Earth Engineering

This course studies earth materials and processes from an engineering point of view through case histories and problem sets. The course develops a geological knowledge for applications to any physical environment and provides an appreciation of the impact of engineering work on the environment. Topics include: mineral and rock identification, the rock cycle, structural geology and tectonics, geology of Canada, effects of water, ice and wind. Students are also introduced to the concept of geologic time, topographic and geologic maps, and the basic principles and tools used to determine geologic history. [Offered: S; Offered as: CIVE 153 (W), ENVE 153 (S), GEOE 153 (S)]

Antireq: EARTH 121

(Cross-listed with CIVE 153, ENVE 153, GEOE 153)

EARTH 200s**EARTH 221 LEC,TUT 0.50**

Course ID: 004826

Geochemistry 1

Origin, abundance and geochemistry of elements. Introduction to stable isotope geology and radiometric dating. Basic aqueous geochemistry. [Offered: W,S]

Prereq: CHEM 123 or 125

EARTH 223 LAB,LEC 0.50

Course ID: 004827

Field Methods in Hydrology

This course consists of field exercises, lectures and laboratory experiments designed to provide students with hands-on experience with a variety of hydrological monitoring techniques. Emphasis will be on the practical aspects of collecting, interpreting, and reporting of groundwater, surface water, meteorological, and water quality data.

Coreq: EARTH 123;

Antireq: EARTH 123L

EARTH 231 LAB,LEC 0.50

Course ID: 004828

Mineralogy

Systematic mineralogy: study of the physical properties of the major rock-forming minerals; their identification, classification and occurrence. Introduction to crystallography; elements of symmetry and the interrelationship of crystal structure to the physical and chemical properties of minerals. Elementary petrology of igneous, metamorphic and sedimentary rocks in hand specimen.

[Note: Additional field trip fees will apply. Offered: F]

Prereq: EARTH 121, 121L or EARTH 153 or CIVE 153 or CIVE 253 or GEOE 153 or ENVE 153

EARTH 232 LAB,LEC 0.50

Course ID: 004829

Petrography

An introduction to optical mineralogy. Basic theory of the behaviour of light through minerals; concept of indicatrices; understanding relief, retardation, birefringence, interference figures and other optical properties of minerals. Microscopic examination of important rock forming minerals and the identification of igneous, metamorphic, and sedimentary rocks. Introduction to silicate phase equilibria; use of mineral stability diagrams to understand igneous and metamorphic petrogenesis. [Offered: W,S]

Prereq: EARTH 231

EARTH 235 LAB,LEC 0.50

Course ID: 004830

Stratigraphic Approaches to Understanding Earth's History

An introduction to stratigraphic principles and methods used in deciphering geological history. The development of stratigraphic sequences as controlled by global and regional tectonics and sea level fluctuations. Interrelating aspects of Earth's physical, chemical and biological history. Examples are drawn primarily from Canadian geology. Laboratory work will include construction and interpretation of various types of maps and cross sections. [Offered: F]

Prereq: EARTH 121, 121L or 122, 122L or 153 or CIVE 153 or CIVE 253 or GEOE 153 or ENVE 153

EARTH 238 LAB,LEC 0.50

Course ID: 004832

Introductory Structural Geology

Concepts of stress and strain; elementary rock mechanics; description and classification of folds, faults, foliations, lineations and joints; use of primary structures; introduction to geometrical analysis. Labs will emphasize geometrical problems, including geological maps and cross sections, and stereographic projection. [Offered: W]

Prereq: EARTH 121, 121L or 122, 122L or 153 or CIVE 153 or CIVE 253 or GEOE 153 or ENVE 153

EARTH 260 FLD,LEC,TUT 0.50

Course ID: 004833

Applied Geophysics 1

An introduction to seismic, gravity, electric, electromagnetic and magnetic methods of exploration geophysics. [Offered: F]

Prereq: PHYS 112 or 122 or 125

EARTH 270 LEC,TUT 0.50

Course ID: 012741

Disasters and Natural Hazards

The course will examine the physical causes and affects of natural disasters including landslides, snow avalanches, earthquakes, tsunamis, hurricanes, tornadoes, flooding, subsidence, volcanic eruptions and asteroid impacts. Illustrated by case histories, the course will analyse the factors that lead to disasters. The effect of climate change, human activity, and population growth on the magnitude and frequency of disasters will be explored. The course will introduce the basic principles of Geo-Risk management and its applications in natural hazards engineering, in the development of mitigation strategies and in the re-insurance industry. [Offered: W]

EARTH 281 LEC,TUT 0.50

Course ID: 011909

Geological Impacts on Human Health

The importance of geology to health. This includes examining the effects of volcanic gases and dust and other aerosols; tracing the sources and impacts of metals and other naturally occurring geological materials in the Earth's hydrosphere and crust; geology and the bioaccumulation of metals; and distinguishing natural versus anthropogenic processes on the geochemical distribution of toxic material in the near-surface environment. [Offered: W]

EARTH 300s

EARTH 321 LEC 0.50

Course ID: 014937

Introduction to Geomicrobiology

This course will provide an overview of how microbial life has affected Earth's environment through time. Emphasis will be on geomicrobial processes in the lithosphere and hydrosphere. Geomicrobial interactions with key elements will be discussed. [Instructor consent required for students lacking EARTH 221 prerequisite; Offered: W]

Prereq: EARTH 221

EARTH 331 LAB,LEC 0.50

Course ID: 004835

Volcanology and Igneous Petrology

The principles and theories of the origins of volcanic and plutonic igneous rocks. Physics and chemistry of magma; controls of volcanic eruptions, magmatic differentiation and the distribution and occurrence of magma types. [Offered: F]

Prereq: EARTH 231 and EARTH 232

EARTH 332 LAB,LEC 0.50

Course ID: 004836

Metamorphic Petrology

Principles and theories of metamorphic rock genesis. Static, dynamic and polyphasal crystalloblastic growth. Processes of solid-state crystallization in metamorphic environments. Zonal and facies classifications; facies series and the place of metamorphism in global tectonics. Introduction to metasomatism. [Offered: W]

Prereq: EARTH 231 and EARTH 232

EARTH 333 LAB,LEC 0.50

Course ID: 004837

Introductory Sedimentology

The origin and physical properties of sediments. Fluid flow, glacier motion and sediment transport processes. Mechanical and chemical erosion rates, sediment fluxes and budget. Facies models of the major depositional environments. Diagenetic processes. Laboratories focussed on the description and interpretation of sediments and sedimentary rocks. [Offered: W]

Prereq: EARTH 231, 232, 235

EARTH 336 LEC,TUT 0.50

Course ID: 004838

Evolution 2: Fossil Record

An overview of the origin of life, how it evolved and diversified, modern principles of paleontology with particular emphasis on analytical tools to interpret ancient life forms. Patterns, processes of evolution and paleoecology of key groups of microfossils, invertebrates, plants, vertebrates and their trace fossils. [Offered: W]

Prereq: EARTH 121 or EARTH 153 or BIOL 359

(Cross-listed with BIOL 360)

EARTH 342 LAB,LEC 0.50

Course ID: 004839

Geomorphology and GIS Applications

Physical processes, environmental impact and remediation; Development, erosion and engineering capabilities of soils and glacial drift. Fluvial processes; Floods; Glacial deposits; Landslides. Application of Geographic Information Systems (GIS) to Earth Sciences. Laboratory work involves air photo interpretation and spatial analysis using GIS. [Offered: F, W]

Prereq: EARTH 121 or 122 or 153 or CIVE 153 or 253 or ENVE 153 or GEOE 153

EARTH 358 LEC,TUT 0.50

Course ID: 004842

Earth System Science

Study of the Earth as a system, with a focus on global climate history and dynamics, biogeochemical cycling, and the impacts of human activity. Critical analysis and synthesis are emphasized in the context of group presentations and discussions. [Offered: W]

Prereq: One of (EARTH 121, 121L, or 122, 122L or EARTH 126 or 153 or GEOE 126 or CIVE 153 or CIVE 253 or GEOE 153 or ENVE 153) and (CHEM 123 or 125) and (EARTH 221 or EARTH 231).

Antireq: SCI 201

EARTH 390 LAB 0.50

Course ID: 004848

Methods in Geological Mapping

Field study in Sudbury and Whitefish Falls areas. Held for at least 9 days at end of the Winter term. Geological and geotechnical field techniques, map construction, report writing.

[Note: Additional field trip fees will apply to all students. Depending on availability of space, EARTH 390 is also open to students who do not require this course in their plan. There will be an additional fee for such students. Offered: W]

Department Consent Required

Coreq: EARTH 235, 238

EARTH 400s**EARTH 421 LAB,LEC 0.50**

Course ID: 004849

Geochemistry 2

The application of chemical thermodynamics to geochemical problems. Development of the three laws of Thermodynamics; Gibbs free energy and equilibria constants. Introduction to various topics in aqueous geochemistry such as mineral equilibria, ion exchange and redox equilibria. Laboratory session will involve various experiments related to mineral solubility, chemical kinetics, acid-base equilibria and chemical modelling. [Offered: F]

Prereq: EARTH 221 and CHEM 123

EARTH 435 LAB,LEC 0.50

Course ID: 004854

Advanced Structural Geology

Stress and strain; deformational behaviour of rocks; origin of folds, foliations, lineations, joints and faults; geometrical and kinematic analysis; relationships of structures from the microscopic to the megascopic scale. Labs will include simple experiments, advanced geometrical problems and observation and measurement of microstructure and fabric.

[Note: EARTH 332 is recommended as a prerequisite. Offered: W]

Prereq: EARTH 238

EARTH 436A PRJ,TUT 0.50

Course ID: 004855

Honours Thesis

The first term of a two-term supervised research project in which students plan and conduct research. Students learn to gather and interpret data and present their findings in a formal seminar and written thesis.

[Note: Students outside the Honours Earth Sciences, Environmental Science (Geoscience Specialization) and Geoscience programs, require department consent and program advisor permission to enroll]

Department Consent Required

Prereq: Level at least 4A; Honours Earth Sciences, Environmental Science (Geoscience Specialization) and Geochemistry students.

Antireq: EARTH 499

EARTH 436B PRJ,TUT 0.50

Course ID: 004856

Honours Thesis

The second term of a two-term supervised research project in which students plan and conduct research. Students learn to gather and interpret data, and present their findings in a formal seminar and written thesis.

[Note: Students outside the Honours Earth Sciences, Environmental Science (Geoscience Specialization) and Geoscience programs, require department consent and program advisor permission to enroll]

Department Consent Required

Prereq: EARTH 436A

EARTH 437 LEC 0.50

Course ID: 004857

Rock Mechanics

Stress, strain and strength in geomaterials. Origins of stress and stress measurement methods, including hydraulic fracture and strain relief. Rock Mechanics principles and design procedures in areas of mining, civil engineering and petroleum engineering. Monitoring methods, including introduction to microseismic surveillance. Course includes laboratory and project work. [Offered: W]

Prereq: CIVE 127 and CIVE 204 or ENVE 127/207 or ME 219; 3A or higher Geological or Civil Engineering

EARTH 438 LAB,LEC 0.50

Course ID: 004858

Engineering Geology

Review of basic concepts in engineering geology as applied to rock and soil, including material properties, variability in

properties, external factors such as stress, and evaluation of design adequacy. Site investigation and characterisation techniques used to define and characterise the properties of geological materials and their use in selected engineering geologic design and construction problems. Laboratory assignments will focus on the determination of physical properties and site assessment problems. [Offered: W]

Prereq: One of EARTH 121, 153, GEOE 153, CIVE 153, ENVE 153

EARTH 439 LEC 0.50

Course ID: 004859

Flow and Transport Through Fractured Rocks

Fractures are ubiquitous in geologic media and important in disciplines such as physical and contaminant hydrogeology, geotechnical engineering, civil and environmental engineering, petroleum engineering among other areas. Despite the importance of fractures, its characterization and predictions of groundwater flow and contaminant transport are fraught with significant difficulties. Students are taught to deal with fractures in hydrogeology, to conceptualize them, and to build reliable models for predicting groundwater flow and contaminant transport. Offered [W]

Prereq: EARTH 359 or 458

EARTH 440 LAB,LEC 0.50

Course ID: 004860

Quaternary Geology

Glacial-interglacial cycles and sub-Milankovitch oscillations from ocean sediments and ice cores. Quaternary geochronology. Glacial sediment-land systems. Mineral exploration techniques pertaining to glaciated terrains and hydrostratigraphic analyses of Quaternary basins. Local field trips. Laboratory studies on glacial sediments.

[Note: Additional field trip fees will apply. Offered: F]

Prereq: EARTH 333 or 342

EARTH 444 LEC,TUT 0.50

Course ID: 012909

Applied Wetland Science

Advanced concepts on wetland ecosystems in the context of regional and global earth systems processes such as carbon and nitrogen cycling and climate change, applications of wetland paleoecology, use of isotopes and other geochemical tools in wetland science, and wetland engineering in landscape rehabilitation and ecotechnology. Current issues in Canada and abroad will be examined. [Offered: F]

Prereq: (One of BIOL 150/250, CIVE 153, EARTH 121, 153, ENVE 153, ENVS 200, GEOE 153) and (one of CHEM 120, 123, CHE 102) and (one of CIVE 224, ENVE 224, STAT 202).

Antireq: BIOL 453, GEOG 405

(Cross-listed with BIOL 462)

EARTH 456 LEC 0.50

Course ID: 004862

Numerical Methods in Hydrogeology

An introduction to the theory and practice of groundwater flow and contaminant transport modeling. Topics related to variably-saturated flow will focus on: derivation of Richard's equation, a control volume finite difference discretization, assembly and solution of the flow equation, material balance error, truncation error analysis, stability and monotonicity. Topics related to contaminant transport will focus on: derivation of the contaminant transport equation, a control volume finite difference discretization along with various spatial and temporal weighting schemes and their associated accuracy, monotonicity, and material balance error. Hands on experience is provided using software applied to industry-standard variably-saturated flow and transport problems, with an emphasis on visualization and interpretation of results.

[Note: EARTH 458, a first year linear algebra and a second year calculus course are recommended. Offered: W]

Prereq: Not open to students in the Faculty of Mathematics

EARTH 458 LEC 0.50

Course ID: 004863

Physical Hydrogeology

An introduction to physical hydrogeology, including Darcy's law, the groundwater flow equations for steady-state and transient conditions, applications to flow nets, aquifer testing, groundwater resources, and groundwater protection. The role of groundwater in the hydrologic cycle is explored with emphasis on natural groundwater flow systems and their influence on stream flow. Physical processes controlling groundwater contamination are introduced.

[Note: EARTH 123 is recommended as a prerequisite. Offered: F,S]

Prereq: EARTH 121, 121L or 122, 122L or CIVE 153 or 253 or ENVE 153 or GEOE 153

EARTH 458L LAB 0.25

Course ID: 013108

Field Methods in Hydrogeology

This course exposes students to a wide variety of field and laboratory techniques for collecting hydrogeologic data and to gain experience in interpreting the data. Advantages and limitations of various measurement and data reduction techniques for evaluating groundwater flow systems are demonstrated in a set of field exercises carried out at the groundwater demonstration facility located on the university North Campus. These exercises illustrate the complexity of natural systems and the need for good data collection and interpretation skills when characterizing such systems. [Offered: F,S]

Coreq: EARTH 458

EARTH 459 LEC,TUT 0.50

Course ID: 004864

Chemical Hydrogeology

An introduction to the chemical side of hydrogeology with emphasis on groundwater quality and contaminants in the groundwater zone, the geochemical origin of major ions in natural groundwater, causes of hardness, groundwater age determination using isotopes, common causes of groundwater contamination; processes governing contaminant behaviour including dispersion, diffusion and adsorption, hydrogeologic aspects of site selection for waste disposal. [Offered: W]

Prereq: EARTH 221, CIVE 375 or ENVE 375; and EARTH 458

EARTH 460 LEC,TUT 0.50

Course ID: 004865

Applied Geophysics 2

A detailed examination of selected topics in exploration geophysics, with an emphasis on data processing, time series analysis and computer modelling of geophysical responses.

[Note: A full credit in first year Calculus is recommended as a prerequisite. Offered: W]

Prereq: EARTH 260

EARTH 461 LEC,TUT 0.50

Course ID: 004866

Applied Geophysics 3

An application-oriented course emphasizing current methodology in near-surface geophysics, including electrical, electromagnetic, ground penetrating radar, seismic refraction and magnetic methods. The basic theory for geophysical data acquisition and interpretation is studied and applied to field data. The application of geophysical techniques to archeological, forensics, geotechnical and hydrogeological problems is discussed. [Offered: F]

Prereq: EARTH 260

EARTH 471 LAB,LEC 0.50

Course ID: 004868

Mineral Deposits

The principles of metal concentration and deposition in magmatic and hydrothermal environments. Classic ore deposits are examined using these principles, including applications of fluid inclusion, stable isotope and mineral stability to ore-forming processes. Basic aspects of mineral exploration are also covered. Laboratories involve hand sample and ore petrology of suites from diverse deposits. [Offered: W]

Prereq: EARTH 221, 232

EARTH 490 LAB 0.00

Course ID: 004869

Field Course

One or more trips that emphasize field observations. Specific trips may be organized to examine field aspects of any of the disciplines within Earth Sciences or Geological Engineering. Field exercises and reports may be part of the requirements. Additional field trip fees will apply.

Prereq: Level at least 3A; Honours Earth Sciences or Environmental Science (Geoscience Specialization) or Geological Engineering

EARTH 491 LEC 0.50

Course ID: 014141

Special Topics in Earth and Environmental Sciences

A lecture course offered in a particular area of Earth and Environmental Sciences, subject to availability of instructor.

Prereq: Earth and Environmental Sciences and Geological Engineering students.

EARTH 499 PRJ,TUT 0.50

Course ID: 013756

Research Project

A one-term supervised research project in which students plan and conduct research. Students learn to gather and interpret data and present their findings in a formal seminar and written report.

[Note: Students outside the Honours Earth Sciences, Environmental Science (Geoscience Specialization) and Geoscience programs, require department consent and program advisor permission to enroll]

Department Consent Required

Prereq: Level at least 4A; Honours Earth Sciences or Environmental Science (Geoscience Specialization).

Antireq: EARTH 436A, 436B

EAST ASIAN

Notes

1. *The East Asian culture courses may provide useful background for students intending to spend time in the Far East.*
2. *All EASIA courses are taught in English*

EASIA 100s

EASIA 100R LEC 0.50

Course ID: 004871

Introduction to East Asia

An introductory survey of East Asia. This course examines common grounds and differences in the historical, cultural, economic, and political foundations of East Asian societies and states.

[Note: Formerly EASIA 201R]

Antireq: EASIA 201R

EASIA 110R LEC 0.50

Course ID: 015612

Introduction to Modern China

This is an introductory survey course on China as a modern nation-state. The course provides a broad overview of the country by looking at major aspects of modern China, including the trajectory of China's rise since the 1980s.

Offered at Renison University College

EASIA 120R LEC 0.50

Course ID: 015272

Monsters and Magic in Japanese Popular Culture

An examination of the roles played by monsters, magic, and supernatural creatures in Japanese popular culture, with attention to their treatment in Buddhism, Shinto, Daoism, and folk practices. Topics include modern-day creations such as Godzilla and Pokemon and traditional beings such as deities, ghosts, angry spirits, goblins, and shapeshifters.

[Note: This course fulfils an Area 1A requirement for Religious Studies majors.]

(Cross-listed with RS 123)

Offered at Renison University College

EASIA 200s

EASIA 202R LEC 0.50

Course ID: 013999

Chinese Culture and Society

The course explores the interface of tradition and modernity in Chinese life. Topics include traditional and modern Chinese culture, language, education, art, technology, and business.

[Note: Formerly CHINA 272R.]

Antireq: EASIA 202R/CHINA 272R

EASIA 203R LEC 0.50

Course ID: 014000

Japanese Culture and Society

The course explores the interface of tradition and modernity in Japanese life. Topics include traditional and modern Japanese culture, language, education, art, technology, and business.

[Note: Formerly JAPAN 272R.]

Antireq: EASIA 203R/JAPAN 272R

EASIA 204R LEC 0.50

Course ID: 013998

Korean Culture and Society

The course explores the interface of tradition and modernity in Korean life. Topics include traditional and modern Korean culture, language, education, art, technology, and business.

[Note: Formerly KOREA 272R.]

Antireq: EASIA 204R/KOREA 272R

EASIA 205R LEC 0.50

Course ID: 004872

Religions of East Asia

An examination of the leading religious and philosophical ideas that have shaped the cultures and histories of East Asia: China, Korea, and Japan. Folk, Shamanic, Confucian, Daoist, Shinto, and Buddhist traditions are examined.

[Note: This course fulfils an Area 1A requirement for Religious Studies majors.]

(Cross-listed with RS 201)

EASIA 206R LEC 0.50

Course ID: 012997

Japanese Religions

An examination of religious phenomena in the history of Japan, including their impact on art, literature, philosophy, and politics. Buddhism, Shinto, Confucianism, folk beliefs, new religious movements, and other traditions are explored.

[Note: This course fulfils an Area 1A requirement for Religious Studies majors.]

Prereq: Level at least 2A

(Cross-listed with RS 206)

EASIA 220R DIS,LEC 0.50

Course ID: 011391

The History of East Asian Communities in Canada

This course examines the evolution of the Chinese, Japanese, and Korean communities in Canada as well as their significance for Canadian economic, social, and political life in the 19th and 20th centuries.

(Cross-listed with HIST 231R)

EASIA 231R LEC 0.50

Course ID: 014876

Calligraphy to Conceptual Art: Text as an Image in Islamic and East Asian Visual Arts

Exploring the history of Islamic and East Asian calligraphic arts and the study of Eastern and Western artists, this course examines multiple ways in which writing and other forms of visible language are incorporated into visual arts. Through studio projects, students explore conceptual approaches to text-based image making.

Prereq: Level at least 2A.

Antireq: FINE 204 (section 001) taken Winter 2012 or Winter 2014; SI 375R taken Winter 2014

(Cross-listed with FINE 275, SI 231R)

Offered at Renison University College

EASIA 250R LEC 1.00

Course ID: 012075

Study Abroad in East Asia

An intensive study of the culture and language of an East Asian country. With the guidance of a Course Director, students complete readings, attend lectures, and visit cultural sites for six weeks or more on location.

[Note: There will be interview and information sessions to confirm that a prospective student has the appropriate background for participation in this course. An appropriate first-year East Asian language course is also required.]

Instructor Consent Required

EASIA 275R LEC 0.50

Course ID: 014245

Religion and Japanese Film

The course examines how religious beliefs and values in Japan are explored in the medium of film.

[Note: This course fulfils an Area 3B requirement for Religious Studies majors.]

Antireq: FINE 253/RS 271 taken in Winter 2010, 2012

(Cross-listed with RS 275)

EASIA 277R LEC 0.50

Course ID: 013313

International Relations of East Asia

This course explores key topics in the international relations of East Asia after World War II. Classes examine literature on major developments of East Asian relations, including the Cold War, East Asian regionalism, and the foreign policies of China, Japan, and Korea.

Prereq: Level at least 2A

EASIA 291R LEC 0.50

Course ID: 015125

Special Topics in East Asian Studies

This course deals with selected topics in East Asian studies.

[Note: This is a repeatable course, subject to different content; it may be completed a total of five times.]

EASIA 300s

EASIA 300R SEM 0.50

Course ID: 012208

Politics and Diplomacy of Contemporary Japan

This course surveys several key topics in the politics and diplomacy of contemporary Japan, particularly in its relations with its Asia-Pacific neighbours. Topics may include the Pacific War and its legacies, the Japan-US security alliance, the Okinawa problem, and Japan-Canada relations.

Prereq: Level at least 3A

EASIA 301R LEC 0.50

Course ID: 012707

The Political Economy of East Asia

This course explores the rise of the East Asian economy since the end of World War II. The subject is pursued through examining some of the most important aspects of the so-called Asian miracle/model, including the historical background of the Asian miracle, the role of the state in the region's economic development, the relationship between Asian culture and economic development, social development, and East Asia's business system and practice.

Prereq: Level at least 2A

EASIA 302R LEC,SEM 0.50

Course ID: 014883

Chinese Foreign Policy since 1949

This course examines the major elements and evolution of Chinese foreign policy since 1949 and China's external relations in the context of rising Chinese power.

Prereq: Level at least 2A

(Cross-listed with PSCI 385)

EASIA 303R LEC,SEM 0.50

Course ID: 015508

Business Environment in East Asia

The course introduces students to the cultural, social, economic, political, and legal environment for business in East Asia. It covers major economies, such as China, Japan, South Korea, Taiwan, and Hong Kong. The course helps students acquire comprehensive understanding of the business environment of this dynamic region.

Prereq: Level at least 2A

EASIA 304R LEC 0.50

Course ID: 015056

Korean Law and Society

This course examines the legal system, legal culture, and socio-cultural traditions of the Republic of Korea from a comparative legal perspective.

Prereq: EASIA 204R/KOREA 272R

EASIA 305R SEM 0.50

Course ID: 015509

Buddhism in East Asia Today

This course examines modern developments in the Buddhism of China, Japan, and Korea. Topics such as war, urbanization, capitalism, colonialism, Christianity, Communism, the Internet, and nostalgia are explored for their impact on Buddhism.

Prereq: Level at least 2A

(Cross-listed with RS 302R)

EASIA 336R LEC 0.50

Course ID: 015544

Korean Pop Culture

This course explores elements of popular culture such as film, music, television, and video games in relation to social, cultural, and political developments in contemporary South Korea. Students critically analyze readings and non-print media to consider South Korean popular culture in national, regional, and global contexts.

Prereq: Level at least 2A.

Antireq: EASIA 391R taken Fall 2016

EASIA 346R LEC 0.50

Course ID: 015354

Global Asian Diasporas

This course explores the literature and culture from one or more global Asian diasporas, with particular emphasis on cultures of East Asian origin. Topics may include identity, transnationalism, imperialism, war, labour, migration, and popular culture.

Prereq: Level at least 2A

(Cross-listed with ENGL 346R)

EASIA 360R LEC 0.50

Course ID: 010193

Pre-modern Chinese Literature

This course is an introductory survey of the main genres of classical and pre-modern Chinese literature. Individual works are related to the evolution of the literary tradition and its interaction with history, philosophy, and politics. Classical and historical writing, poetry, drama, and novels are introduced.

[Note: Taught in English. Formerly EASIA 210R.]

Prereq: Level at least 2A.

Antireq: EASIA 210R

EASIA 361R LEC,SEM 0.50

Course ID: 014789

Modern Chinese Literature (1917 - present day)

This survey course explores modern Chinese literature beginning from 1917 and the New Culture movement. Selected works and relevant critiques are used to prompt discussion of cultural and literary topics, particularly of changes in Chinese culture and literature from the beginning of the 20th century to the present day.

[Note: Taught in English. Formerly EASIA 260R.]

Prereq: Level at least 2A.

Antireq: EASIA 260R

EASIA 362R LEC 0.50

Course ID: 015057

Introduction to Pre-Modern Japanese Literature

Students study a selection of works of early Japanese literature from its beginnings to the 17th century and examine a wide variety of genres, including poetry, diaries, military tales, and philosophical tracts composed during that time period.

[Note: Taught in English.]

Prereq: Level at least 2A

EASIA 363R LEC 0.50

Course ID: 015058

Introduction to Early Modern Japanese Literature

A study of a selection of works of Japanese literature from the 17th century to the early 20th century, examining a wide variety of genres in early modern Japan.

[Note: Taught in English.]

Prereq: Level at least 2A

EASIA 377R LEC 0.50

Course ID: 014875

Cold War in East Asia

This course examines the origins, developments, and contemporary implications of the Cold War in East Asia.

Prereq: Level at least 2A

(Cross-listed with HIST 377R)

Offered at Renison University College

EASIA 391R LEC,RDG,SEM 0.50

Course ID: 012154

Special Topics

This course deals with selected topics in East Asian studies.

[Note: This is a repeatable course, subject to different content; it may be completed a total of five times.]

Prereq: Level at least 3A

ELECTRICAL AND COMPUTER ENGINEERING**Notes**

1. The Department reserves the right, where pre-enrolment in a course is less than twenty, to cancel the course.
2. In extraordinary cases an instructor may override the prerequisite conditions listed below.
3. The terms in which fourth-year courses are offered, and the selection of fourth-year courses, are occasionally changed, with updates appearing in a future edition of the calendar.

ECE 100s**ECE 100A SEM 0.20**

Course ID: 013156

Electrical and Computer Engineering Practice

Areas of research and professional practice in Electrical and Computer Engineering, including the engineer's role in protecting public safety. Exposure to concepts from other Engineering disciplines. Support material for the academic term, co-operative education, and professional or career development. [Offered: F]

Prereq: Level at least 1A Computer Engineering or Electrical Engineering.

ECE 100B SEM 0.20

Course ID: 013157

Electrical and Computer Engineering Practice

Areas of research and professional practice in Electrical and Computer Engineering. Exposure to concepts from other Engineering disciplines. Support material for the academic term, co-operative education, and professional or career development.

[Note: This course graded as CR/NCR. Offered: W, S]

Prereq: Level at least 1B Computer Engineering or Electrical Engineering

ECE 102 SEM 0.00

Course ID: 009233

Information Session

Scheduled, non-credit session to provide information to electrical and computer engineering students. [Offered: W, S]

Prereq: Level at least 1B Computer or Electrical Engineering

ECE 103 LEC,TUT 0.50

Course ID: 009889

Discrete Mathematics

Propositional logic, predicate logic, set theory, finite automata, temporal logic. [Offered: W, S]

Prereq: Level at least 1B Computer Engineering or Electrical Engineering.

Antireq: CO 220, ECE 108, MATH 229, 239, 249

ECE 105 LAB,LEC,TUT 0.50

Course ID: 013166

Classical Mechanics

Forces in nature and Newton's laws, Dynamics and circular motion, Work, Energy and conservation of energy. Linear Momentum and linear Impulse, Rotational Dynamics. Oscillations; Simple Harmonic Motion. Wave motion; Traveling waves and standing waves. [Offered: F]

Prereq: Level at least 1A Computer Engineering or Electrical Engineering or Software Engineering

ECE 106 LAB,LEC,TUT 0.50

Course ID: 013167

Electricity and Magnetism

Electrostatics; electric field, flux, Gauss's Law, potential and potential energy. Capacitors; Dielectric, capacitance, electric energy storage. Resistors; charge flow, current, resistance. Magnetostatic; magnetic force, magnetic fields, Ampere's Law. Inductors; magnetic flux, inductance, magnetic materials, magnetic energy storage. Time-Varying Fields; Faraday's Law, mutual inductance, simple motors and generators. [Offered: W, S]

Prereq: ECE 105, 140; Level at least 1B Computer Engineering or Electrical Engineering or Software Engineering.

Antireq: NE 241, PHYS 112 or 112L

ECE 108 LEC,PRJ,TUT 0.50

Course ID: 015291

Discrete Mathematics and Logic 1

Introduction to discrete mathematics, including: propositional/Boolean logic, syntax and semantics, proof theory, and model theory; set theory, relations and functions, combinatorics (counting techniques, permutations, and combinations), graph theory. Applications in electrical, computing and software engineering. [Offered: W, S]

Prereq: ECE 150, MATH 117; Level at least 1B Computer Engineering or Electrical Engineering or Software Engineering.

ECE 124 LAB,LEC,TUT 0.50

Course ID: 013168

Digital Circuits and Systems

Number systems and Boolean arithmetic. Boolean algebra and simplification of Boolean functions. Combinational circuits. Sequential circuits; design and implementation. Hardware description languages. Timing analysis. Implementation technologies. [Offered: W, S]

Prereq: Level at least 1B Computer Engineering or Electrical Engineering or Software Engineering

ECE 140 LAB,LEC,TUT 0.50

Course ID: 013169

Linear Circuits

Analysis of linear circuits. Voltage, current, resistance, capacitance, inductance, voltage source, current source, dependent sources, Ohm's Law, Kirchhoff's Laws, nodal analysis, mesh analysis, circuit transformations, operational amplifier circuits, time response, sinusoidal steady-state response. Preparing for, conducting, and reporting of laboratory experiments. Safety-orientation training, including WHMIS assessment, is included in this course. [Offered: W, S]

Prereq: Level at least 1B Computer Engineering or Electrical Engineering or Software Engineering.

Antireq: GENE 123, MTE 120

ECE 150 LAB,LEC,TUT 0.50

Course ID: 004750

Fundamentals of Programming

Software design process in a high-level programming environment. Programming fundamentals, language syntax, simple data types, control constructs, functions, parameter passing, recursion, classes, arrays and lists, list traversals, introduction to searching and sorting algorithms, basic object-oriented design, polymorphism and inheritance, simple testing and debugging strategies, pointers and references, basic memory management. [Offered: F]

Prereq: Level at least 1A Computer Engineering or Electrical Engineering.

Antireq: CHE 121, CIVE 121, GENE 121, NE 113, SYDE 121

ECE 155 LAB,LEC,TUT 0.50

Course ID: 013170

Engineering Design with Embedded Systems

Introduction to embedded systems, review of engineering design and analysis principles, software development life cycle, integrated development environments, use of software requirements and specifications, unified modelling language and documentation, event handling, simulation, project management, project scheduling, testing, verification, and maintenance considerations. [Offered: W, S]

Prereq: ECE 150; Level at least 1B Computer Engineering or Electrical Engineering.

ECE 190 LEC 0.25

Course ID: 015292

Engineering Profession and Practice

Introduction to Electrical and Computer Engineering with an emphasis on the profession of engineering and engineering design. Topics include: engineering design, safety, risk analysis, engineering data analysis, project management, sustainability, business, entrepreneurship, and intellectual property. Additional topics include: co-op fundamentals for engineering students, professional development, and diversity training with a goal of understanding the roles and responsibilities of the professional engineer in society. [Offered: F]

Prereq: Level at least 1A Computer Engineering or Electrical Engineering.

Antireq: ECE 100A

ECE 192 LEC,TUT 0.25

Course ID: 015628

Engineering Economics and Impact on Society

This course teaches engineering economics and the impact of engineering on the society at large. Important concepts of engineering economics including cash flow diagrams, present worth, quantification of impact costs, and rate of return analysis are presented. This course discusses real-life engineering cases that cover the above aspects and provide a broad perspective on the issues. Energy supply scenarios and the environment, global energy use and supply, and environmental impacts of engineering projects are discussed. [Offered W, S, first offered Winter 2019]

Prereq: Level at least 1B Computer or Electrical Engineering

ECE 200s**ECE 200A SEM 0.10**

Course ID: 013159

Electrical and Computer Engineering Practice

Areas of research and professional practice in Electrical and Computer Engineering. Exposure to concepts from other Engineering disciplines. Support material for the academic term, co-operative education, and professional or career development.

[Note: This course graded as CR/NCR. Offered: F, W]

Prereq: Level at least 2A Computer Engineering or Electrical Engineering

ECE 200B SEM 0.10

Course ID: 013161

Electrical and Computer Engineering Practice

Areas of research and professional practice in Electrical and Computer Engineering. Exposure to concepts from other Engineering disciplines. Support material for the academic term, co-operative education, and professional or career development.

[Note: This course graded as CR/NCR. Offered: F, S]

Prereq: Level at least 2B Computer Engineering or Electrical Engineering

ECE 201 SEM 0.00

Course ID: 009234

Information Session

Scheduled, non-credit session to provide information to electrical and computer engineering students. [Offered: F, W]

Prereq: Level at least 2A Computer Engineering or Electrical Engineering

ECE 202 SEM 0.00

Course ID: 009235

Information Session

Scheduled, non-credit session to provide information to electrical and computer engineering students. [Offered: F, S, first offered Spring 2019]

Prereq: Level at least 2B Computer Engineering or Electrical Engineering

ECE 203 LEC,TUT 0.50

Course ID: 015629

Probability Theory and Statistics 1

Ensemble model of randomness. Conditional probability, independence, and Bayes' theorem. Random variables, probability distribution functions. Expected values. Collections of random variables, joint and marginal probability distributions, and correlation. Introduction to random processes. [Offered: F, S, first offered Spring 2020]

Prereq: ECE 103, (ECE 205 or MATH 211), MATH 119; Level at least 2B Computer or Electrical Engineering.

Antireq: ECE 306, 316

ECE 204 LEC,TUT 0.50

Course ID: 004752

Numerical Methods

Application of computational methods to engineering problems. Number systems, errors and error propagation. Roots of nonlinear equations. Introduction to numerical linear algebra. Interpolation and numerical integration. Introduction to numerical solutions of ordinary differential equations, optimization. Emphasis will be placed on algorithm development. [Offered: F, W]

Prereq: Level at least 2A Computer Engineering or Electrical Engineering.

Antireq: AMATH 342, CS 370, 371, ECE 204A, 204B, MTE 204

ECE 204A LAB 0.25

Course ID: 014941

Numerical Methods 1

Application of computational methods to engineering problems. Number systems, errors and error propagation. Roots of nonlinear equations. Introduction to numerical linear algebra. Interpolation and numerical integration. [Offered: F, W]

Department Consent Required

Prereq: Level at least 2A Computer Engineering or Electrical Engineering.

Antireq: ECE 204

ECE 204B LAB 0.25

Course ID: 014942

Numerical Methods 2

Application of computational methods to engineering problems. Introduction to numerical solutions of ordinary differential equations, optimization. [Offered: F, S]

Department Consent Required

Prereq: Level at least 2B Computer Engineering or Electrical Engineering.

Antireq: ECE 204

ECE 205 LEC,TST,TUT 0.50

Course ID: 006891

Advanced Calculus 1 for Electrical and Computer Engineers

Fourier series. Ordinary differential equations. Laplace transform. Applications to linear electrical systems. [Offered: F,W]

Prereq: 2A Electrical Engineering or Computer Engineering
(Cross-listed with MATH 211)

ECE 206 LEC,TST,TUT 0.50

Course ID: 006892

Advanced Calculus 2 for Electrical Engineers

Triple integrals, cylindrical and spherical polar coordinates. Divergence and curl, applications. Surface integrals, Green's, Gauss' and Stokes' theorems, applications. Complex functions, analytic functions, contour integrals, Cauchy's integral formula, Laurent series, residues. [Offered: F,S]

Prereq: 2B Electrical Engineering or Computer Engineering
(Cross-listed with MATH 212)

ECE 207 LEC,TUT 0.50

Course ID: 013171

Signals and Systems

Discrete, continuous and periodic signals, time- and frequency-domain analysis of continuous- and discrete-time linear systems, periodic signals and Fourier series, non-periodic signals and Fourier transforms. [Offered: F, S]

Prereq: (ECE 140, 240; Level at least 2B Computer Engineering or Electrical Engineering) or (ECE 140, MATH 213; Level at least 3A Software Engineering)

ECE 208 LEC,PRJ,TUT 0.50

Course ID: 015300

Discrete Mathematics and Logic 2

Formal logics, methods, and associated tools, and their uses in specifying, synthesizing, and verifying computing systems. Predicate logic. Temporal logic. Relational logic. Set theory. Proof theory. Model theory. Graph theory. Formal models of computation. Applications in computer and software engineering. [Offered: F, S, first offered Spring 2019]

Prereq: ECE 108; Level at least 2B Computer Engineering or Electrical Engineering.

Antireq: CS 245, SE 212

ECE 209 LAB,LEC,TUT 0.50

Course ID: 004754

Electronic and Electrical Properties of Materials

Review of wave-particle duality, basic quantum mechanics, Schrodinger equation, energy bands in crystals, basic properties of semiconductors, intrinsic and doped semiconductors, electrons and holes, metals and alloys, superconductivity, phonons and heat capacity, dielectric materials, optical properties, dielectric properties and magnetic properties of materials. [Offered: F, S]

Prereq: (ECE 105, 106) or PHYS 125; Level at least 2B Computer Engineering or Electrical Engineering or Software Engineering

ECE 222 LAB,LEC,TUT 0.50

Course ID: 004755

Digital Computers

Computer organization. Memory units, control units, I/O operations. Assembly language programming, translation and loading. Arithmetic logic units. Computer case studies. [Offered: F, W]

Prereq: ECE 124; (CS 125 or 135 or 137 or ECE 150); Level at least 2A Computer Engineering or Electrical Engineering or Software Engineering or Computer Science/Digital Hardware Option

ECE 224 LAB,LEC,TUT 0.50

Course ID: 013172

Embedded Microprocessor Systems

Microprocessor system architecture, bus systems, memory systems, peripherals, parallel interfaces, serial interfaces, analog interfaces, data transfer, synchronization, error detection/correction, testing and debugging. [Offered F, W, S]

Prereq: (ECE 124, 222; Level at least 2B Computer Engineering or 2B Electrical Engineering) or (ECE 124, 222; Level at least 3A Software Engineering).

Antireq: MTE 325

ECE 240 LAB,LEC,TUT 0.50

Course ID: 013173

Electronic Circuits 1

Introduction to electronic signal processing; operational amplifier circuits; diode device and circuits; MOS (metal-oxide semiconductor) and bipolar amplifier biasing networks; load-line analysis; diode, MOS and bipolar small-signal equivalent circuits; single-stage small-signal MOS and bipolar amplifiers; transistor switches. [Offered: F, W]

Prereq: ECE 106, 140, MATH 119; Level at least 2A Computer Engineering or Electrical Engineering.

Coreq: (ECE 205 or MATH 211)

ECE 242 LAB,LEC,TUT 0.50

Course ID: 013174

Electronic Circuits 2

Electronic circuits and their limitations, including: differential pairs, biasing, the cascode configuration and active loads. Differential and multistage amplifiers. Feedback, stability and compensation. CMOS logic circuits. [Offered: F, S]

Prereq: ECE 240, (ECE 205 or MATH 211); Level at least 2B Computer Engineering or Electrical Engineering.

Coreq: ECE 207.

Antireq: ECE 340

ECE 250 LAB,LEC,TUT 0.50

Course ID: 004759

Algorithms and Data Structures

Data structures, abstract data types, recursive algorithms, algorithm analysis, sorting and searching, and problem-solving strategies. [Offered: F,W]

Prereq: Level at least 2A Computer Engineering or Electrical Engineering.

Antireq: CS 234, 240, 341, SE 240

ECE 252 LAB,LEC,TUT 0.50

Course ID: 015301

Systems Programming and Concurrency

Processes and threads (pthreads); system calls; concurrency (semaphore, mutex, monitors, and barrier synchronization); user-level memory management. Performance and correctness of concurrent systems. Deadlock detection and recovery; file systems. [Offered: F, S, first offered Spring 2019]

Prereq: ECE 250; Level at least 2B Computer Engineering or Electrical Engineering.

Antireq: CS 343, 350, ECE 254, SE 350

ECE 254 LAB,LEC,TUT 0.50

Course ID: 013175

Operating Systems and Systems Programming

Concepts of operating systems and systems programming; utility programs, subsystems, multiple-program systems; processes, interprocess communication, synchronization, and concurrency; memory management, segmentation, and paging; loading and linking, libraries; resource allocation, scheduling, performance evaluation; I/O systems, storage devices, file systems; protection, security, and privacy. [Offered: F, S]

Prereq: ECE 103, 150, 155, 250; Level at least 2B Computer Engineering or Electrical Engineering.

Antireq: CS 343, 350, MTE 241, SE 350

ECE 260 LAB,LEC,TUT 0.50

Course ID: 015302

Electromechanical Energy Conversion

Power systems and their fundamental components and models. Introduction to the principles of electromechanical energy conversion, including transformers and rotating machines, in particular (direct current) dc, induction and synchronous machines. [Offered: F, S, first offered Spring 2019]

Prereq: ECE 160; Level at least 2B Computer Engineering or Electrical Engineering.

Antireq: ECE 261, 361, ME 269, MTE 320

ECE 290 LEC,TUT 0.50

Course ID: 013176

Engineering Profession, Ethics, and Law

An introduction to engineering law and ethics: ethical theories, code of ethics and misconduct, whistle blowing, conflict of interest, health and safety, diversity, workplace equity and sexual harassment, environment, Charter of Rights and Freedoms, torts, contract, and intellectual property. Continuation of studies of professional practice: history, Professional Engineers Act and Regulation, licensing, discipline and enforcement. [Offered: F, W]

Prereq: Level at least 2A Computer Engineering or Electrical Engineering.

Antireq: AFM 231/LS 283, BUS 231W, CIVE 491, COMM 231, ENVS 201, GENE 411, ME 401, MTHEL 100, PD 22

ECE 298 LAB 0.25

Course ID: 015293

Instrumentation and Prototyping Laboratory

Practical aspects of analog and digital instrumentation. Prototyping such as printed circuit board design and manufacture.

[Offered: F, S, first offered Spring 2019]

Prereq: Level at least 2B Computer Engineering or Electrical Engineering

ECE 300s

ECE 300A SEM 0.10

Course ID: 013162

Electrical and Computer Engineering Practice

Areas of research and professional practice in Electrical and Computer Engineering. Exposure to concepts from other Engineering disciplines. Support material for the academic term, co-operative education, and professional or career development.

[Note: This course graded as CR/NCR. Offered W, S]

Prereq: Level at least 3A Computer Engineering or Electrical Engineering

ECE 300B SEM 0.10

Course ID: 013163

Electrical and Computer Engineering Practice

Areas of research and professional practice in Electrical and Computer Engineering. Exposure to concepts from other Engineering disciplines. Support material for the academic term, co-operative education, and professional or career development.

[Note: This course graded as CR/NCR. Offered F, W]

Prereq: Level at least 3B Computer Engineering or Electrical Engineering

ECE 301 SEM 0.00

Course ID: 009236

Information Session

Scheduled, non-credit session to provide information to electrical and computer engineering students. [Offered: W, S, first offered Winter 2020]

Prereq: Level at least 3A Computer Engineering or Electrical Engineering

ECE 302 SEM 0.00

Course ID: 009237

Information Session

Scheduled, non-credit session to provide information to electrical and computer engineering students. [Offered: F, W, first offered Fall 2020]

Prereq: Level at least 3B Computer Engineering or Electrical Engineering

ECE 306 LEC,TUT 0.50

Course ID: 015294

Probability Theory and Statistics

Ensemble model of randomness. Conditional probability, independence, and Bayes' theorem. Random variables, probability distribution functions. Expected values. Collections of random variables, joint and marginal probability distributions, and correlation. Introduction to Statistics. Confidence intervals. Estimation. Chi-squared test. p-values. [Offered: W, S, first offered Winter 2020]

Prereq: ECE 103, (ECE 205 or MATH 211), MATH 119; Level at least 3A Computer Engineering or Electrical Engineering.

Antireq: ECE 316

ECE 307 LEC,TUT 0.50

Course ID: 015630

Probability Theory and Statistics 2

This course provides in depth knowledge of statistics motivated by electrical and computer engineering applications. Use of modern statistical software tools is introduced. Topics include sufficient statistics, exponential families, hypothesis testing, error estimation, confidence intervals, chi-square tests, analysis of variance, regression, correlation, decision theory, and Bayesian and non-Bayesian statistics. [Offered: F, W, first offered Fall 2021]

Prereq: ECE 203; Level at least 3B Computer or Electrical Engineering.

Antireq: STAT 330, 331, 332

ECE 309 LEC,TST,TUT 0.50

Course ID: 004767

Introduction to Thermodynamics and Heat Transfer

Macroscopic approach to energy analysis. Energy transfer as work and heat, and the First Law of thermodynamics. Properties and states of simple substances. Control-mass and control-volume analysis. The essence of entropy, and the Second Law of thermodynamics. The Carnot cycle and its implications for practical cyclic devices. Introduction to heat transfer by conduction, convection, and radiation. Basic formulation and solution of steady and transient problems. Issues relevant to the cooling of electrical devices. [Offered: W,S]

Prereq: MTE 202, 203; Level at least 3A Mechatronics Engineering.

Antireq: ME 250, SYDE 381

(Cross-listed with MTE 309)

ECE 316 LEC,TUT 0.50

Course ID: 004768

Probability Theory and Statistics

Ensemble model of randomness. Conditional probability, independence, and Bayes' theorem. Random variables, probability distribution functions. Expected values. Collections of random variables, joint and marginal probability distributions, and correlation. Introduction to Statistics. Confidence intervals. Estimation. Chi-squared test. p-values. [Offered: W, S]

Prereq: ECE 103, (ECE 205 or MATH 211), MATH 119; Level at least 3A Computer Engineering or Electrical Engineering.

Antireq: ECE 306

ECE 318 LAB,LEC,TUT 0.50

Course ID: 004769

Analog and Digital Communications

Introduction to random processes, power spectral density. Thermal noise and the white noise model. Amplitude and angle modulation, generation and detection schemes. Sampling and reconstruction, quantization. Digital baseband transmission. Overview of digital passband communications. [Offered: F, W]

Prereq: ECE 207, 306, (ECE 205 or MATH 211); Level at least 3B Computer Engineering or Electrical Engineering

ECE 320 LAB,LEC,TUT 0.50

Course ID: 015295

Computer Architecture

Organization and performance of uniprocessors, pipelined processors, dynamically scheduled processors, parallel processors and multiprocessors; memory and cache structures; multiprocessor algorithms and synchronization techniques;

special-purpose architectures. [Offered: F, W, first offered Fall 2020]

Prereq: CS 354 or ECE 222; Level at least 3B Computer Engineering or Electrical Engineering or Software Engineering or Computer Science/Digital Hardware Option.

Antireq: ECE 429

ECE 327 LAB,LEC,TST,TUT 0.50

Course ID: 004786

Digital Hardware Systems

Design and modelling of digital hardware systems using a hardware description language. Development process. Impact of implementation technologies. Performance analysis and optimization. Functional verification. Timing analysis. Power analysis and optimization. Faults and testability. Reliability and fault tolerance.[Offered: W, S]

Prereq: (ECE 222 or MTE 241); (ECE 224 or MTE 325); (ECE 124 or MTE 262 or SE 141); Level at least 3A Computer Engineering or Electrical Engineering or Mechatronics Engineering or Software Engineering or Computer Science/Digital Hdw Op

ECE 331 LAB,LEC,TUT 0.50

Course ID: 013177

Electronic Devices

Review of band theory and doped semiconductors in thermal equilibrium, charge neutrality, mass action law, recombination and transport mechanisms, Boltzmann relations. Device theory and modelling of p-n junction diode and derivation of dc and ac characteristics, charge storage effects. Principles, device theory and modelling of Metal-Oxide Semiconductor Field-Effect Transistors (MOSFETs) and the derivation of threshold voltage, dc current characteristics, small signal ac models. Principles of Bipolar transistor and derivation of dc and ac terminal characteristics, equivalent circuits. [Offered: F, W]

Prereq: ECE 209; Level at least 3B Computer Engineering or Electrical Engineering.

Antireq: NE 242

ECE 340 LAB,LEC,TUT 0.50

Course ID: 015296

Electronic Circuits 2

Electronic circuits and their limitations, including: differential pairs, biasing, the cascode configuration and active loads. Differential and multistage amplifiers. Feedback, stability and compensation. Complementary metal-oxide semiconductor (CMOS) logic circuits. [Offered: W, S, first offered Winter 2020]

Prereq: Level at least 3A Computer Engineering or Electrical Engineering.

Antireq: ECE 242

ECE 350 LAB,LEC,TUT 0.50

Course ID: 015297

Real-Time Operating Systems

Memory/virtual memory and caching; I/O devices, drivers, and permanent storage management; process scheduling; queue management in the kernel; real-time kernel development. Aspects of multi-core operating systems. [Offered: F, W, first offered Fall 2020]

Prereq: ECE 252; Level at least 3B Computer Engineering or Electrical Engineering.

Antireq: CS 350, ECE 254, SE 350

ECE 351 LAB,LEC,TUT 0.50

Course ID: 013178

Compilers

Programming paradigms, compilation, interpretation, virtual machines. Lexical analysis, regular expressions and finite automata. Parsing, context-free grammars and push-down automata. Semantic analysis, scope and name analysis, type checking. Intermediate representations. Control flow. Data types and storage management. Code generation. [Offered: W, S]

Prereq: ECE 150, 208, 250; Level at least 3A Computer Engineering or Electrical Engineering

ECE 356 LAB,LEC,TST,TUT 0.50

Course ID: 013179

Database Systems

Data models, file systems, database system architectures, query languages, integrity and security, database design. [Offered: F, W]

Prereq: ECE 208, ECE 250; Level at least 3B Computer Engineering or Electrical Engineering.

Antireq: CS 348/448

ECE 358 LAB,LEC,TUT 0.50

Course ID: 013180

Computer Networks

This course is a comprehensive introduction to computer networks. The focus is on the concepts, the protocols, and the fundamental design principles that have contributed to the success of the Internet. Topics include: history of the Internet, transmission media and technologies, switching and multiplexing, protocols and layering, wired and wireless LAN (local-area networks), congestion/flow/error control, routing, addressing, internetworking (Internet) including TCP (transmission control protocol). [Offered: F, W, S]

Prereq: (ECE 222, 203; Level at least 3B Computer Engineering or Electrical Engineering) or (ECE 222, STAT 206; Level at least 3A Software Engineering)

ECE 360 LAB,LEC,TUT 0.50

Course ID: 015298

Power Systems and Smart Grids

Fundamentals of power systems, analysis techniques including power flow and symmetrical fault analyses, and the basics of distribution systems and smart grids. [Offered: F, W, first offered Fall 2020]

Prereq: ECE 260; Level at least 3B Computer Engineering or Electrical Engineering.

Antireq: ECE 361, 362

ECE 361 LAB,LEC,TUT 0.50

Course ID: 013181

Power Systems and Components

This course is an introduction to basic modeling and analysis techniques in electricity generation, transmission and distribution, including basic concepts in nonlinear system analysis. Functional descriptions and modeling of generators, transformers, transmission lines, motors and other loads are discussed. Power flow analysis techniques are studied in detail, from the basic equations to their use in power networks. Fault analysis and basic protection concepts are also discussed. [Offered: F, W]

Prereq: ECE 106, 140; Level at least 3B Computer Engineering or Electrical Engineering.

Antireq: ECE 260, 360

ECE 373 LAB,LEC,TST,TUT 0.50

Course ID: 015299

Radio Frequency and Microwave Circuits

Review of transmission line and scattering matrix representation of radiofrequency (RF) circuits, multiport RF networks, modern RF and microwave planar technology, lumped and distributed microstrip circuits, microwave couplers, Hybrids, resonators, filters, Low-noise amplifiers (LNAs), RF oscillators and mixers, computer-aided design (CAD) tools for RF circuits, Hybrid and monolithic RF circuits. [Offered: F, W, first offered Fall 2020]

Prereq: ECE 375 and (ECE 206 or MATH 212); Level at least 3B Computer Engineering or Electrical Engineering.

Antireq: ECE 473

ECE 375 LAB,LEC,TST,TUT 0.50

Course ID: 013187

Electromagnetic Fields and Waves

Maxwell's equations; plane waves; time-harmonic fields; waves at planar boundaries; boundary conditions; reflection and transmission; transmission lines; electric fields in matter; magnetic fields in matter. [Offered W, S]

Prereq: ECE 106, (ECE 206 or MATH 212); Level at least 3A Computer Engineering or Electrical Engineering

ECE 380 LAB,LEC,TUT 0.50

Course ID: 004779

Analog Control Systems

Introduction to control systems. Advantages of closed-loop feedback systems. The role of the system mathematical model. Block diagrams and signal flow graphs. The basic control system design problem, stability in control systems. Frequency response analysis techniques. Root-locus analysis. Elementary lead-lag compensation. [Offered: W, S]

Prereq: (ECE 207; Level at least 3A Computer Engineering or Electrical Engineering) or (MATH 213; Level at least 3A Software Engineering).

Antireq: ME 360, MTE 360, SE 380, SYDE 352

ECE 390 LEC,PRJ,TUT 0.50

Course ID: 013182

Engineering Design, Economics, and Impact on Society

Introduction to design-project management, the impact of technology on society and the environment, and engineering economics. [Offered: F, W]

Prereq: ECE 290; Level at least 3B Computer Engineering or Electrical Engineering

ECE 400s**ECE 400A SEM 0.10**

Course ID: 013164

Electrical and Computer Engineering Practice

Areas of research and professional practice in Electrical and Computer Engineering. Exposure to concepts from other Engineering disciplines. Support material for the academic term, co-operative education, and professional or career development.

[Note: This course graded as CR/NCR. Offered: S]

Prereq: Level at least 4A Computer Engineering or Electrical Engineering

ECE 400B SEM 0.10

Course ID: 013165

Electrical and Computer Engineering Practice

Areas of research and professional practice in Electrical and Computer Engineering. Exposure to concepts from other Engineering disciplines. Support material for the academic term, co-operative education, and professional or career development.

[Note: This course graded as CR/NCR. Offered: W]

Prereq: Level at least 4B Computer Engineering or Electrical Engineering

ECE 401 SEM 0.00

Course ID: 009238

Information Session

Scheduled, non-credit session to provide information to electrical and computer engineering students. [Offered: S, first offered Spring 2021]

Prereq: Level at least 4A Computer Engineering or Electrical Engineering

ECE 402 SEM 0.00

Course ID: 009239

Information Session

Scheduled, non-credit session to provide information to electrical and computer engineering students. [Offered: W, first offered Winter 2022]

Prereq: Level at least 4B Computer Engineering or Electrical Engineering

ECE 403 LEC,TUT 0.50

Course ID: 015303

Thermal Physics

Temperature and thermodynamic equilibrium. Work, internal energy and heat; first law, with examples. Kinetic theory of gases. Basic probability theory. Microscopic states and entropy. Absolute temperature, reversibility and the second law. Thermodynamic Functions and Maxwell's relations. Phase transitions. Third Law. Other applications of thermodynamics. [Offered: F, S]

Prereq: (ECE 105, 106) or (PHYS 112 or 122); (ECE 205 or MATH 211) or ((MATH 227 or 237 or 247) and (MATH 228 or AMATH 250)).

Antireq: CHEM 254, ECE/MTE 309, ME 250, 354, PHYS 358, SYDE 381

ECE 404 LEC,TUT 0.50

Course ID: 015304

Geometrical and Physical Optics

Electromagnetic waves and the nature of light. Geometrical optics, aberrations. Physical Optics: interference, Fraunhofer and Fresnel diffraction, polarization. Optical instruments. [Offered: F, W]

Prereq: (One of PHYS 112, 122) or (ECE 105, 106); (One of MATH 108, 119, 128, 138, 148).

Antireq: PHYS 226, 246, 256

ECE 405 LEC,TUT 0.50

Course ID: 015305

Introduction to Quantum Mechanics

Introduction to quantization, wave-particle duality and the uncertainty principle. The Schroedinger equation and solvable examples. Topics include stationary states of particle-in-a-box, harmonic oscillator and the hydrogen atom. Quantization of angular momentum and spin. Introduction to approximation methods including time-independent perturbation theory. Modern applications of quantum mechanics. [Offered: W]

Prereq: ECE 105, 106, MATH 117, (ECE 205 or MATH 211).

Antireq: AMATH 373, CHEM 356, NE 232, PHYS 233, 234

ECE 406 LAB,LEC,TUT 0.50

Course ID: 010053

Algorithm Design and Analysis

Design and analysis of efficient, correct algorithms. Advanced data structures, divide-and-conquer algorithms, recurrences, greedy algorithms, dynamic programming, graph algorithms, search and backtrack, inherently hard and unsolvable problems, approximation and randomized algorithms, and amortized analysis. [Offered: W]

Prereq: Level at least 4A Computer Engineering or Electrical Engineering or Software Engineering.

Antireq: CS 341, 466, SYDE 423

ECE 409 LEC,TUT 0.50

Course ID: 010055

Cryptography and System Security

Introduction to cryptology and computer security, theory of secure communications, points of attack, conventional cryptographic systems, public key cryptographic systems, standards, firewalls, wireless system security, applications.

[Offered: W]

Prereq: ECE 358; Level at least 4A Computer Engineering or Electrical Engineering or Software Engineering.

Antireq: CO 485, 487, CS 458

ECE 413 LEC,PRJ,TUT 0.50

Course ID: 004784

Digital Signal Processing

Fourier representations in discrete and continuous time. Discrete Fourier transform and fast Fourier transform algorithms. Sampling theory. Sampling and quantization errors. Transform analysis of linear time-invariant systems. Filter design. Discrete Hilbert transform. Introduction to filter banks and discrete wavelet transform. [Offered: S]

Prereq: (Level at least 4A Computer Engineering or Electrical Engineering) or (MATH 213, STAT 206; Level at least 3B Software Engineering)

ECE 414 LEC,TUT 0.50

Course ID: 004785

Wireless Communications

Overview of wireless communications including standards. Characterization of mobile radio propagation channels. Signal representations. Transmission and reception techniques for wireless channels. Fundamentals of cellular communications and multiple-access schemes. [Offered: S]

Prereq: ECE 306, 318, Level at least 4A Computer Engineering or Electrical Engineering

ECE 415 LEC,PRJ,TUT 0.50

Course ID: 013431

Multimedia Communications

Overview of multimedia communications system, digital representation of multimedia signals, introduction to multimedia coding theory, entropy, rate distortion function, Huffman coding, arithmetic coding, run-length coding, Lempel-Ziv coding, quantization, Lloyd-Max algorithm, JPEG (Joint Photographic Experts Group) compression, hybrid video coding, MPEG (Moving Picture Experts Group) 4 and H.264 coding standards, HEVC (High Efficiency Video Coding), rate control, RTP (Real-time Transport Protocol), error control coding, unequal error protection, error concealment, multimedia security, watermarking. [Offered: W]

Prereq: Level at least 4A Computer Engineering or Electrical Engineering or Biomedical Engineering or Mechatronics Engineering or Nanotechnology Engineering or Software Engineering or Systems Design Engineering

ECE 416 LAB,LEC,TST,TUT 0.50

Course ID: 013432

Advanced Topics in Networking

This course introduces advanced topics in networking with a focus on applications and wireless technologies. Topics include: Cellular networks (2G, 3G, 4G and beyond), applications (Domain Name System [DNS], Simple Mail Transfer Protocol [SMTP], Post Office Protocol [POP], Internet Message Access Protocol [IMAP], Hypertext Transfer Protocol [HTTP]) and socket programming, Content-centric networks (content delivery networks, peer-to-peer protocols, data centers, etc.), protocols for multimedia applications (Session Initiation Protocol [SIP], Real-time Transport Protocol [RTP], RTP Control Protocol [RTCP]), emerging technologies (Internet of Things, sensors, software defined networks), policy issues (network neutrality, who controls the Internet?). [Offered W]

Prereq: ECE 358, Level at least 4A Computer Engineering or Electrical Engineering or Software Engineering.

Antireq: CS 456

ECE 417 LEC,PRJ,TUT 0.50

Course ID: 013433

Image Processing

This course introduces the basic theories and methodologies of digital image processing. Topics include intensity transformations for image enhancement, two-dimensional discrete Fourier transform, spatial and frequency domain linear image filtering, nonlinear image filtering, binary image processing, edge detection, image segmentation, and digital video

processing basics. [Offered: W]

Prereq: (Level at least 4A Computer Engineering or Electrical Engineering) or (ECE 207; Level at least 4A Software Engineering).

Antireq: SYDE 575

ECE 418 LEC,TUT 0.50

Course ID: 010125

Communications Networks

Introduction to communications networks. Network architecture. Probabilistic description of network Queuing analysis. Packet transmission and error control. Dynamic routing. Media access control. Connection admission and congestion control. Design tradeoffs and performance evaluation. Application examples. [Offered: S]

Prereq: Level at least 4A Computer Engineering or Electrical Engineering or Software Engineering

ECE 423 LAB,LEC,TST,TUT 0.50

Course ID: 013435

Embedded Computer Systems

Specification and design of embedded systems, specification languages, hardware/software co-design, performance estimation, co-simulation, verification, validation, embedded architectures, processor architectures and software synthesis, system-on-a-chip paradigm, retargetable code generation and optimization, verification and validation, environmental issues and considerations. [Offered: W]

Prereq: (ECE 254 or SE 350), (ECE 224 or MTE 325), ECE 327; Level at least 4A Computer Engineering or Electrical Engineering or Software Engineering.

Antireq: SYDE 524

ECE 429 LAB,LEC,TUT 0.50

Course ID: 004788

Computer Architecture

Organization and performance of conventional uniprocessors, pipelined processors, parallel processors and multiprocessors; memory and cache structures; multiprocessor algorithms and synchronization techniques; special-purpose architectures. [Offered: S]

Prereq: One of CS 354, ECE 254, SE 350; Level at least 4A Computer Engineering or Electrical Engineering or Software Engineering or Computer Science/Digital Hardware Option.

Antireq: ECE 320

ECE 432 LAB,LEC,TST,TUT 0.50

Course ID: 013436

Radio Frequency Integrated Devices and Circuits

An introduction to the theory and practice of Radio Frequency (RF) Integrated Circuit design. Physics and modelling of RF integrated components such as resistor, inductor, capacitor (RLC) passives, diodes, metal oxide semiconductor field-effect transistors (MOSFETs), high electron mobility transistors, hetero-junction bipolar transistors. RF integrated components properties and representation such as short channel effects, noise parameters, transit frequency (ft), maximum frequency of oscillation (fmax), and quality factor.[Offered: S]

Prereq: (ECE 242 or 340); Level at least 4A Computer Engineering or Electrical Engineering

ECE 433 LAB,LEC,TST,TUT 0.50

Course ID: 013437

Fabrication Technologies for Micro and Nano Devices

Processes for Micro and Nano electronic fabrication. Semiconductor crystal growth. Thin films by chemical and physical vapor deposition. Epitaxial growth. Plasma-assisted and wet-chemical etch processes. Nano-structured material synthesis. Junction formation. Dielectric layer growth. Photolithography. Patterning on the nano-scale. Fabrication processes for Transistors, complementary metal-oxide semiconductor (CMOS), and Thin film devices. Micro-electro-mechanical systems (MEMS) technology. Process techniques for Nanoelectronic devices. [Offered: W]

Prereq: ECE 209, 331; Level at least 4A Computer Engineering or Electrical Engineering.

Antireq: NE 343

ECE 444 LAB,LEC,TST,TUT 0.50

Course ID: 013438

Integrated Analog Electronics

Analog electronics exploits the physical behaviour of electronic devices to create electronic systems. The performance of single and multiple transistor amplifying stages are studied. Followed by a study of biasing, current mirror and output stages, which are then combined in the study of operational amplifier circuits. Frequency response and feedback are then reviewed leading to a detailed study of stability and compensation for multistage and operational amplifiers. The course finishes with a look at selected topics from A/D (analog-to-digital) converters, oscillators and phase-locked loops. [Offered: W]

Prereq: (ECE 242 or 340); Level at least 4A Computer Engineering or Electrical Engineering

ECE 445 LAB,LEC,TST,TUT 0.50

Course ID: 013439

Integrated Digital Electronics

Review of the Metal-Oxide Semiconductor (MOS) transistor: Static and dynamic behavior, short channel effects, scaling trends, Simulation Program with Integrated Circuit Emphasis (SPICE) models. Complementary Metal-Oxide Semiconductor (CMOS) inverter; combinational CMOS circuit design - logic styles for low power, high performance circuits; sequential CMOS circuit design - flip-flops, pipelines, Schmitt trigger; CMOS arithmetic circuits; interconnect parasitic; clocking and timing considerations in digital Very Large Scale Integration (VLSIs). [Offered: S]

Prereq: Level at least 4A Computer Engineering or Electrical Engineering

ECE 451 LAB,LEC,TST,TUT 0.50

Course ID: 004413

Software Requirements Specification and Analysis

Introduces students to the requirements definition phase of software development. Models, notations, and processes for software requirements identification, representation, analysis, and validation. Cost estimation from early documents and specifications.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: F,W]

Prereq: ECE 250; Level at least 3A Computer Engineering or Electrical Engineering.

Antireq: SE 463

(Cross-listed with CS 445)

ECE 452 LAB,LEC,TST,TUT 0.50

Course ID: 004414

Software Design and Architectures

Introduces students to the design, implementation, and evolution phases of software development. Software design processes, methods, and notation. Implementation of designs. Evolution of designs and implementations. Management of design activities.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: W,S]

Prereq: ECE 250; Level at least 3A Computer Engineering or Electrical Engineering.

Antireq: CS 430, SE 464

(Cross-listed with CS 446)

ECE 453 LAB,LEC,TST,TUT 0.50

Course ID: 004416

Software Testing, Quality Assurance and Maintenance

Introduces students to systematic testing of software systems. Software verification, reviews, metrics, quality assurance, and prediction of software reliability and availability. Related management issues.

[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work. Offered: W]

Prereq: ECE 250; Level at least 3A Computer Engineering or Electrical Engineering.

Antireq: SE 465

(Cross-listed with CS 447)

ECE 454 LAB,LEC,TUT 0.50

Course ID: 004801

Distributed Computing

Principles of distributed computing; architectures and middleware; servers, processes, and virtualization; upper-layer network protocols, interprocess communication and remote procedure calling; concurrency, synchronization and distributed algorithms, dependable distributed systems and fault tolerance. [Offered: S]

Prereq: (ECE 252 or SE 350); Level at least 4A Computer Engineering or Electrical Engineering or Software Engineering.

Coreq: ECE 358 Software Engineering only.

Antireq: CS 454, 654

ECE 455 LAB,LEC,TST,TUT 0.50

Course ID: 004802

Embedded Software

Concepts, theory, tools, and practice to understand, design, and write embedded software. This course covers computing elements, structures in embedded software, resource access protocols, uniprocessor scheduling, programming-language support, languages for MDD (model-driven development), worst-case execution time analysis, and overview of embedded distributed systems. [Offered: S]

Prereq: ECE 350 or SE 350; Level at least 4A Electrical Engineering or Computer Engineering or Software Engineering

ECE 457A LEC,TST,TUT 0.50

Course ID: 013441

Cooperative and Adaptive Algorithms

The course starts by addressing the ill-structured problems and need for computational intelligence methods. It introduces the concepts of heuristics and their use in conjunction with search methods, solving problems using heuristics and metaheuristics, constraints satisfaction. The course also introduces the concepts of cooperation and adaptations and how they are influencing new methods for solving complex problems. The course starts by illustrating how the concepts of cooperation and adaptation are manifested in nature and how such models are inspiring new types of solutions methods. Topics to be covered include: search algorithms, game playing, constraints satisfaction, meta-heuristics, evolutionary computing methods, swarm intelligence, ant-colony algorithms, particle swarm methods, adaptive and learning algorithms and the use of these algorithms in solving continuous and discrete problems that arise in engineering applications. [Offered: S]

Prereq: Level at least 4A Computer Engineering or Electrical Engineering or Software Engineering.

Antireq: CS 486, SYDE 422/522

ECE 457B LEC,TST,TUT 0.50

Course ID: 013442

Fundamentals of Computational Intelligence

Introduces novel approaches for computational intelligence based techniques including: knowledge based reasoning, expert systems, fuzzy inferencing and connectionist modeling based on artificial neural networks. The focus is on the use of soft computing approaches to deal effectively with real world complex systems for which their mathematical or physical models are either non-tractable or are difficult to obtain. The main thrust is on designing computationally intelligent systems with human like capabilities in terms of reasoning, learning and adaptation. Tools of computational intelligence could be used in a wide range of engineering applications involving real world problems such as in: planning problems, intelligent control, autonomous robotics, speech understanding, pattern analysis, network design, face recognition, communication systems to name a few. [Offered: W]

Prereq: Level at least 4A Computer Engineering or Electrical Engineering or Mechatronics Engineering or Software Engineering or Systems Design Engineering.

Antireq: SYDE 558

ECE 458 LAB,LEC,TST,TUT 0.50

Course ID: 013443

Computer Security

Introduction to computer security. Models of security. Elementary cryptography. Software security, vulnerabilities, threats, defenses and secure-software development processes. Threats to networks and defenses. Security issues at the application layer. Secure design principles, techniques and security evaluation. Privacy, ethics and legal issues. [Offered: S]

Prereq: ECE 252 or SE 350; Level at least 4A Computer Engineering or Electrical Engineering or Software Engineering.

Antireq: CS 458

ECE 459 LAB,LEC,TST,TUT 0.50

Course ID: 013471

Programming for Performance

Profiling computer systems; bottlenecks, Amdahl's law. Concurrency: threads and locks. Techniques for programming multicore processors; cache consistency. Transactional memory. Streaming architectures, vectorization, and SIMD. High-performance programming languages. [Offered: W]

Prereq: ECE 252 or SE 350; Level at least 4A Electrical Engineering or Computer Engineering or Software Engineering

ECE 462 LAB,LEC,TST,TUT 0.50

Course ID: 013445

Electrical Distribution Systems

This course provides the students an understanding of the operation, analysis and design of electric power distribution systems, starting with estimation of the loads on the network to the detail design of the distribution system networks. The primary objective of the course is to provide students with the skills to understand the analytical and design methods and modern tools for solution of problems associated with electric distribution system engineering. [Offered: S]

Prereq: ECE 260 or ECE 361; Level at least 4A Computer Engineering or Electrical Engineering

ECE 463 LAB,LEC,TST,TUT 0.50

Course ID: 004806

Design & Applications of Power Electronic Converters

Principles of power conditioning. Switching characteristics of power semiconductor devices. Computer simulation of power electronic circuits. Analysis, design, and applications of power converters. [Offered: S]

Prereq: (ECE 260 or 361; Level at least 4A Comp or Elec Eng) or (MTE 120, 220, 320; Level at least 3B Mechtr Eng) or (ECE 240 or GENE 123; Level at least 4A Mech Eng/Mechtr Opt) or (SYDE 292,292L; Level at least 4A Sys Des Eng/Mechtr Opt)

ECE 464 LAB,LEC,TST,TUT 0.50

Course ID: 004807

High Voltage Engineering and Power System Protection

The course provides the fundamentals concepts of generation and measurements of high voltage ac, dc, and impulses. Briefly introduces the students to basic conduction and breakdown mechanisms of insulating materials. The scope of this course also includes understanding the basic protection system, studying the principles for protecting different elements and studying different technologies used in designing protective relays. Exposure to several state-of-art high voltage testing techniques of power system components will ensure that students have knowledge of the industrial solutions to the management of the problems associated with overvoltage and the protection mechanisms used. [Offered: W]

Prereq: ECE 260 or ECE 361; Level at least 4A Computer Engineering or Electrical Engineering

ECE 467 LAB,LEC,TUT 0.50

Course ID: 012581

Power Systems Analysis, Operations and Markets

This course provides a basic understanding of the main issues relevant to the operation, analysis and management of power grids, and gives an introduction to the functioning of electricity markets. The course covers the following main technical and economic issues relevant to system operators, utilities and analysts: power system economic operations; short-term operation of power systems; power flow; introduction to optimal power flows; overview of electricity markets; fault calculations; and

basic concepts in power system stability and control. [Offered: W]

Prereq: ECE 260 or ECE 361; Level at least 4A Computer Engineering or Electrical Engineering

ECE 473 LAB,LEC,TST,TUT 0.50

Course ID: 004810

Radio Frequency and Microwave Circuits

Review of transmission line and scattering matrix representation of radiofrequency (RF) circuits, multiport RF networks, modern RF and microwave planar technology, lumped and distributed microstrip circuits, microwave couplers, Hybrids, resonators, filters, Low-noise amplifiers (LNAs), RF oscillators and mixers, CAD tools for RF circuits, Hybrid and monolithic RF circuits. [Offered: S]

Prereq: ECE 375 and (ECE 206 or MATH 212); Level at least 4A Computer Engineering or Electrical Engineering.

Antireq: ECE 373

ECE 474 LAB,LEC,TST,TUT 0.50

Course ID: 004811

Radio and Wireless Systems

Modern transmitter and receiver architectures, Noise and linearity in radio and wireless systems, Design considerations of RF/microwave subsystems, radio and wireless system designs, CAD tools for radio and wireless systems, Antennas, Radio wave propagation models, Indoor radio, Satellite communication, Personal communication systems (PCSs). [Offered: W]

Prereq: ECE 375 and (ECE 206 or MATH 212); Level at least 4A Computer Engineering or Electrical Engineering

ECE 475 LAB,LEC,TUT 0.50

Course ID: 013188

Radio-Wave Systems

Review of Maxwell's equations and uniform plane waves. Electromagnetic wave propagation, reflection and transmission through different uniform media, metallic waveguides, multilayer structures, radiation theory, transmitting and receiving antenna, antenna arrays and applications, simple radio-wave propagation models, radio transmission systems and wireless networks. [Offered: S]

Prereq: ECE 375 and (ECE 206 or MATH 212); Level at least 4A Computer Engineering or Electrical Engineering

ECE 477 LAB,LEC,TUT 0.50

Course ID: 011045

Photonic Devices and Systems

Review of Maxwell's equations and electromagnetic plane waves, Dielectric waveguides, Optical fibers, lasers and photonic transmitters, Photodetectors and photonic receivers, optical amplifiers, and photonic systems and networks. [Offered: W]

Prereq: ECE 375 and (ECE 206 or MATH 212); Level at least 4A Computer Engineering or Electrical Engineering

ECE 481 LAB,LEC,TST,TUT 0.50

Course ID: 004813

Digital Control Systems

Performance specifications for design. Dynamic system modelling and basic system identification. Dealing with basic nonlinear effects. Sampled data systems. Discrete-time system stability and dynamic performance. Digital control system design: emulation methods, z-domain, frequency domain, pole placement. Implementation of digital controllers. [Offered: S]

Prereq: (ECE 380 or MTE 360 or SYDE 352; Level at least 4A Computer Engineering or Electrical Engineering or Systems Design Engineering) or (ECE 207, SE 380; Level at least 4A Software Engineering).

Antireq: ECE 484

ECE 484 LAB,LEC,TUT 0.50

Course ID: 011332

Digital Control Applications

Dynamic system modeling: linear, nonlinear, state-space, sample data systems, computer simulation, system identification. Discrete system stability and dynamic performance. Nonlinear system analysis, limit cycles. Digital control system design: emulation methods, z-domain, frequency domain, pole placement. Implementation of digital controllers. Laboratory projects in computer control of mechatronic and other systems. [Offered: F, W]

Prereq: (MTE 360; Level at least 4A Mechatronics Eng) or (ME 360; Mechanical Eng./Mechatronics Option) or (SYDE 352; Systems Design Eng/Mechtr Option).

Antireq: ECE 481

ECE 486 LAB,LEC,TUT 0.50

Course ID: 004816

Robot Dynamics and Control

Homogeneous transformations. Kinematics and inverse kinematics. Denavit-Hartenberg convention. Jacobians and velocity transformations. Dynamics. Path planning, nonlinear control. Compliance and force control. [Offered: S]

Prereq: (ECE 380; Level at least 4A Comp or Elect Eng) or (SE 380; Level at least 4A Software Eng) or (MTE 360; Level at least 4A Mechatronics Eng) or (ME 360; Level at least 4A Mech Eng/Mechtr Opt) or (SYDE 352; Level at least 4A Sys Design Eng)

.Antireq: ME 547

ECE 488 LEC,TUT 0.50

Course ID: 011333

Multivariable Control Systems

Review of feedback control design fundamentals; SISO controller parameterizations; the fundamental effect of MIMO interaction; introduction to state-space models in continuous and discrete time; SISO techniques for MIMO design; optimal control; model-predictive control design; state estimation; decoupling, MIMO PID control design; applications in areas such as aerospace systems. [Offered: W]

Prereq: (ECE 380; Level at least 4A Comp or Elect Eng) or (SE 380; Level at least 4A Software Eng) or (MTE 360; Level at least 4A Mechatronics Eng) or (ME 360; Level at least 4A Mech Eng/Mechtr Opt) or (SYDE 352; Level at least 4A Sys Design Eng)

ECE 493 LEC,TUT 0.50

Course ID: 010059

Special Topics in Electrical and Computer Engineering

Special courses on advanced topics will be offered from time to time, when resources are available. For current offerings, inquire at the ECE Undergraduate Office or check the ECE website.

[Note: Some offerings may include a laboratory component. Offered: W, S]

Department Consent Required

Prereq: Level at least 4A Computer Engineering or Electrical Engineering or Mechatronics Engineering or Nanotechnology Engineering or Software Engineering

ECE 498A PRJ,SEM 0.50

Course ID: 013183

Engineering Design Project

Team-oriented design-project which comprises a significant design experience based on the knowledge and skills acquired by students in previous courses and on co-operative work terms. Development of the design specification and plan documents, followed by the initial design work. [Offered: F, W, S]

Prereq: ECE 390; Level at least 4A Computer Engineering or Electrical Engineering.

ECE 498B PRJ,SEM 0.50

Course ID: 013184

Engineering Design Project

Completion of the design cycle started in ECE 498A and communication of the engineering design work. Submission of a written final report. Lecture-style technical presentation by group members. Poster-style technical presentation with group members available to discuss the project. [Offered: F, W, S]

Prereq: ECE 498A; Level at least 4B Computer Engineering or Electrical Engineering.

ECE 499 PRJ 0.50

Course ID: 010040

Engineering Project

An engineering project requiring the student to demonstrate initiative and assume responsibility. The student will arrange for a faculty supervisor prior to registration. Students can propose their own topic. A project report is required at the end of the term.

[Note: The project is approved by a departmental course coordinator. Offered: F, W, S]

Department Consent Required

Prereq: Level at least 4A Computer Engineering or Electrical Engineering

ECONOMICS

Notes

1. *Some of the courses listed are not offered in the current academic year. Up to date information on planned course offerings for each term is available on the department website.*
2. *Students who fail to select their courses during normal course selection periods may be unable to take a particular course in their term of preference.*

ECON 100s

ECON 100 LEC 0.50

Course ID: 014062

Principles of Economics

This course provides an introduction to the basic concepts and tools of micro and macro economic analysis of individuals, businesses, and government in the global world. Topics may include consumers, producers, market structures, national income accounting, unemployment, and inflation.

Prereq: Mathematics/Chartered Professional Accountancy only.

Antireq: ECON 101

(Cross-listed with COMM 103)

ECON 101 LEC,TST 0.50

Course ID: 004874

Introduction to Microeconomics

This course provides an introduction to microeconomic analysis relevant for understanding the Canadian economy. The behaviour of individual consumers and producers, the determination of market prices for commodities and resources, and the role of government policy in the functioning of the market system are the main topics covered.

Antireq: ECON 100/COMM103

Also offered Online

ECON 102 LEC,TST 0.50

Course ID: 004877

Introduction to Macroeconomics

This course introduces students to the measurement and behaviour of key macroeconomic variables both in Canada and around the world. Topics include national accounts, inflation, interest rates, wages, international balance of payments, business cycles, growth, employment, unemployment, poverty, and inequality.

Also offered Online

ECON 201 LEC 0.50

Course ID: 004885

Microeconomic Theory for Business and Policy

This course offers an introduction to the theory of market based economies. Topics include consumer choice, production, price and output under perfect and imperfect competition, price discrimination and two part pricing, vertical and horizontal firm boundaries and integration, and market structure.

Prereq: ECON 101 or ECON 100/COMM 103

ECON 206 LEC 0.50

Course ID: 015179

Money and Banking 1

This course offers an overview of the functioning of the financial system both in Canada and abroad. It includes discussions of money and inflation, financial assets, and financial institutions and intermediaries.

Prereq: ECON 101 or ECON 100/COMM 103; ECON 102.

Antireq: ECON 304

ECON 207 LEC 0.50

Course ID: 015180

Economic Growth and Development 1

This course offers an overview of the enormous differences in living standards across countries and over time, and it considers how these can be traced to differences in economic productivity, investment, population, natural resources, government, inequality, and culture.

Prereq: ECON 101 or ECON 100/COMM 103; ECON 102

ECON 211 LEC,TUT 0.50

Course ID: 004890

Introduction to Mathematical Economics

An introduction to mathematical techniques of particular use in economics. Topics include matrix algebra, differentiation, partial derivatives, optimization techniques including constrained optimization - all developed within the context of economic problems.

Prereq: ECON 101 or ECON 100/COMM103; one of MATH 104, 4U Advanced Functions, 4U Calculus and Vectors; Not open to students in the Faculty of Mathematics

ECON 212 LEC 0.50

Course ID: 015181

Introduction to Game Theory

Game theory analyzes the strategic interaction between agents. It has applications in various fields including economics, law, political science, biology, and computer science. This course introduces the basic tools of game theoretic analysis and examines applications such as auctions, business strategy, and curbing carbon emissions. The course includes an experiential learning component where students play strategic games against each other.

Prereq: ECON 101 or ECON 100/COMM 103; Level at least 2A.

Antireq: ECON 412, ECON 483 - Topic 16 (Special Topics in Game Theory)

ECON 220 LEC 0.50

Course ID: 004894

Entrepreneurship Principles and Practices

The role of the entrepreneur, the entrepreneurial firm, and the creative society are examined. Students are exposed to the practices that enable workplace creativity and innovation with exposure to leadership theory and project management.

Prereq: ECON 101 or ECON 100/COMM 103; Level at least 2A; Not open to Arts and Business students.

Antireq: ARBUS 200/201 taken prior to Fall 2013, ARBUS 200 taken after Fall 2013, ENBUS 203

ECON 221 LEC,TUT 0.50

Course ID: 004895

Statistics for Economists

This course introduces students to describing economic data and drawing inferences from features of economic data. Starting from fundamental axioms of probability, students will learn about the calculation of probabilities of basic events and the features of random variables, the most important tool for representing the outcomes of complex economic phenomena. Students will describe discrete and continuous random variables via their probability distributions and summary statistics such as means and standard deviations, as well as the relationships between two random variables in terms of covariance, correlation, and simple regression models. The concepts of hypothesis testing and confidence intervals, and the fundamentals of statistical inference are discussed for basic features of random variables and for comparing the features of more than one random variable. Prereq: ECON 101 or ECON 100/COMM 103; Not open to Math students. Coreq: ECON 211 or Science and Business students or Biotech/Chartered Accountancy students. Antireq: ARTS 280, ENVS 278, KIN 222, 232, PSCI 214/314, PSYCH 292, REC 371, SDS 250R, SMF 230, SOC/LS 280, STAT 202, 206, 211, 220, 230, 240, SWREN 250R

See course description for requisite requirements

ECON 231 LEC 0.50

Course ID: 004899

Introduction to International Economics

This course explores international trade in goods and services, as well as the international exchange of financial assets. Economic theories will be examined, which help explain how international transactions affect the world's economies. Topics include the theory of comparative advantage and the gains from trade, tariff theory, concepts and measurement of balance of payments, exchange rate systems, and the international monetary system.

Prereq: ECON 101 or ECON 100/COMM 103; ECON 102

ECON 241 LEC 0.50

Course ID: 015377

Introduction to Public Economics

This course examines the scope and level of government involvement in economic activity. The main focus is on historical trends and recent developments in the extent and composition of government spending, taxation, and regulation in developed nations. A secondary focus is to introduce the current policy debates in these areas.

Prereq: ECON 101 or ECON 100/COMM 103; ECON 102

ECON 254 LEC 0.50

Course ID: 014129

Economics of Sport

The course will develop fundamental economic concepts in the context of the sports industry. The course begins with an investigation of some of the primary aspects of the way that the sports industry is organized. The course then considers labour economics in the context of sport. Finally, the course examines the issues that arise with the introduction of various levels of government and/or regulatory bodies in the sports industry, looking at competition between cities for sports teams.

Prereq: ECON 101 or ECON 100/COMM 103

ECON 255 LEC 0.50

Course ID: 015182

Introduction to the Economics of Natural Resources

This course uses the theory and tools of economics to explore key problems in natural resource use and management. The meaning and implications of natural resource scarcity are explored, as well as how the insights of economics can be used to guide policies to promote a more sustainable path for our future. The course examines issues of economic efficiency and equity in specific resource sectors such as energy resources, fisheries, forestry, and water.

Prereq: ECON 101 or ECON 100/COMM 103.

Antireq: ECON 355

ECON 256 LEC 0.50

Course ID: 015183

Introduction to Health Economics

Why are some people healthy and others not? Why is health different from other goods and services? How do the many stakeholders interact in health care markets? Why do countries have different health care systems? This course introduces students to how the theories and tools of economics can be used when examining health, health care, and health care policies. Concepts such as supply and demand, uncertainty, and utility will be introduced in the context of health and health care markets. While international institutions may be discussed, the course will emphasize Canadian health care markets.

Prereq: ECON 101 or ECON 100/COMM 103

ECON 261 LEC 0.50

Course ID: 015088

Philosophy of Economics

This course considers conceptual, methodological, foundational, and ethical issues in economic theory and practice. Questions include: What can philosophy teach us about economic methodology and justification? Are economic formalizations useful idealizations of human behaviour? Is economics a science? What role do values play in economic reasoning and policy-making?

Antireq: PHIL 371 taken Winter 2014

(Cross-listed with PHIL 205)

ECON 262 LEC 0.50

Course ID: 015186

History of Economic Thought

This course studies approaches to economic problems in historical context. Authors examined may include Smith, Malthus, Ricardo, Marx, J.S. Mill, Walras, Marshall, Veblen, Keynes, Hayek, Aumann, Debreu, and Stiglitz.

Prereq: ECON 101 or ECON 100/COMM 103

ECON 290 LEC 0.50

Course ID: 015187

Models of Choice in Competitive Markets

Choice lies at the heart of all economic models. This course focuses on choice by consumers and firms. It explains the notion and use of utility functions and budgets, and shows how their interaction allows economists to make predictions about behaviour. The constrained maximization techniques from ECON 211 are used extensively, and extended to situations covering uncertainty (risk) and time. Profit maximization by firms is explored.

Prereq: ECON101 or ECON100/COMM103; ECON211 or one of MATH128,138,148; ECON221 or one of ARTS280, ENV278, KIN222,232, PSCI214/314, PSYCH292, REC371, SDS250R, SMF230, SOC/LS280, STAT202, 206,211,220,230,240, SWREN250R; or Math/FARM stdnts.

Antireq: ECON301,302

ECON 300s

ECON 301 LEC 0.50

Course ID: 004911

Microeconomic Theory 2

Pricing and employment of inputs; general equilibrium theory; theory of modern welfare economics with some applications; intertemporal choice.

Prereq: ECON 201; ECON 211 or (one of MATH 109, 116, 117, 127, 137, 147 and one of MATH 106, 115, 136, 146).

Antireq: ECON 290

ECON 302 LEC 0.50

Course ID: 004913

Macroeconomic Theory 2

An extension of the tools developed in Macroeconomic Theory 1 to analyse topics such as unemployment and inflation, government spending, finance, consumption, investment, growth, and the open economy.

Prereq: ECON 202; ECON 211, or (one of MATH 109, 116, 117, 127, 137, 147 and one of MATH 106, 115, 136, 146).

Antireq: ECON 290

ECON 306 LEC 0.50

Course ID: 015188

Macroeconomics

This course introduces students to the analysis of inter-temporal trade-offs in macroeconomics and macroeconomic policy. Its main objective is to show how economists use economic theory to analyze the role of incentives and general equilibrium considerations in the macro-economy. Applications include national savings and investment, business cycles, and monetary and fiscal policy.

Prereq: ECON 391

ECON 311 LEC 0.50

Course ID: 004921

Mathematical Economics

This course builds on and expands the material in ECON 211. Multi-variate calculus and optimization are covered in detail, with a focus on economic applications of the envelope theorem. The implicit function theorem and its uses in comparative statics are explored. Difference and differential equations and their application to dynamic models are introduced, culminating in an introduction to optimal control.

Prereq: ECON 201, 202, ECON 211; or ECON 391; Not open to students in the Faculty of Mathematics

ECON 321 LEC 0.50

Course ID: 004923

Introduction to Econometrics

An introductory course in the theory and practice of econometrics, focusing on multiple regression analysis and associated topics such as multicollinearity, heteroskedasticity and serial correlation. Simultaneous equation models will also be introduced. Computer assignments make up part of the course.

Prereq: ECON 221; or for Mathematics students ECON 101, 102 and one of STAT 221, 231, 241; or for Accounting students ECON 101, 102, STAT 211.

Antireq: ECON 290, 322, STAT 321, 331, 361, 371

ECON 322 LEC,TUT 0.50

Course ID: 015189

Econometric Analysis 1

This course covers the core topics needed to estimate linear models using ordinary least squares and to interpret estimates for cross-sectional data. Students will learn to interpret the coefficients of linear models for continuous and discrete regressors, to conduct reliable inference for different specifications of the error term, and to determine which model is the most suitable among the class of linear models. It concludes with an introduction to the method of instrumental variables. Students will be introduced to a statistical software package and will be required to complete regular computer-based assignments throughout the course that either: (i) simulate the statistical distribution of the least squares estimator under an assumed model; or (ii) estimate the parameters of an assumed model using a sample

of data from the real world.

Prereq: ECON 221; or for Mathematics students ECON 101, 102 or ECON 100/COMM 103 and one of STAT 220, 230, 240; or for Accounting students ECON 101, 102, STAT 211.

Antireq: ECON 321, STAT 221, 231, 241

ECON 323 LEC 0.50

Course ID: 015190

Econometric Analysis 2

This course covers the most important methods used in applied economics research beyond the least-squares estimator. It starts by exploring solutions to the endogeneity problem in detail, emphasizing proper ways of conducting causal inference. It extends the methods covered in ECON 322 to the case in which the data are observed over time. Students will learn how to estimate and interpret dynamic models and how these models affect our ability to do inference. The course also covers methods for data in which the response variable is either qualitative, with or without multiple levels, or count data. For that purpose, it introduces students to maximum likelihood estimation, and the estimation of models by probit, logit, and Poisson regressions. Assignments have the same data-based focus as in ECON 322.

Prereq: ECON 322.

Antireq: ECON 321, STAT 322, 324

ECON 332 LEC 0.50

Course ID: 004927

International Finance

An analysis of the main issues in international finance. Topics include international borrowing and lending, intertemporal gains from trade, current account and balance of trade movements, the determination of exchange rates and foreign exchange markets.

Prereq: ECON 201, 202 or ECON 201, 206 or ECON 206, 290.

Antireq: (For Mathematics students only) BUS 443W

ECON 341 LEC 0.50

Course ID: 004932

Public Economics: Expenditure

The course focuses on the rationale for government intervention in a market economy. The course begins with a consideration of market successes through the analysis of the first and second theorems of welfare economics. The course then considers market failures through an analysis of distributional issues, public goods, externalities, non-competitive market structures, and asymmetric information. Time permitting, some issues in the public economics of taxation may be covered.

Prereq: ECON 211; ECON 201 or 391

ECON 342 LEC 0.50

Course ID: 004934

Public Economics: Taxation

The course focuses on the public economics of taxation. Normative topics include the efficiency and distributional aspects of taxation and positive topics include the incentive effects of taxation and tax incidence. Time permitting, some issues in public expenditure theory may be covered.

Prereq: ECON 211; ECON 201 or 391

ECON 344 LEC 0.50

Course ID: 004936

Marketing 1: Principles of Marketing and Consumer Economics

Economic principles for marketing, exchange theory and consumer analysis, product or service introductions, public and private policies for advertising, differentiation, and quality assurance.

Prereq: ECON 101 or ECON 100/COMM 103; Level at least 2B.

Antireq: ENBUS 211/311, GBDA 304, BUS 352W

(Cross-listed with ARBUS 302)

ECON 345 LEC 0.50

Course ID: 015191

Marketing 2

Because firms exist to satisfy customer needs, a solid understanding of the consumer is needed for any successful marketing management. The course also considers how products, services, and consumption can have far-reaching social impacts.

Prereq: ECON 344/ARBUS 302 or ENBUS 211/311

(Cross-listed with ARBUS 303)

ECON 351 LEC 0.50

Course ID: 004939

Labour Economics

A study of the supply of labour by individuals (and unions) and the demand for labour by firms. Topics include the labour market effects of social assistance, unemployment insurance and minimum wages, discrimination in the labour market, efficient wage contracts, the determinants of wage inflation and unemployment.

Prereq: ECON 101 or ECON 100/COMM 103; ECON 102; Level at least 3A

ECON 355 LEC 0.50

Course ID: 004941

Economics of Energy and Natural Resources

An analysis of the economics of conservation, especially the adequacy of the market mechanism as an allocator of resource use over time. Issues concerning the economic behaviour of Canada's fishery, forest, fuel and nonfuel mineral industries will be considered.

Prereq: ECON 201

ECON 357 LEC 0.50

Course ID: 004942

Environmental Economics

Application of economic theory to problems of the environment, in particular, air, water, and land pollution. Emphasis is on the theory of the management of common property resources.

Prereq: ECON 201; or ECON 392, 393

ECON 361 LEC 0.50

Course ID: 004943

Cost-Benefit Analysis and Project Evaluation

Methods for evaluating private and public projects; decision rules, efficiency conditions, and methods of conducting cost-benefit analysis. Application of the technique.

Prereq: ECON 201 or 290; ECON 221 or one of ARTS 280, ENVS 278, KIN 222, 232, PSCI 214/314, PSYCH 292, REC 371, SDS 250R, SMF 230, SOC/LS 280, STAT 202, 206, 211, 220, 230, 240, SWREN 250R

Also offered Online

ECON 363 LEC 0.50

Course ID: 004944

The Economics of Social Problems

A topic-oriented course. Problems are selected from a list that includes regulatory economics, poverty, unemployment, industrial policy, safety, social policy, government deficits/debt, stabilization policy, and others. The format assists the

student in gaining analytical skills through work on the selected topics.

Prereq: ECON 102; ECON 201 or 290

ECON 366 LEC 0.50

Course ID: 015192

Gender and Economics

This course explores historical trends and economic theories and models to investigate the development of gender norms and changes in those norms across time. It questions whether physiological differences, economic models (e.g., comparative advantage, specialization, or discrimination) or social constructs can explain gender differences in roles within the family, education, work, pay, and poverty and changes in the differences across time. Social policies designed to diminish gender differences will be scrutinized. Some topics/questions that may be addressed include the rise in labour force participation of women post World War II; occupational and wage differences between men and women; changing educational attainment; and how men and women make decisions regarding marriage, fertility, child care, elder care, and divorce.

Prereq: ECON 101 or ECON 100/COMM 103; ECON 102; Level at least 3A

ECON 371 LEC 0.50

Course ID: 004946

Business Finance 1

The course explores decisions faced by managers of firms. In particular, decision-makers must determine which long-term real investment opportunities to exploit. Once undertaken, managers must decide how to finance the projects, for example, by debt or equity. The course develops both the conceptual framework and the tools required for these decisions. Prereq: ECON 101 or ECON 100/COMM 103; ECON 102; ECON 221 or one of ARTS 280, ENVS 278, KIN 222, 232, PSCI 214/314, PSYCH 292, REC 371, SDS 250R, SMF 230, SOC/LS 280, STAT 202, 206, 211, 220, 230, 240, SWREN 250R. Antireq: AFM 271/273, AFM 274/371, ACTSC 371 prior to Fall 2014, ACTSC 372 after Fall 2014.

Prereq: See course description for requisites

ECON 372 LEC 0.50

Course ID: 004947

Business Finance 2

This course examines a number of topics relevant to financial practitioners. The topics examined may include options, derivatives securities, futures markets, swaps and hedging. Prereq: ECON 211, ECON 371, and (ECON 221 or one of ARTS 280, ENVS 378, KIN 222, 232, PSCI 214/314, PSYCH 292, REC 371, SDS 250R, SMF 230, SOC/LS 280, STAT 202, 206, 211, 220, 230, 240, SWREN 250R); or for Mathematics students ECON 101 or ECON 100/COMM 103, ECON 102 and one of ACTSC 371 prior to Fall 2014, ACTSC 372 after Fall 2014. Antireq: ACTSC 446 (for Actuarial Science students only)

See course description for requisites

ECON 381 SEM 0.50

Course ID: 009938

Special Topics

One or more special half courses may be offered at different times as announced by the Department.

[Note: This is a repeatable course, subject to different content; it may be completed a total of five times.]

Instructor Consent Required

ECON 382 LEC 0.50

Course ID: 004949

Special Topics

One or more special half courses may be offered at different times as announced by the Department.

[Note: This is a repeatable course, subject to different content; it may be completed a total of five times.]

Instructor Consent Required

ECON 391 LEC 0.50

Course ID: 015193

Equilibrium in Market Economies

Central to the study of economics is the concept of an equilibrium in which the actions of individuals are not only individually optimal, but are also consistent with each other; such as when the total amount of a good that individuals wish to purchase equals the total amount available. This course introduces students to the notion of equilibrium for a market and market economy. The properties of such equilibria are explored, both in terms of model logic (existence, uniqueness) as well as in terms of the desirability of the equilibrium outcomes (efficiency, welfare). Partial equilibrium (in a single market) as well as general equilibrium (in all markets at once) are covered for models with endowments, production, uncertainty, and time.

Prereq: ECON 290

ECON 392 LEC 0.50

Course ID: 015194

Strategic Situations and Welfare Economics

Many economic decisions are made in circumstances where there are no competitive markets. This course introduces students to individual and group choice in such settings. It covers how to model such settings as "games" in both the extensive and strategic form, and introduces the key equilibrium concepts associated with these models. An introduction to considerations in group decision making via cooperative game theory and welfare economics is provided in the last part of the course.

Prereq: ECON 290.

Antireq: ECON 412 taken prior to Fall 2016

ECON 393 LEC 0.50

Course ID: 015195

Market Failures

This course explores the many ways in which the assumptions of the perfectly competitive model are violated in the real world, and the consequences of these market failures for consumers and firms. The course examines potential government intervention to "fix" the failures as well as the limits of government intervention. Topics include monopoly/monopsony, externalities, the tragedy of the commons, public goods, asymmetric information, and incomplete information.

Prereq: ECON 391

ECON 400s**ECON 401 LEC 0.50**

Course ID: 004952

Microeconomic Theory 3

The course considers a number of topics in microeconomics. Possible topics include decision theory, the analysis of uncertainty, principal-agent problems, game and information theory, social choice theory and the coordination of economic activity through prices, quantities, command and coercion.

Prereq: ECON 301; Level at least 3B Honours Economics, Honours Applied Economics, Honours Mathematical Economics (BA and BMATH), Joint Honours Economics, and Science Biotechnology/Economics students

ECON 402 LEC 0.50

Course ID: 004953

Macroeconomic Theory 3

The course develops and analyzes simple models of the economy that recognize explicitly the dynamic nature of decision making and market interactions. These models will be used to interpret and understand macroeconomic phenomena including money and inflation, unemployment, savings and investment, and the national debt.

Prereq: ECON 302; Level at least 3B Honours Economics, Honours Applied Economics, Honours Mathematical Economics (BA and BMATH), Joint Honours Economics, and Science Biotechnology/Economics students

ECON 404 LEC 0.50

Course ID: 004955

Topics in Money and Finance

A discussion of topics in monetary policy. Topics may include: foundations of monetary theory, portfolio choice, term structure of interest rates, money supply and money demand, decision-making under uncertainty, capital asset pricing models, financial flow analysis, rational expectations and monetary policy.

Prereq: ECON 301, 302, 372; Honours students or Economics majors

ECON 405 LEC 0.50

Course ID: 013754

Topics in Financial Econometrics

This course is one of the topic courses in Econometrics. The course will focus on both the Econometric theory and applications in Economics and Finance. Topics may include several main components, such as regression theory (linear/non-linear regression models, multivariate regressions), estimation methodology (OLS, MLE, GMM, WLS/GLS, Monte Carlo simulations), and time series analysis/financial modelling (stochastic process, general ARMA process, autoregressive conditional heteroskedasticity model, stochastic volatility model, high frequency data analysis, nonstationarity for time series and co-integration, continuous time stochastic process).

Prereq: ECON 371, 372; one of ECON 321, STAT 331, 361, 371, 372; Honours students or Economics majors.

Antireq: AFM 423 prior to Fall 2015

ECON 406 LEC 0.50

Course ID: 015196

Money and Banking 2

This course examines the monetary and financial aspects of the macro-economy. It prepares students to conduct analyses of problems and policies in monetary economics. Topics may include analyses of the banking system, financial crises, and monetary policy.

Prereq: ECON 306

ECON 407 LEC 0.50

Course ID: 015197

Economic Growth and Development 2

The goal of this course is to understand the enormous differences in living standards across countries and over time. It uses economic analysis to understand the sources of investment and innovation, and the role of economic, social, and political institutions in economic growth and development.

Prereq: ECON 306

ECON 408 LEC 0.50

Course ID: 015198

Business Cycles

This course prepares students to conduct analyses of problems and policies associated with macroeconomic fluctuations. It examines the empirical features of business cycles, and discusses how macroeconomic models help to understand business cycles and to assess the consequences of alternative macroeconomic policies.

Prereq: ECON 306

ECON 409 LEC 0.50

Course ID: 015199

Workers, Jobs, and Wages

This course examines the role of labour markets in the macro-economy. It focuses on the analysis of aggregate employment, unemployment, labour force participation, and earnings inequality. The main goal of the course is to understand current labour-market outcomes both in Canada and around the world.

Prereq: ECON 306

ECON 412 LEC 0.50

Course ID: 014723

Topics in Game Theory

This course builds on ECON 392 to give students a broader exposure to game theory. Possible topics include extensive games with imperfect information, evolutionary games, repeated games, as well as applications of game theory such as auctions and negotiations.

Prereq: ECON 392; Level at least 3B Honours Economics, Honours Mathematical Economics (BA and BMATH), Joint Honours Economics or Science Biotechnology/Economics students.

Antireq: ECON 483-Topic 16 (Spec. Topics in Game Theory)

ECON 421 LEC 0.50

Course ID: 004959

Econometric Theory

This course offers an advanced treatment of topics covered in ECON 322/323 through the extensive use of matrix algebra, statistical theory and numerical methods. After a review of the required mathematics, these tools will be used to derive the least-squares estimator for the standard linear model and to conduct inference about features of the model, checking the results of theory using regression software and economic data. Then this framework will be used for theoretical generalizations of the model and their estimation using regression software. By the end of the course, students will be able to estimate a linear model and conduct accurate inference in cases where economic data violate the assumptions of the standard linear regression model. This includes methods for dealing with heteroskedastic data, observations that may be dependent over time, response distributions with heavy tails or limited range (such as binary outcomes and count variables), and observations that may suffer from selection bias.

Prereq: One of ECON 321, ECON 323, STAT 221, 231, 241; Honours students or Economics majors.

Antireq: STAT 331, 361, 371, 372

ECON 422 LEC 0.50

Course ID: 004960

Microeconometric Analysis

This course investigates advanced estimation and inference techniques for microeconomic data. Students will learn about error components models that are used for economic data that exhibits significant unobserved heterogeneity. The estimation of treatment effects using fixed effects and difference-in-differences methods will be covered, and design-based methods of causal inference such as matching and regression discontinuity may be covered as well. Extensions such as multilevel or hierarchical models, limited dependent variable models, duration models or selection models may also be included. Students also learn how to apply these methods using computer software, and will use it to analyze complex data from household and firm-level surveys in assignments.

Prereq: ECON 201 or ECON 290; one of ECON 321, 323, STAT 221, 231, 241; Honours students or Economics majors

ECON 423 LEC 0.50

Course ID: 015200

Time Series Econometrics

This course introduces students to popular methods and practices of analyzing data that exhibit dependence over time. The topics may cover fundamental linear time series models (autoregressive processes, moving average processes and their generalizations), modelling time-varying volatility (the autoregressive conditional heteroskedasticity or ARCH family of models and stochastic volatility models), multivariate time series analysis, non-stationary models, and ongoing topics in modern time series econometric research. The course is designed to balance the introduction of statistical theory and applications with empirical data. A main component of this course consists of practical exercises and an empirical project with real data.

Prereq: ECON 321 or ECON 323 or one of STAT 221, 231, 241; Honours students or Economics majors

ECON 436 LEC 0.50

Course ID: 011778

International Trade

An examination of theories of international trade. Topics include the gains from trade, theories of trade determination (Ricardian, Heckscher-Ohlin, increasing returns to scale), the effects of tariffs, multinational corporation behaviour and factor mobility.

Prereq: ECON 301 or 393; Honours students or Economics majors

ECON 441 LEC 0.50

Course ID: 015378

Public Economics

This course examines to what extent government spending, taxation, and regulation policies in developed nations are driven by economic rationales for government involvement in economic activity. Both efficiency and distributional rationales are considered. Examined areas of government spending include education, pensions, infrastructure, health care, science, innovation, and social welfare programs. Examined areas of the tax structure include personal income taxes, corporate taxes, consumption taxes, and environmental taxes. Examined areas of regulation may include topics such as alcohol, organ transplants, and gasoline standards. A key aim of the course is to generate an appreciation of how theories of market failure guide public policy.

Prereq: ECON 323, 393

ECON 442 LEC 0.50

Course ID: 012408

Economics of Taxation

This course discusses economic issues in taxation. Topics may include general equilibrium tax incidence, computable tax models, optimal taxes, development taxation, environmental taxation, tax reforms and fiscal federalism.

Prereq: ECON 301, 302; or ECON 306, 393; Honours students or Economics majors

ECON 443 LEC 0.50

Course ID: 015379

Advanced Public Economics

This course covers advanced topics in public economics and introduces students to the current research frontier in public economics. Examined areas may include topics such as public choice and voting, dynamic tax policy modelling, tax competition, regulatory capture, policy reform, fiscal federalism, and equalization. Both theoretical and empirical recent research will be covered. For each research topic covered, the course provides an introduction to the relevant background literature. A key course aim is to gain an appreciation of how research can inform public policy.

Prereq: ECON 323, 393

ECON 445 LEC 0.50

Course ID: 009948

Industrial Organization and Public Policy

This course analyzes the structure of markets and how firms compete in them. The emphasis is on oligopoly markets and the use of game theory. The course focuses on differentiated goods, price discrimination, barriers to entry, vertical relationships, advertising, strategic behaviour, and empirical industrial organization including the estimation of demand and costs. Applications to competition policy emphasizing the evaluation of horizontal mergers are presented as well.

Prereq: ECON 301 or 391; ECON 321 or 322; Honours students or Economic majors

ECON 451 LEC 0.50

Course ID: 013562

Law and Economics

Legal rules and jurisprudence can have a significant effect on resource allocation. A key question is whether legal

regimes affect the optimality of an equilibrium and succeed in bringing society closer to a welfare maximizing outcome. From another perspective, a relevant question is on the objective or motivation behind the enactment of specific legislation. Recent studies suggest that much legislation is consistent with simple welfare concepts developed by economists. The course focuses on these issues with examples drawn from property, contract, tort, and criminal law.

Prereq: ECON 201, 211; or ECON 391; Level at least 3A Honours students or Economics majors.

Antireq: ECON 381 taken S'09, S'10, S'11, S'12

ECON 452 LEC 0.50

Course ID: 013884

Topics in Labour Economics

The course presents an overview of the relevant theoretical and empirical research questions related to employment relationships (pay, mobility, workplace organization). The course will offer a combination of tools (theoretical or statistical) and applications of these tools to various topics. Each topic addresses research questions for which we will see the associated seminal papers and more recent papers providing the latest findings on the given topic. The findings may come from new theoretical arguments, data improvement and/or finer methodological tools, all offering a way to better address the question.

Prereq: ECON 301 or 391; one of ECON 321, 323, STAT 221, 231, 241; Honours students or Economics majors

ECON 456 LEC 0.50

Course ID: 012409

Topics in Health Economics

This course explores the theories and models developed to study the health and health-care sectors from an economic viewpoint. The course will focus on the economic tools necessary to evaluate the efficiency of the market for, and the efficient allocation of scarce resources in, health and health care. Examples of possible topics to be covered are the nature of the market, supply and demand of health care, asymmetries of information, externalities, principal-agent relationships, insurance and cost-benefit analysis.

Prereq: ECON 301 or 393; one of ECON 321, 323, STAT 221, 231, 241; Honours students or Economics majors

ECON 471 LEC 0.50

Course ID: 009949

Computational Economics

Basic concepts and techniques of computational economics. Topics may include computable general equilibrium models, data and calibration, system sensitivity, and dynamic extensions. Depending on class backgrounds and interests, applications may cover areas such as economics of taxation, international trade, industrial organization, economic history, development, environment, dynamics, and finance.

Prereq: ECON 301, 302; or ECON 306. Honours students or Economics majors

ECON 472 ESS,LEC 0.50

Course ID: 004970

Senior Honours Essay

Students are required to identify a research topic, conduct research independently, write a research paper, and attend class meetings. Each student is supervised by a member of the Economics faculty. Class meetings cover topics such as a general overview of research methods in economics, research ethics, finding reference material, citing practices, and effective writing and presentation.

Department Consent Required

Prereq: Level at least 4A Honours Economics or Honours Mathematical Economics (BA and BMATH) students only

ECON 474 LEC 0.50

Course ID: 015201

Numerical Methods for Economists

This course covers important topics related to scientific computing through applications in microeconomics, macroeconomics, and econometrics. The topics include floating point arithmetic, nonlinear equations, constrained and

unconstrained optimization, numerical derivatives and numerical integration, differential equations, and dynamic models. Students will also develop their programming skills by learning strategies to write structured and efficient programs.

Prereq: ECON 311, 392, 393; Level at least 4A.

Antireq: ECON 485 taken W'12, W'13, W'14 and ECON 484 taken W'15, W'16 (section 001)

ECON 483 SEM 0.50

Course ID: 009950

Special Topics

Special topics that may vary with individual instructor's areas of research interest.

[Note: This is a repeatable course, subject to different content; it may be completed a total of five times.]

Instructor Consent Required

Prereq: Level at least 3A

ECON 484 SEM 0.50

Course ID: 009951

Special Topics

Special topics that may vary with individual instructor's areas of research interest.

[Note: This is a repeatable course, subject to different content; it may be completed a total of five times.]

Instructor Consent Required

Prereq: Level at least 3A Economics majors

ECON 487 SEM 0.50

Course ID: 009953

Special Studies

Research and reading courses under the direction of individual instructors. See Economics Undergraduate Officer for course registration.

Instructor Consent Required

ECON 488 RDG 0.50

Course ID: 004974

Special Studies

Research and reading courses under the direction of individual instructors. See Economics Undergraduate Officer for course registration.

Instructor Consent Required

ECON 489 RDG 0.50

Course ID: 004975

Special Studies

Research and reading courses under the direction of individual instructors. See Economics Undergraduate Officer for course registration.

Instructor Consent Required

ECON 491 LEC 0.50

Course ID: 015202

Advanced Microeconomics

This course prepares students for graduate-level theory courses. Students will be exposed to a selection of topics treated with the mathematical rigour required for graduate work.

Prereq: ECON 392, 393; Level at least 4A

ECON 496 LEC 0.50

Course ID: 015203

Advanced Macroeconomics

This course provides students with the methodological principles that underlie modern analyses of the macro-economy, and to prepare students for graduate-level macroeconomic theory courses.

Prereq: ECON 306; Level at least 4A

ENGLISH FOR ACADEMIC SUCCESS**EFAS 00s****EFAS 32 LEC 0.00**

Course ID: 014667

Academic Skills

This course helps students improve their accuracy and fluency in English by working on all four language skill areas: reading, writing, listening and speaking. Throughout the course, students focus on the skills necessary for success in an academic environment including summary writing, paraphrasing, and documentation skills.

Department Consent Required

EFAS 34 LEC 0.00

Course ID: 014668

Writing Skills

This course helps students develop strategies to produce well structured, well-supported academic short essays. Students apply basic research and academic discourse skills to produce text. The focus is on creating sentence variety, self-editing and revising for clarity and succinctness, and developing unity and cohesion. Students write multiple drafts as well as one-time pieces.

Department Consent Required

EFAS 36 LEC 0.00

Course ID: 014669

Oral Skills

This course helps improve speaking, pronunciation, listening, vocabulary, and presentation skills. The student becomes a more effective participant in conversations, discussions, and presentations by engaging in a variety of in-class communicative activities, and assignments.

Department Consent Required

EFAS 42 LEC 0.00

Course ID: 013850

Academic Skills

This course helps students improve their language and academic skills including vocabulary development, note-taking and summarizing. As such, it prepares students for university studies as well as for success in tests of English proficiency like the iBT TOEFL, CAEL, and ELPE.

Department Consent Required

EFAS 44 LEC 0.00

Course ID: 013851

Writing Skills

This course focuses on the most frequent grammar problems in the writing of advanced ESL students, who will be practising

organizational patterns that suit both academic and professional contexts. Topics include sentence structure, idioms, style, and parallelism, as well as effective quotation, paraphrase, and reference systems.

Department Consent Required

EFAS 46 LEC 0.00

Course ID: 013852

Oral Skills

This integrated course helps students improve their listening, speaking, pronunciation, and presentation skills. With regular practice, students learn to become effective participants in seminars, lectures, and small groups through student-led discussions and public speaking exercises. Students practise a variety of expressions that perform different communicative functions.

Department Consent Required

ENGLISH FOR MULTILINGUAL SPEAKERS

EMLS 100s

EMLS 101R LEC 0.50

Course ID: 011984

Oral Communications for Academic Purposes

Designed specifically for students for whom English is not the first language, this course introduces group discussion strategies and presentation skills. Students will improve their informal and formal speaking skills to meet current social, academic, and business practices. A focus on pronunciation and vocabulary assists learners to better engage in conversations and listen to and deliver English presentations. Materials organization, rhetorical devices, nonverbal communication, group management, and intonation patterns are examined.

[Note: Not open to fluent speakers of English.]

EMLS 102R LEC,TUT 0.50

Course ID: 011985

Clear Communication in English Writing

Designed specifically for students for whom English is not the first language, this course offers sentence-level instruction in grammar and idiom to teach students to produce, evaluate, and edit writing under time constraints. It emphasizes readability and error reduction in sentences and paragraphs.

[Note: Not open to fluent writers of English.]

EMLS 103R LEC 0.50

Course ID: 014140

Effective English Pronunciation

Designed specifically for students for whom English is not the first language, this course has an intensive focus on the structure of the English sound system with a view to improving pronunciation. Vowel and consonant sounds are practised as well as the phonetic elements above those sounds, such as stress, intonation, and rhythm. The goal is for students to identify their problem areas and to develop strategies to improve their comprehensibility.

[Note: Not open to fluent speakers of English.]

EMLS 104R LEC 0.50

Course ID: 014967

Reading and Listening for Academic Purposes

Designed specifically for students for whom English is not the first language, this course offers instruction in reading and listening strategies. Students learn macro and micro reading and listening strategies to improve their reading comprehension

and speed and their listening and note-taking skills. Students also build their academic vocabulary.

[Note: Not open to fluent speakers or writers of English.]

EMLS 110R LEC 0.50

Course ID: 013932

Communicating in Canadian Academic Contexts

Designed specifically for students for whom English is not the first language, this course introduces students to North American academic expectations. Students learn to identify attitude and intent in text, to recognize North American patterns of organization, to select and acknowledge appropriate primary and secondary sources, and to present ideas cohesively in speaking and writing.

[Note: Not open to fluent speakers or writers of English.]

EMLS 129R LEC,TUT 0.50

Course ID: 005061

Written Academic English

Designed specifically for students for whom English is not the first language, this writing skills course provides instruction in grammar, sentence and paragraph structure, elements of composition, and academic essay writing, including a focus on theme, development of central ideas, exposition, and argumentation.

[Note: Not open to fluent writers of English.]

(Cross-listed with ENGL 129R)

Also offered Online

ENVIRONMENT AND BUSINESS

ENBUS 100s

ENBUS 102 LEC,TUT 0.50

Course ID: 010089

Introduction to Environment and Business

Introduction of ways in which business has and is responding to environmental and business issues; business and sustainable development; issues of corporate/business greening.

Prereq: Environment and Business students only

ENBUS 112 LEC,TUT 0.50

Course ID: 012902

Operationalizing Sustainable Development within Business

This course will explore organizational structures within business. Discussions will focus on factors that deter organizational change along with the means of overcoming these issues. A variety of guest speakers will demonstrate how the greening of industry has affected organizational structure in different business sectors. This course includes a review of business case studies where environmental management changes have resulted.

[Note: Formerly ENBUS 312]

Prereq: Level at least 2B Environment and Business

ENBUS 200s

ENBUS 202 LEC 0.50

Course ID: 005265

Environmental Management Systems

The examination and evaluation of Environmental Management Systems such as ISO 14001. Alternate EMS systems will be compared and reviewed to identify their respective strengths and weaknesses. Case studies will be used to illustrate the ideas presented.

Prereq: ENBUS 102; Environment and Business students only

ENBUS 203 LEC,TUT 0.50

Course ID: 012894

Green Entrepreneurship

This course examines the role of entrepreneurship in finding solutions to environmental challenges. Discussions will focus on understanding entrepreneurship and the forces that are shaping contemporary green entrepreneurship. Students will also be introduced to the entrepreneurship process by assessing an environmental challenge, finding a solution, and developing a green business model.

Prereq: Level at least 2A.

Antireq: ECON 220/ARBUS 200/201

ENBUS 204 LEC 0.50

Course ID: 012895

Principles of Industrial Ecology

The course presents the history of industrial ecology, defines its key concepts, presents its main methods, and discusses future directions. Local, national and international case studies will be discussed.

Prereq: ENBUS 102

ENBUS 211 LEC 0.50

Course ID: 012901

Principles of Marketing for Sustainability Professionals

This course explores the principles of marketing with a focus on sustainability issues. Topics that will be explored include green consumerism; greenwashing, the incorporation of environmental considerations into successful products and services; the role of social marketing, government regulations and other incentives related to green marketing.

[Note: formerly ENBUS 311]

Antireq: ENBUS 311, ECON 344/ARBUS 302

ENBUS 300s**ENBUS 302 LEC,TUT 0.50**

Course ID: 010090

Strategies for Environment and Business

A review of the successes and failures of businesses which have attempted to adopt sustainability principles into their strategies and practices. Case studies will be reviewed to identify barriers to adopting environmental priorities and the processes which proved successful in overcoming these obstacles.

Prereq: ENBUS 202; Environment and Business students only

ENBUS 306 LEC,TUT 0.50

Course ID: 012896

Research Design

This course will outline the principles involved in producing written research. Students will examine different types of research design; identify a problem/issue on a contemporary topic within environment and business; produce an analytical

review of this topic; develop a research proposal; identify and collect data; conduct preliminary data (or information) analysis on the topic chosen for the literature review; and reflect on the above to produce a research proposal and associated risk analysis that could form the basis for the fourth year project.

Prereq: Level at least 3A Environment and Business

ENBUS 307 LEC 0.50

Course ID: 012897

Industrial Ecology: Life Cycle Assessment and Management in Business

This course builds students' technical competencies in life cycle assessment (LCA) and in critical analysis of products' environmental impacts through an understanding of life cycle management. Course content covers the ISO life-cycle assessment framework, how to conduct technical LCA (including applying quantitative approaches using LCA software and databases, as available and appropriate), challenges of application of LCA to a range of product systems, limitations of LCA, and product life cycle management concepts for business and policy decisions. Students will use the knowledge gained to conduct their own technical LCA or to provide guidance on how to conduct a product LCA for business or policy applications such as ecodesign, benchmarking, ecolabeling and environmental product declarations.

Prereq: ENBUS 204; Level at least 3A Environment and Business students

ENBUS 308 LEC 0.50

Course ID: 012898

Sustainability Management Standards and Auditing

Standards and auditing approaches used for sustainability management are examined. Public standards, like those from the International Organization for Standardization, are contrasted with private standards, developed by specific industries for product transparency and accountability in supply-chains. Auditing practice, as defined by the ISO 19011 standard, is examined including principles, steps, reporting and important concepts. Examples of performance standards and management system standards are explored, covering industrial, social and environmental issues. Lectures may be supplemented by required field trip(s) and/or field work.

[Note: Field trip fee: up to \$50+HST]

Prereq: ENBUS 202, 204 or instructor consent

ENBUS 309 LEC,TUT 0.50

Course ID: 014976

Applied Social Marketing

Social marketing uses social psychology and marketing concepts to promote behavioural change (e.g. anti-smoking campaigns, promotion of household energy conservation, and so on). This course will focus on developing an understanding of social marketing and behavioural change models. These concepts will be applied in the context of sustainability issues, using case studies to demonstrate successful (and not so successful) social marketing programs.

Prereq: Level at least 3A

ENBUS 400s

ENBUS 402A PRJ,WSP 1.00

Course ID: 010154

Environment and Business Project

The application of the principles learned in earlier courses will focus on a particular project. Applications may include group projects of sufficient scope to demonstrate mastery of problem-solving, integration and communication on a selected topic related to environment and business, or on selected environmental issues related to a specific business operation.

[Note: An all-day retreat will be scheduled for the first Friday of term. Instructor must be informed if student is unable to attend.]

Prereq: ENBUS 302; Environment and Business students only

ENBUS 402B PRJ 0.50

Course ID: 010155

Environment and Business Project

A continuation of ENBUS 402A.

[Note: Course fee \$30-\$60]

Prereq: ENBUS 402A; Environment and Business students only

ENBUS 406 LEC 0.50

Course ID: 014977

Industrial Ecology: Sustainable Materials

Sustainability of industrial materials is examined, including resources, production, use and end-of-life. Different types of industrial materials and major applications (buildings, transportation, communications, etc.) are covered. Industrial ecology and management approaches help restructure production systems and support sustainable development.

Prereq: ENBUS 204; Level at least 4A Environment and Business students

ENBUS 407 LEC 0.50

Course ID: 012903

Corporate Sustainability Accounting and Reporting

The course focuses on the environmental reporting mechanisms required of businesses in North America and overseas. The course will also evaluate best practices with reporting performance in different business sectors.

Prereq: ENBUS 202, 204

ENBUS 408 LEC 0.50

Course ID: 012904

Best Practices in Regulations

Well-crafted environmental regulations, smart regulations, can not only protect the environment but also enhance business competitiveness. This course will discuss issues with regard to smart regulations from the viewpoint of various stakeholders: for example, governments, businesses, and customers.

Prereq: ENVS 201

ENBUS 409 FLD,LEC,TUT 0.50

Course ID: 012905

Special Topics in Environment and Business

This course will allow for additions to the program on a short-term basis, and for the development of future permanent courses.

[Note: Field trip fee may be required]

Prereq: Level at least 3A

ENBUS 410 LEC 0.50

Course ID: 012906

Engaging Stakeholders

Business practices need to reflect responsibility not just to shareholders, customers and staff, but also towards the local community. This course discusses what this means for management, and the strategies and practices that are needed to express this responsibility successfully.

Prereq: Level at least 4A Environment and Business

ENBUS 411 LEC 0.50

Course ID: 012907

International Corporate Responsibility

The course will focus on corporate responsibility, including social and environmental obligations. The course will consider methods of creating a culture of integrity; examine and evaluate methods such as due-diligence processes, risk assessment, sustainability assessment to integrate responsibility into day to day business positions; and evaluate social and sustainability reports; evaluate methods to determine the link between responsibility and increased profitability and benchmark responsibility in different business sectors including non-profit organizations.

Prereq: Level at least 4A Environment and Business

ENBUS 412 LEC 0.50

Course ID: 012900

Advanced Strategic Management for Sustainable Business

This course draws on strategy concepts and theories explored in ENBUS 302 by focusing on the integration of business strategy with sustainability strategy. The course presents the principles that are essential for the formulation and evaluation of strategy for business and explores frameworks for strategic analysis, synthesis and action as it relates to sustainable business.

[Note: formerly ENBUS 310]

Prereq: ENBUS 302.

Antireq: ENBUS 310

ENBUS 414 LEC 0.50

Course ID: 014978

Sustainability for Small and Medium Enterprises

The course will focus on the application of material learned in earlier courses and contemporary business knowledge to the challenges of integrating sustainability practices into small and medium enterprise. Overall term goals include the development of a small business plan. Weekly presentations will be made in class on small and medium business case studies, often by the actual business.

Prereq: Level at least 4A Environment and Business

ENGLISH

Notes

1. Not all courses are offered within an academic year. Please consult with the Department regarding current course offerings.
2. Many courses are also taught at St. Jerome's University.
3. "R" courses are administered by Renison University College, and several of the other courses are also taught there.

ENGL 100s

ENGL 100A LEC 0.50

Course ID: 013477

Fiction

An introduction to fiction through the detailed examination of a range of novels and/or short stories.

Antireq: ENGL 102A, 102B

Also offered at Renison University College

ENGL 100B LEC 0.50

Course ID: 013478

Poetry

An introduction to poetry through a detailed examination of a range of poetic texts.

Antireq: ENGL 102B

Also offered at Renison University College

ENGL 100C LEC 0.50

Course ID: 013479

Drama

An introduction to dramatic literature through the detailed examination of a range of dramatic texts.

Antireq: ENGL 102A

Also offered at Renison University College

ENGL 101A LEC 0.50

Course ID: 011580

Introduction to Literary Studies

An introduction to the study of literature, covering such areas of enquiry as literary history, genre, criticism, analysis, and theory.

ENGL 101B LEC 0.50

Course ID: 011581

Introduction to Rhetorical Studies

This course introduces students to rhetoric: the art of persuasion. The history, theory, practice, and impacts of rhetoric will be considered. Students will analyze persuasive artifacts including propaganda, advertisements, political texts, and scientific communications. Students will also act as rhetors (users of rhetoric) to craft persuasive arguments.

Also offered Online

ENGL 103B LEC 0.50

Course ID: 005042

Varieties of English

Introduction to the study of varieties of the English language - regional, social, temporal, functional, and stylistic. The relations of languages and literature and of speech and writing will be discussed.

ENGL 104 LEC 0.50

Course ID: 011395

Rhetoric in Popular Culture

This course examines the role of persuasion in contemporary society by focusing on one or more topic areas: film, television, video games, comic books, music, fashion, etc. Students will explore the topic area(s) in depth using a variety of rhetorical theories and methods.

ENGL 108A LEC 0.50

Course ID: 013480

The Superhero

An examination of hero figures, ranging broadly from ancient characters such as Gilgamesh to the modern comic book superhero. Literary as well as non-literary materials (e.g., film, comics, games) will be considered.

Antireq: ARTS 199 sec 003 taken Fall 2007

ENGL 108B LEC 0.50

Course ID: 013481

Global English Literatures

An exploration of texts from a range of geographical locations, such as South Africa, Australia, the Caribbean, India, New Zealand, and Pakistan.

ENGL 108D LEC 0.50

Course ID: 013483

Digital Lives

An examination of how digital communication technologies create and promote online identities and social spaces, as well as interpersonal and communal interactions.

ENGL 108E LEC 0.50

Course ID: 005049

Gender and Representation

A study of the ways gender in all its diversity is constructed and gendered experience is expressed in literature, rhetoric, and a variety of media.

(Cross-listed with WS 108E)

ENGL 108F LEC 0.50

Course ID: 005050

The Rebel

A study of various works of literature in which the protagonist is a rebel against existing norms. The course will examine a number of rebel types and concepts, moral implications, and final outcomes either in successful realization or in tragic defeat.

ENGL 108G LEC 0.50

Course ID: 015552

Horror

A study of the contemporary horror genre in literature and film. Topics may include the history of horror, the construction of fear, and the development of horror archetypes. Authors and creators may include H.P. Lovecraft, Shirley Jackson, George Romero, and Stephen King.

ENGL 108P LEC 0.50

Course ID: 015165

Popular Potter

This course examines all seven of J.K. Rowling's Harry Potter novels.

ENGL 108T LEC 0.50

Course ID: 015164

Tolkien: From Book to Film

A study of J.R.R. Tolkien's *The Hobbit* (1937) and *The Lord of the Rings* (1954-55), and their film adaptations by Peter Jackson (2001-03, 2012-14).

ENGL 108X LEC 0.50

Course ID: 015492

Literature and Medicine

How can literature help us understand the body, illness, and healing? The course considers the perspectives of patients and medical practitioners across a range of works, including poetry, fiction, medical texts, and other nonfiction.

Also offered at St. Jerome's University

ENGL 109 LEC,TUT 0.50

Course ID: 005054

Introduction to Academic Writing

The course will explore a variety of issues in academic writing such as style, argument, and the presentation of information. Frequent written exercises will be required.

Also offered Online

ENGL 119 LEC,TUT 0.50

Course ID: 011175

Communications in Mathematics & Computer Science

This course aims to build students' oral and written communication skills to prepare them for academic and workplace demands. Working independently and in collaboration with others, students will analyze and produce various written and spoken forms of communication. Projects and assignments will draw on materials for Mathematics and Computer Science students.

Prereq: Honours Mathematics students only

ENGL 129R LEC,TUT 0.50

Course ID: 005061

Written Academic English

Designed specifically for students for whom English is not the first language, this writing skills course provides instruction in grammar, sentence and paragraph structure, elements of composition, and academic essay writing, including a focus on theme, development of central ideas, exposition, and argumentation.

[Note: Not open to fluent writers of English.]

(Cross-listed with EMLS 129R)

Also offered Online

ENGL 140R LEC 0.50

Course ID: 005064

The Use of English

This course examines the use of English in a variety of contexts (colloquial, scientific, legal, political, commercial, journalistic, literary, etc.) to increase critical awareness of the language and help students write more clearly and effectively.

ENGL 190 LEC 0.50

Course ID: 005068

Shakespeare

Designed for students in all faculties, the course examines some of Shakespeare's comedies, history plays, and tragedies. Shakespeare's variety and flexibility in developing characters and dramatic structures are stressed, as are significant themes.

[Note: No previous work in Shakespeare is required.]

Also offered Online

ENGL 200s

ENGL 200A LEC,TUT 0.50

Course ID: 005069

Survey of British Literature 1

An historical survey of major figures, types, and trends in British literature from the Middle Ages to the late 18th century.

Prereq: Level at least 2A

Also offered Online

ENGL 200B LEC,TUT 0.50

Course ID: 005070

Survey of British Literature 2

An historical survey of major figures, types, and trends in British literature from the late 18th century to the present.

Prereq: Level at least 2A

Also offered Online

ENGL 201 LEC 0.50

Course ID: 005071

The Short Story

This course deals with the history and techniques of the short story, with emphasis upon works by such British, American, and Canadian writers as Henry James, James Joyce, D.H. Lawrence, Ernest Hemingway, and Alice Munro.

ENGL 202A LEC 0.50

Course ID: 005072

The Bible and Literature 1

A study of the major stories, themes and literary characteristics of the Old Testament of the King James Bible (also known as the Hebrew Scripture); and of its influence on other English literature.

Also offered Online

ENGL 202B LEC 0.50

Course ID: 005073

The Bible and Literature 2

A study of the major stories, themes and literary characteristics of the New Testament of the King James Bible and of its influence on English literature.

ENGL 203 LEC 0.50

Course ID: 011680

Designing Digital Images and Interaction

This course draws on multiple theoretical perspectives to introduce students to the fundamental principles of multi-modal communication design in its social context. Students will analyze, design, and produce images and interactivity for use in a variety of digital platforms, including e-learning and business applications.

Prereq: Honours English students only.

Antireq: GBDA 101

(Cross-listed with DAC 201)

ENGL 204 LEC 0.50

Course ID: 011681

Designing Digital Video

This course introduces students to the principles of designing time-based multi-modal communication in a social context. Students will analyse, design, and produce video for use in a variety of digital platforms, including e-learning and business applications.

Antireq: GBDA 201, 202

(Cross-listed with DAC 202)

ENGL 205R LEC 0.50

Course ID: 005078

The Canadian Short Story

Exploration of the Canadian short story, from its beginnings - in the bush, in the north, on the land, in the small towns - through the struggles of an urbanizing society to the present. Students will be expected to work in some depth with individual authors.

ENGL 206 LEC 0.50

Course ID: 011769

Writing Lives

This course studies the ways the self is constructed through text by examining a variety of life-writing approaches, organized from youth to old age, along with theories of identity, memory, gender, narrative, cultural studies, and autobiography as a genre.

ENGL 208A LEC 0.50

Course ID: 005081

Forms of Fantasy

A study of fantasy literature, including some subgenres such as romances, fairy tales, fables, and gothic and horror fiction.

ENGL 208B LEC 0.50

Course ID: 005082

Science Fiction

Various examples drawn, for instance, from Utopian and anti-Utopian science fiction, social science fiction, "gadget" science fiction, parapsychology, and alternate worlds and beings will be considered. Some attention will be given to the historical development of the genre.

ENGL 208C LEC,TUT 0.50

Course ID: 005083

Studies in Children's Literature

A critical examination of works of children's literature. Specific readings may range broadly, encompassing works as diverse as ancient folk tales and novels and poetry from the eighteenth century to the present day.

ENGL 208E LEC 0.50

Course ID: 005084

Women's Writing

This course explores a range of women's writing and the social and cultural contexts in which they made their voices heard.

(Cross-listed with WS 208E)

Also offered at Renison University College

ENGL 208G LEC 0.50

Course ID: 015124

Gothic Monsters

A study of monstrosity, fear, terror, and horror in the gothic mode from its origins to the present, with attention to the ways various genres (from the novel to new media) represent gothic sexualities, genders, politics, and aesthetics.

Prereq: Level at least 2A

ENGL 208H LEC 0.50

Course ID: 005086

Arthurian Legend

The story of Arthur and his knights of the Round Table will be discussed as it is treated at various times in various works and genres. Such matters will be considered as the character of Arthur, the concept of Camelot, and the Fellowship of the Round Table.

ENGL 208K LEC 0.50

Course ID: 005087

Detective Fiction

A study of the "detective novel", the "novel of crime", the "thriller", the "novel of intrigue", and of "espionage" with texts drawn from various time periods and national literatures. The course includes the examination of critical approaches to the form of detective fiction.

ENGL 208L LEC 0.50

Course ID: 009249

Race and the Literary Tradition

How have ideas of race been represented, transmitted, and resisted in the canon of literature in English over the centuries? Topics may include the invention of race, Eurocentrism and imaginative geography, racial beauty myths, internalized racism, and issues of gender, sexuality, and colonialism.

ENGL 208M LEC 0.50

Course ID: 010194

Travel Literature

The course examines the forms and functions of travel literature as a genre. Topics will include the representation of travel as adventure, discovery, pilgrimage, and escape; travel and tourism; travel and gender; travel and colonialism.

ENGL 208N LEC 0.50

Course ID: 010335

Sex and Marriage in Literature

An examination of changing attitudes toward sex and marriage as those attitudes are expressed in literary works written in English during the various periods of literary production from the medieval period to the modern age.

ENGL 209 LEC 0.50

Course ID: 015063

Advanced Academic Writing

This course will explore relationships between audience, situation, purpose, and form in academic writing in the disciplines. Students will explore the rhetorical features of knowledge creation across fields of study. They will practice situated inquiry and argumentation through a variety of research-based written exercises, including a significant research project in a field of their choice.

Prereq: Level at least 2A

ENGL 210C LEC 0.50

Course ID: 015086

Genres of Creative Writing

This course introduces students to both contemporary and historical forms of creative writing. Students will explore genres of poetry, prose, and/or drama through their own writing. Students will also investigate the culture of publishing, learn key revision strategies, and workshop the writing of their peers to develop their critical abilities.

ENGL 210E LEC,TUT 0.50

Course ID: 005095

Genres of Technical Communication

This course explores writing, presentation, and design across various genres of technical communication, with a primary focus on printed and/or online computer documentation. Other assignments might include white papers, product specifications, help-desk communication, etc.

Prereq: Level at least 2A

ENGL 210F LEC,TUT 0.50

Course ID: 005096

Genres of Business Communication

This course explores the genres of communication in business and other organizations. Students will study and produce instances from several of the following: reports (of several kinds), letters, email messages, marketing materials, public relations materials, and any other types of organizational communication.

Prereq: Level at least 2A

Also offered Online

ENGL 210G LEC 0.50

Course ID: 014911

Grant Writing

The course covers researching, organizing, drafting, and editing proposals and applications for government grants for organizations. Topics may include interviews with domain experts, working with proposal guidelines and checklists, establishing milestones and expectations, using past proposals as models, treating individual sections as separate sub-genres, and creating coherence and flow in the final draft.

Prereq: Level at least 2A

ENGL 210H LEC 0.50

Course ID: 009890

Arts Writing

A study of the various forms, processes, and modes of publication of professional writing in the arts. The course will consider both free-lance writing and writing within institutional contexts. Practice in research, writing, and editing will be emphasized.

Prereq: Level at least 2A

ENGL 210I LEC 0.50

Course ID: 010336

Legal Writing

A study of the principles, processes, and various forms of writing used in the practice of law and drafting of legislation. The history and structure of legal writing, including current debates about plain language, will be examined.

(Cross-listed with LS 291)

ENGL 210J LEC 0.50

Course ID: 014912

Technical Editing

This course will introduce students to practices and tools of technical editing, such as language and format editing, verification and fact-checking, style guide consistency, discourse appropriateness, and the use of profession-specific software.

Prereq: Level at least 2A

ENGL 211 LEC 0.50

Course ID: 014998

First Nations, Metis, and Inuit Literatures

This course examines literary works in a variety of genres by First Nations, Metis, and Inuit authors in Canada. Students will study the literature in relation to key concepts that recur in indigenous literary criticism such as land, teaching, and respect.

ENGL 212 LEC 0.50

Course ID: 011770

Convict Literature

This course examines the representation of the prison experience in literary works written by or about prisoners as well as the legal contexts of their imprisonment.

Offered at St. Jerome's University

ENGL 213 LEC 0.50

Course ID: 011771

Literature and the Law

A study of literary works that involve legal matters and/or have led to litigation on such grounds as obscenity, treason, heresy, libel, and plagiarism.

(Cross-listed with LS 292)

ENGL 217 LEC 0.50

Course ID: 005104

Canadian Children's Literature

A study of 19th- and 20th-century Canadian literature for children.

Antireq: ENGL 317

ENGL 218 LEC 0.50

Course ID: 005106

Mennonite Literature

A study of poetry and fiction by authors of Canadian Mennonite heritage, since 1962. The course will include a close examination of selected texts considered in the context of the various historical and cultural conditions that affected their production.

ENGL 220A LEC 0.50

Course ID: 013008

Languages and Society I

This course examines the role that languages play in multilingual societies from a linguistic perspective. It focuses on topics such as dialects, language contact and change, bilingualism, language choice, and language and identity.

[Note: Taught in English.]

(Cross-listed with GER 261, REES 261)

ENGL 220B LEC 0.50

Course ID: 013009

Languages and Society II

This course examines the role that languages play in multilingual societies from a social and cultural perspective. It focuses on topics such as plurilingualism and multilingualism, language maintenance and loss, language planning and politics, multilingual and heritage language education.

[Note: Taught in English.]

(Cross-listed with GER 262, REES 262)

ENGL 247 LEC 0.50

Course ID: 010338

American Literature and Popular Culture

An introduction to American literary and cultural studies through the examination of selected movements, moments, topics, or figures, drawing on both literature and other media.

ENGL 248 LEC 0.50

Course ID: 015350

Literature for an Ailing Planet

Can the humanities change how cultures relate to environments and the natural world? This course surveys environmental thought in works of literature and in popular culture.

Also offered at St. Jerome's University

ENGL 251 LEC 0.50

Course ID: 005120

Literary Theory and Criticism

What exactly are we doing when we study literature? By examining a selection of critical methods and theoretical approaches, this course will enhance understanding of the many different emphases, values, and priorities critics bring to literature, and the many available perspectives on what constitutes literature's significance.

Prereq: Level at least 2A.

Antireq: ENGL 251A, ENGL 251B

Also offered Online

ENGL 260 LEC 0.50

Course ID: 011370

Irish Literature and the "Troubles"

A study of Irish literature written during and about the "Troubles" (1916-1923; 1968 - present), focussing on the relationship between literature and its social, historical, and cultural contexts.

Offered at St. Jerome's University

ENGL 275 LEC 0.50

Course ID: 014997

Fiction and Film

A study of the relationships between written and cinematic narrative focussing on adaptations of fiction to film and the different narrative techniques of each medium.

ENGL 280 LEC 0.50

Course ID: 014901

Literatures of Migration

This course explores the literatures of one or more diasporic communities in North America (for example, African, Asian, Caribbean, Middle Eastern, South Asian) and topics such as memory, generational difference, and cultural hybridity.

Prereq: Level at least 2A

ENGL 290 LEC 0.50

Course ID: 013352

Global Shakespeare

An introduction to Shakespeare's continuing influence, focusing on adaptations and appropriations of his works in various media by contemporary writers, artists, and directors around the globe.

Prereq: Level at least 2A

ENGL 291 LEC 0.50

Course ID: 014899

Global Literatures

How has border-crossing shaped the field of English literary studies? In this course, students will discuss works of literature from around the world that explore such themes as colonialism, migration, transnationalism, and the global.

Prereq: Level at least 2A

ENGL 292 LEC,TUT 0.50

Course ID: 005122

Rhetorical Theory and Criticism

This course provides a survey of the multidisciplinary field of rhetorical studies. In addition to introducing key concepts, theoretical frameworks, and critical debates, this course examines the role of rhetoric in a range of academic disciplines and social contexts.

Prereq: Level at least 2A

Also offered Online

ENGL 293 LEC 0.50

Course ID: 013353

Introduction to Digital Media Studies

A study of theories of digital media, including critical, rhetorical, and semiotic approaches, and of the interpretation and creation of digital media artifacts.

Prereq: Level at least 2A

ENGL 294 LEC 0.50

Course ID: 014790

Game Studies

This course introduces students to the field of humanities-based game studies. Topics may include the debate between ludological (rules-based) and narratological (story-based) approaches, procedural studies, platform and software studies, gamification, games and adaptation studies, and games as rhetorical objects.

Prereq: Level at least 2A

ENGL 295 LEC 0.50

Course ID: 014791

Social Media

This course surveys the popular social media landscape and charts scholarly approaches, both methodological and theoretical, to understanding and analyzing social media texts. Topics to be addressed may include memes, social networks, fan communities and texts, digital identity, and other emergent social media forms.

Prereq: Level at least 2A

ENGL 300s

ENGL 303 LEC 0.50

Course ID: 011682

Special Topics in Digital Design

In this course students will learn advanced digital design theory. They will participate in workshops with professional designers, develop specialized digital materials and contribute signature work to their Digital Portfolio.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

(Cross-listed with DAC 300, SPCOM 300)

ENGL 304 LEC 0.50

Course ID: 013106

Designing with Digital Sound

In this course, students will be introduced to sound analysis and production. Students will learn to record, edit, and implement sound in a variety of linear and non-linear media forms, with emphasis on film and video games.

Antireq: DAC 301

(Cross-listed with DAC 203)

ENGL 305A LEC 0.50

Course ID: 005124

Old English 1

An introduction to the English language in its earliest form and to English prose in pre-Conquest England, examining Old English prose style, its principal practitioners, and their world view.

Prereq: Level at least 2A

ENGL 305B LEC 0.50

Course ID: 005125

Old English 2

An introduction to Old English poetry, noting in representative Old English poems those things about its purpose, style, and its audience which make it unique but which also provide the beginnings of the English poetic tradition.

Prereq: ENGL 305A

ENGL 306A LEC 0.50

Course ID: 005126

Introduction to Linguistics

Introduction to linguistics and the principles of linguistic analysis through an examination of English phonology, forms, syntax, and discourse.

Also offered Online

ENGL 306B LEC 0.50

Course ID: 005127

Modern English Grammar

Introduction to modern English grammar and structure - its meaningful forms and syntax. Several methods of analysis will be employed and evaluated, including the traditional, structural, transformational-generative, and functional.

Prereq: ENGL 306A

ENGL 306C LEC 0.50

Course ID: 005128

Historical Linguistics

Introduction to historical-reconstruction and comparative analysis. Basic phonological, morphological, syntactic changes as they manifest themselves in language will be examined.

Prereq: ENGL 306A

ENGL 306D LEC 0.50

Course ID: 005129

The History of English

Introduction to the linguistic history of English from earliest documents to the present, with some consideration of various modern dialects.

ENGL 306F LEC 0.50

Course ID: 005131

Introduction to Semiotics

A study of systems of signs, codes, and signification in language, culture, and literature.

ENGL 306G LEC 0.50

Course ID: 005136

Critical Discourse Analysis

This course provides an introduction to the theory and practice of critical discourse analysis (CDA), the close study of language and its effects in social context. Students will learn to apply discourse-analytical tools to a wide range of texts, conversations, images, and other artifacts.

ENGL 308 LEC 0.50

Course ID: 015493

Race and Resistance

An examination of how contemporary literary and cultural texts represent, reconfigure, and resist ideas of race. Analyzing literature, film, art, popular culture, and social movements, this course covers major debates in critical race theory and anti-racist practices.

Also offered at St. Jerome's University

Also offered at Renison University College

ENGL 309A LEC 0.50

Course ID: 005133

Rhetoric, Classical to Enlightenment

A study of rhetorical theories from antiquity through the Renaissance to the eighteenth century, with an emphasis on how these theories reflect changing attitudes towards language, society, and the self.

Prereq: Level at least 2A.

Antireq: ENGL 309B

ENGL 309C LEC 0.50

Course ID: 005135

Contemporary Rhetoric

An examination of contemporary rhetorical theory and its relationships to criticism, interdisciplinary studies, and digital applications.

Prereq: Level at least 2A

Also offered Online

ENGL 309E LEC 0.50

Course ID: 005137

Speech Writing

The analysis, writing, and editing of speeches. Analysis will focus on the reading and viewing of several famous 20th-century speeches using theories of communication. Writing and editing will focus on implementing oral/aural communication strategies.

Prereq: Level at least 4A; English Rhetoric and Professional Writing or English Rhetoric, Media, and Professional Communication

(Cross-listed with SPCOM 323)

ENGL 309G DIS,LEC 0.50

Course ID: 011393

The Discourse of Dissent

A study of the social, historical, and rhetorical dimensions of collective action. Topics may include health and welfare movements, civil rights and anti-war protests, and environmentalism.

Prereq: Level at least 2A

(Cross-listed with HIST 309, SPCOM 434)

ENGL 310A LEC 0.50

Course ID: 005139

Chaucer 1

An introduction to the poetry and the prose translations of Geoffrey Chaucer, including his dream allegories, "Troilus and Criseyde," and related compositions.

Prereq: Level at least 2A

ENGL 310B LEC 0.50

Course ID: 005140

Chaucer 2

A study of Geoffrey Chaucer's "Canterbury Tales".

Prereq: Level at least 2A

ENGL 310C LEC 0.50

Course ID: 005141

Non-Chaucerian Middle English Literature

Non-Chaucerian English writings during the later Middle Ages; the Middle English romance, including "Sir Gawain and the Green Knight"; alliterative literature, such as "Piers Plowman"; and representative examples of Middle English non-Chaucerian verse.

Prereq: Level at least 2A

ENGL 313 LEC 0.50

Course ID: 005145

Early Canadian Literatures

This course examines a selection of pre-1920 Canadian texts concerning first contact, imperialism, colonization, incipient nationhood, and early multi-racial immigration that participate in the ongoing invention of Canada.

Prereq: Level at least 2A

ENGL 315 LEC 0.50

Course ID: 005147

Modern Canadian Literature

This course focuses on the varied ways in which 20th-century writers of poetry and prose participate in the shaping of Canadian literary culture, with emphasis on the literature of the middle decades.

Prereq: Level at least 2A

Also offered at Renison University College

Also offered Online

ENGL 316 LEC 0.50

Course ID: 005148

Canadian Drama

This course explores traditions and experiments in Canadian drama through an analysis of Canadian plays, especially those from 1960 to the present, in their historical and theatrical contexts.

Prereq: Level at least 2A

ENGL 318 LEC 0.50

Course ID: 005150

Contemporary Canadian Literature

This course examines Canadian Literature written in the latter decades of the 20th century and into the 21st century. Literary works are studied in relation to relevant contemporary social, cultural and political topics, such as nationalism, aboriginality, multiculturalism and diaspora.

Prereq: Level at least 2A

ENGL 319 LEC 0.50

Course ID: 012358

History and Theory of Media 1

This course explores the development of media technologies such as writing and print (including the book) from their beginnings to the twentieth century. Emphasis will be placed on the social, political, and cultural contexts and consequences of these developing technologies.

Prereq: Level at least 2A

ENGL 320 LEC 0.50

Course ID: 011392

History and Theory of Media 2

This course explores the social, political, and cultural contexts and consequences of contemporary technologies of representation such as print and visual media, photography and film, audio recordings, computer-mediated communications, and interactive digital media.

[Note: Formerly ENGL 392C]

Prereq: Level at least 2A

ENGL 322 LEC 0.50

Course ID: 011583

Postcolonial Literature of the Americas

This course examines postcolonial literature in English from Canada, the U.S., and the Caribbean. Through study of both written and oral genres, we will discuss how language practices adapt to and are created in colonial and postcolonial contexts. Topics may include diaspora and migration, nationalism, gender, neo-colonialism, and multiculturalism.

Prereq: Level at least 2A

ENGL 325 LEC 0.50

Course ID: 012931

Austen

A study of selected novels by Jane Austen, including *Pride and Prejudice* and *Emma*. Her letters and juvenilia may also be considered, as well as some of the films based on or inspired by her novels.

Prereq: Level at least 2A

(Cross-listed with WS 325)

ENGL 330A LEC 0.50

Course ID: 005152

Sixteenth-Century Literature 1

A study of short poems by such writers as Wyatt, Gascoigne, Whitney, Raleigh, Spenser, the Sidneys, Shakespeare, and Donne.

Prereq: Level at least 2A

ENGL 330B LEC 0.50

Course ID: 005153

Sixteenth-Century Literature 2

A study of selected genres, topics, and works from Tudor literature.

Prereq: Level at least 2A

ENGL 335 WSP 0.50

Course ID: 005155

Creative Writing 1

Aimed at encouraging students to develop their creative and critical potentials, the course consists of supervised practice, tutorials, and seminar discussions.

Prereq: Level at least 3A

Also offered at Renison University College

ENGL 336 WSP 0.50

Course ID: 005156

Creative Writing 2

Designed to assist advanced creative writers to develop their skills in various genres by means of workshop processes, supervised practice, and critical discussion of one or more major projects.

[Note: Admission by portfolio review]

Instructor Consent Required

Prereq: Level at least 3A and ENGL 335

ENGL 342 LEC 0.50

Course ID: 010339

American Literature to 1860

A study of developments in early American Literature. Texts may be drawn from Anglo-European movements such as gothicism and romanticism; captivity narratives and other colonial writings; Afro-American, Native American, and other minority traditions; sentimental and domestic fiction; and indigenous American forms such as the frontier romance, and other minority literatures.

Prereq: Level at least 2A

ENGL 343 LEC 0.50

Course ID: 005157

American Literature 1860-1910

A survey of literary developments in America from the Civil War through the turn of the twentieth-century, including significant movements of the period such as realism, regionalism, and naturalism; the New Woman's writing and other developments in women's literatures; popular forms such as the Western; and minority literatures.

Prereq: Level at least 2A

ENGL 344 LEC 0.50

Course ID: 005158

Modern American Literature

A study of American Literature from the early twentieth century through the second world war, emphasizing aesthetic innovation in the modernist movement, and its aftermath in the social writings of the 1930s.

Prereq: Level at least 2A

ENGL 345 LEC 0.50

Course ID: 005159

American Literature in a Global Context

A study of the ways in which movements of peoples and cultures have shaped American literature. Topics may include colonialism, immigration and migration, literary influence across borders and languages, nativism and internationalism, racial and ethnic styles and exchanges.

Prereq: Level at least 2A

Also offered Online

ENGL 346 LEC 0.50

Course ID: 010195

American Fiction

A study of four to five writers. Topics may include the evolution of narrative style, realism and anti-realism, literature and story, fiction and history, the novel and film, gender and ethnicity.

Prereq: Level at least 2A.

Antireq: ENGL 346C

ENGL 346R LEC 0.50

Course ID: 015354

Global Asian Diasporas

This course explores the literature and culture from one or more global Asian diasporas, with particular emphasis on cultures of East Asian origin. Topics may include identity, transnationalism, imperialism, war, labour, migration, and popular culture.

Prereq: Level at least 2A

(Cross-listed with EASIA 346R)

ENGL 347 LEC 0.50

Course ID: 005162

American Literature Since 1945

A study of the movements of American Literature following the second world war. The course will consider the formal and cultural diversity of writing in this period, with attention to topics such as avant-garde experiment, the persistence of realism, counter-cultural politics, feminism and literature, postmodernism, and the emergence of minority writers in the mainstream.

Prereq: Level at least 2A.

Antireq: ENGL 347A

ENGL 348 LEC 0.50

Course ID: 010196

American Poetry Since 1850

A study of poems, poets, ideas, and movements, contributing to the growth of a distinctive American poetry from Whitman and Dickinson to the twenty-first century. Texts will be drawn from popular and avant-garde contexts, as well as the literary mainstream.

Prereq: Level at least 2A

ENGL 350A LEC 0.50

Course ID: 005164

Seventeenth-Century Literature 1

A study of literature by such writers as Jonson, Donne, Wroth, Herbert, Bacon, Milton, Behn, and Dryden.

Prereq: Level at least 2A

ENGL 350B LEC 0.50

Course ID: 005165

Seventeenth-Century Literature 2

An intensive study of Milton's epic, *Paradise Lost*, in its historical and literary contexts.

Prereq: Level at least 2A

Also offered Online

ENGL 361 LEC 0.50

Course ID: 004682

English Drama to 1642

The Middle Ages, the Elizabethans and Jacobean (excluding Shakespeare), and the Spanish Golden Age.

Prereq: Level at least 2A

ENGL 362 LEC 0.50

Course ID: 005166

Shakespeare 1

A study of the plays written before 1599-1600, excluding Julius Caesar.

Prereq: Level at least 2A

(Cross-listed with DRAMA 386)

Also offered Online

ENGL 363 LEC 0.50

Course ID: 005167

Shakespeare 2

A study of the plays written after 1599-1600, including Julius Caesar.

Prereq: Level at least 2A

(Cross-listed with DRAMA 387)

Also offered Online

ENGL 364 LEC 0.50

Course ID: 010197

Shakespeare in Performance at The Stratford Festival

An historical, theoretical, and analytical introduction to Shakespeare's plays in performance, both on stage and screen, this course focuses on specific problems and decisive issues of past productions and of those in the current Stratford Festival season.

Prereq: Level at least 2A

ENGL 365 RDG 0.50

Course ID: 005168

Selected Studies

Designed to provide a study in-depth of problems and/or authors selected by the instructor. Students interested in initiating such courses are encouraged to do so by bringing their ideas to the attention of individual instructors.

Department Consent Required

ENGL 366 RDG 0.50

Course ID: 005169

Selected Studies

Designed to provide a study in-depth of problems and/or authors selected by the instructor. Students interested in initiating such courses are encouraged to do so by bringing their ideas to the attention of individual instructors.

Department Consent Required

ENGL 371 LEC 0.50

Course ID: 011772

Editing Literary Works

Investigating scholarly, educational, popular, and electronic editions, this course explores the theory and practice of editing literary texts.

Prereq: Level at least 2A

Offered at St. Jerome's University

ENGL 376R LEC 0.50

Course ID: 005172

Applied English Grammar 1

In exploring different definitions and types of grammar (e.g. descriptive vs. prescriptive), students develop their own critical framework for explaining the structure of English. Of interest to intending teachers of English as the native or second language.

Prereq: Level at least 2A

ENGL 377R LEC 0.50

Course ID: 005173

Applied English Grammar 2

A continuation of ENGL 376R. Practical applications of language theories to error analysis and correction.

Prereq: ENGL 376R

ENGL 378 LEC 0.50

Course ID: 014969

Professional Communications in Statistics and Actuarial Science

This course introduces students to oral and written communication in the fields of Statistics and Actuarial Science. With emphasis on the public presentation of technical knowledge, the ability to give and receive constructive feedback, and communication in a collaborative environment, this course helps students develop proficiencies in critical workplace skills. This course is writing intensive and includes extensive collaborative assignments.

[Note: Students are encouraged to complete this course by their 4A term. Offered: F,W,S]

Prereq: At least 70% in one of EMLS 101R, 102R, EMLS/ENGL 129R, ENGL 109, SPCOM 100, 223; (STAT 331, 371 or ACTSC 331); Actuarial Science or Statistics major students only

(Cross-listed with MTHL 300)

Also offered at St. Jerome's University

ENGL 392A LEC 0.50

Course ID: 005175

Information Design

The theory and practice of design for print and digital media, including the study of design concepts such as space, colour, typography, interactivity, immersion, motion, and presence. Students produce designs using professional software tools.

Prereq: One of ENGL 292, 293, ENGL 203/DAC 201, ENGL 204/DAC 202, GBDA 201, 202

ENGL 392B LEC 0.50

Course ID: 005176

Visual Rhetoric

This course introduces students to the study of images from a rhetorical perspective, including the interaction of texts and images in such professional writing fields as advertising, book illustration, technical documentation, journalism, and public relations. Issues may include visual and textual literacy, the semiotics and rhetoric of design, and the ideological basis of social communication.

Prereq: One of ENGL 292, 293, ENGL 203/DAC 201, ENGL 204/DAC 202, GBDA 201, 202

ENGL 400s

ENGL 403 PRJ 0.50

Course ID: 011683

Digital Design Research Project

Students work in small groups under the supervision of a faculty researcher on an ongoing, large-scale, digital design project.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: ENGL 293
(Cross-listed with DAC 400)

ENGL 406 LEC 0.50

Course ID: 012663

Advanced Rhetorical Study

Topics may include communication, media, politics, science, and social movements. Students will explore the topic(s) in depth using a variety of rhetorical theories and methods.

Prereq: One of ENGL 292, 309A, 309B, 309C

ENGL 407 LEC 0.50

Course ID: 012357

Language and Politics

This course explores how language shapes and is shaped by the unequal distribution of power in modern societies. The role of language will be considered in, for example, the maintenance of sexual difference, the establishment and maintenance of national identity, and the conflict between social classes. The reading will consist of literary and theoretical texts, the latter including such writers as Bourdieu, Bakhtin, Foucault, Cameron, Lakoff, Ngugi wa Thion'go, and Paulin.

Prereq: Level at least 2A

ENGL 408A LEC 0.50

Course ID: 005177

Writing for the Media

This course examines the genres and strategies of both journalism and public relations. With a strong orientation towards rhetorical and linguistic theories, this course will cover audience concerns from both within and outside organizations.

Prereq: One of ENGL 292, 309A, 309B, 309C

ENGL 408B LEC 0.50

Course ID: 005178

The Discourse of Advertising

This course introduces students to writing and editing advertising copy. Students will also be introduced to models of discourse and rhetorical analysis of advertising texts. Assignments include creating a portfolio of advertising copy and an extensive analysis of sample advertising discourse.

Prereq: One of ENGL 292, 309A, 309B, 309C

ENGL 408C LEC 0.50

Course ID: 005179

The Rhetoric of Digital Design: Theory and Practice

Students apply a variety of analytic perspectives - design discourse, multimodal discourse, rhetorical theory, social semiotics - to the design and production of a major digital project (or compilation of projects) using professional software and hardware tools.

Prereq: ENGL 392A

ENGL 409A LEC 0.50

Course ID: 011394

Rhetoric of Argumentation

This course studies the discursive, social, and rhetorical principles of argumentation, including topics such as evidence, reasoning, and the organization and presentation of arguments. Scholars studied may include Richard Whatley, Jurgen Habermas, Stephen Toulmin, Chaim Perelman, Lucie Olbrecht-Tyteca, Kenneth Burke, and Pierre Bourdieu.

Prereq: One of ENGL 292, 309A, 309B, 309C

ENGL 410A LEC 0.50

Course ID: 005183

Restoration Literature

A selection of literature, including drama, from the period 1660-1700 by such authors as Cavendish, Dryden, Behn, Etherege, Rochester, and Wycherley. Topics may include the poetry of the court wits, literary reflections of Restoration feminism and libertinism, and the rise of print culture.

Prereq: Level at least 2A

ENGL 410B LEC 0.50

Course ID: 005184

Eighteenth-Century Literature 1

A selection of early and mid eighteenth-century literature by such writers as Finch, Pope, Swift, Congreve, Manley, Montagu, Addison, and Steele. Topics may include satire, neo-classicism vs. literary modernism, the development of women's publication, and generic experimentation.

Prereq: Level at least 2A

ENGL 410C LEC 0.50

Course ID: 012930

Eighteenth-Century Literature 2

A selection of mid- and late eighteenth-century fiction by such writers as Thomson, Gray, Smart, Thrale, Johnson, Sheridan, and Wheatley. Topics may include the culture of sensibility, the emergence of (auto) biography and of (anti-) colonial writing, and the consolidation of women's publication.

Prereq: Level at least 2A

ENGL 410D LEC 0.50

Course ID: 010341

Eighteenth-Century Fiction I

A selection of late-seventeenth and eighteenth-century fiction by such writers as Behn, Manley, Haywood, Defoe, Richardson, and Fielding. Topics may include the novel as an experimental form, romance and amatory fiction, and authorial engagement with issues of gender, class, and colonialism.

Prereq: Level at least 2A

ENGL 410E LEC 0.50

Course ID: 014557

Eighteenth-Century Fiction II

A selection of mid- and late eighteenth-century fiction by such writers as Fielding, Haywood, Sterne, Burney, Radcliffe, and Austen. Topics may include sentiment and sociability, the gothic, and abolitionism.

Prereq: Level at least 2A

ENGL 410F LEC 0.50

Course ID: 014558

Eighteenth-Century Women Writers

A selection of writing by women such as Behn, Finch, Montagu, Fielding, Edgeworth, and Austen. Topics may include the culture of sensibility, romance and the gothic, and the interaction of women's writing with discourses of race and colonialism.

Prereq: Level at least 2A

(Cross-listed with WS 410F)

ENGL 430A LEC 0.50

Course ID: 005185

Literature of the Romantic Period 1

An examination of the first generation of Romantic writers, including such authors as Barbauld, Blake, Wollstonecraft, Wordsworth, and Coleridge.

Prereq: Level at least 2A

ENGL 430B LEC 0.50

Course ID: 005186

Literature of the Romantic Period 2

An examination of the second generation of Romantic writers, including such authors as Byron, P. B. Shelley, Mary Shelley, Keats, and Hemans.

Prereq: Level at least 2A

ENGL 451A LEC 0.50

Course ID: 005190

Literature of the Victorian Age 1

A critical study of early to mid-Victorian literature, including authors such as Carlyle, Arnold, Tennyson, the Brontës, Elizabeth Barrett Browning, Robert Browning, Gaskell, Ruskin, and Dickens. Topics may include liberty, work, gender, class, imperialism, and poetry.

Prereq: Level at least 2A

ENGL 451B LEC 0.50

Course ID: 005191

Literature of the Victorian Age 2

A critical study of mid- to late Victorian literature, including authors such as Christina Rossetti, Dante Gabriel Rossetti, George Eliot, Newman, Hopkins, Michael Field, Wilde, and Hardy. Topics may include the "Woman Question," the crisis in religious faith, and aestheticism.

Prereq: Level at least 2A

ENGL 460A LEC 0.50

Course ID: 005192

Early Literature of the Modernist Period in the United Kingdom and Ireland

A study of the literatures of the United Kingdom before and after World War I, including such writers as Conrad, Forster, Hopkins, Mansfield, Shaw, Synge, Wilde, and Yeats.

Prereq: Level at least 2A

ENGL 460B LEC 0.50

Course ID: 005193

Literature of the Modernist Period in the United Kingdom and Ireland

A study of the literatures of the United Kingdom and Ireland from World War I to World War II, including such writers as Auden, Eliot, Isherwood, Joyce, Lawrence, Orwell, West, and Woolf.

Prereq: Level at least 2A

ENGL 460C LEC 0.50

Course ID: 005194

Literature of the Postwar Period in the United Kingdom and Ireland

A study of the literatures of the United Kingdom and Ireland after World War II, including such writers as Beckett, Greene, Larkin, Murdoch, Osborne, Pinter, and Spark.

Prereq: Level at least 2A

ENGL 460D LEC 0.50

Course ID: 014269

Contemporary Literature of the United Kingdom and Ireland

A study of the contemporary literatures of the United Kingdom and Ireland, including such writers as Byatt, Boland, Drabble, Heaney, Hughes, Rushdie, and Stoppard.

Prereq: Level at least 2A

ENGL 463 LEC 0.50

Course ID: 011584

Postcolonial Literatures

This course examines postcolonial literature (fiction, poetry, and drama) from Africa, Australia, Britain, India, New Zealand, and Pakistan. Topics may include the range of creative forms and language use in texts; indigeneity and migration; intersections of gender, sexuality and race; and resistance, nationalism, and history.

Prereq: Level at least 2A

ENGL 470A LEC 0.50

Course ID: 005195

Contemporary Critical Theory

Contemporary critical theory offers an array of competing constructions of text and culture. This course examines several topics in recent critical theory, such as gender, race, subjectivity, textuality, and popular culture.

Prereq: Level at least 3A

ENGL 470B LEC 0.50

Course ID: 005196

History of Literary Criticism

An historical survey of major critical texts and movements from the Greek and Roman classics to the New Criticism of the mid-20th century, examining different critical theories and practices in a context of cultural changes.

Prereq: Level at least 3A

ENGL 470C LEC 0.50

Course ID: 005197

Literary Studies in Digital Forms

A critical examination of literary publication, research, and criticism in digital forms.

Prereq: Level at least 2A

ENGL 471 LEC 0.50

Course ID: 011773

Adapting Literary Works

Focusing on adaptation of classic works of literature in English, this course examines the problems, possibilities, and principles of representing such works in other literary forms and in other media.

Prereq: Level at least 2A

Offered at St. Jerome's University

ENGL 472 LEC 0.50

Course ID: 014913

Research Methods in Technical Communication

This course teaches students the practice and theory of research methods in the field of technical and professional communication. Topics may include resource validity and renewal cycles, data-gathering techniques and analytics, interview techniques for subject-matter experts, rapid research skills, and user-experience design.

Prereq: Level at least 2A

ENGL 481 LEC 0.50

Course ID: 009976

Topics in the History and Theory of Language

A special study of a selected topic in the history and theory of language. Please see course instructor for details.

Prereq: Level at least 3A English majors

ENGL 484 LEC 0.50

Course ID: 009979

Topics in Literatures Medieval to Romantic

A special study of a selected topic, author, genre, or period in Medieval to Romantic literatures. Please see course instructor for details.

Prereq: Level at least 3A English majors

ENGL 485 LEC 0.50

Course ID: 014485

Topics in Literatures Romantic to Modern

A special study of a selected topic, author, genre, or period in Romantic to Modern literatures. Please see course instructor for details.

Prereq: Level at least 3A English majors

ENGL 486 LEC 0.50

Course ID: 014486

Topics in Literatures Modern to Contemporary

A special study of a selected topic, author, genre, or period in Modern to Contemporary literatures. Please see course instructor for details.

Prereq: Level at least 3A English majors

ENGL 491 LEC 0.50

Course ID: 015553

Topics in Literature and Rhetoric

A special study of a selected topic in literature and rhetoric. Please see course instructor for details.

Prereq: Level at least 3A English majors

ENGL 492 LEC 0.50

Course ID: 014487

Topics in the History and Theory of Rhetoric

A special study of a selected topic in the history and theory of rhetoric. Please see course instructor for details.

Prereq: Level at least 3A English majors

ENGL 493 LEC 0.50

Course ID: 014488

Topics in Professional Writing and Communication Design

A special study of a selected topic in professional writing and communication design. Please see course instructor for details.

Prereq: Level at least 3A English majors

ENGL 494 LEC 0.50

Course ID: 014489

Topics in Forms of Media and Critical Analysis

A special study of a selected topic in forms of media and critical analysis. Please see course instructor for details.

Prereq: Level at least 3A English majors

ENGL 495A ESS 0.50

Course ID: 005223

Supervision of Honours Essay

Senior Honours Essay will be completed under supervision.

[Note: A grade for ENGL 495A will be submitted only after the completion of ENGL 495B.]

Department Consent Required

ENGL 495B ESS 0.50

Course ID: 005224

Supervision of Honours Essay

Senior Honours Essay will be completed under supervision.

Prereq: ENGL 495A

ENVIRONMENTAL ENGINEERING

ENVE 100s

ENVE 100 LAB,LEC,TST,TUT 0.80

Course ID: 005226

Environmental and Geological Engineering Concepts

An introduction to the fundamental methods, principles and skills of environmental and geological engineering. Fundamentals of technical communication, the engineering design process and problem solving. Completion of a pre-design study and report for an environmental engineering project. Independent and team work. Fundamentals of engineering computation: units, data collection, measurement, and error analysis. Field surveying (automatic level, engineer's transit, differential Global Positioning System (GPS), total station). Laboratory on engineering graphics auto-computer assisted diagnosis (AutoCAD) and computational software (Excel, Matlab). Aspects of the engineering profession (code of ethics, negligence, misconduct, role of the Professional Engineers Ontario (PEO), etc.), diversity in the workplace, and professional development. Preparation for the University of Waterloo co-operative education program (Co-operative Education and Career Action (CECA), résumé writing, job search and interview skills). [Offered: F]

Prereq: 1A Environmental or Geological Engineering

ENVE 153 LAB,LEC,TST,TUT 0.50

Course ID: 011496

Earth Engineering

This course studies earth materials and processes from an engineering point of view through case histories and problem sets. The course develops a geological knowledge for applications to any physical environment and provides an appreciation of the impact of engineering work on the environment. Topics include: mineral and rock identification, the rock cycle, structural geology and tectonics, geology of Canada, effects of water, ice and wind. Students are also introduced to the concept of geologic time, topographic and geologic maps, and the basic principles and tools used to determine geologic history. [Offered: S; Offered as: CIVE 153 (W), ENVE 153 (S), GEOE 153 (S)]

Prereq: Level at least 1B Environmental Engineering students only

(Cross-listed with CIVE 153, EARTH 153, GEOE 153)

ENVE 223 LEC,TST,TUT 0.50

Course ID: 005236

Differential Equations and Balance Laws

An introduction to ordinary differential equations with applications to mass and energy balance problems in engineering. Standard methods of solution of first and second order linear equations with constant coefficients. Numerical methods for solving ordinary differential equations. Partial differential equations. [Offered: W]

Prereq: 2A Environmental Engineering.

Antireq: CIVE 222, MATH 218

ENVE 224 LEC,TST,TUT 0.50

Course ID: 005237

Probability and Statistics

Role of probability in Environmental Engineering and decision making under uncertainty. Basic probability concepts. Probability distributions. Functions of random variables. Data analysis. Confidence intervals and hypothesis testing. Introduction to regression analysis. Introduction to design of experiments and statistical quality control. [Offered: W, S]

Prereq: MATH 115, 117; Level at least 2B Environmental or Geological Engineering.

Antireq: CHE 220, CIVE 224

ENVE 225 LEC,TST,TUT 0.75

Course ID: 014963

Environmental Modelling

Modelling of environmental engineering processes via the solution of differential equations. Mass transfer processes in continuum and discrete systems, with applications to natural and engineered systems. Reactor theory. Understanding initial and boundary conditions. Classical and numerical solution techniques for solving differential equations. Volume and surface integration. Reynolds transport theorem. [Offered: F]

Prereq: ENVE 223, CIVE 115; 2B Environmental Engineering

ENVE 275 LAB,LEC,TST,TUT 0.50

Course ID: 005239

Environmental Chemistry

Overview of risk, biosphere compartments and contaminant fate. Composition of water. Electroneutrality and activity. Reactions and speciation including reaction kinetics, mass transfer, vapor pressure, equilibrium, and chemical thermodynamics. Equilibrium chemistry including Log-concentration diagrams, titration and buffering intensity, dissolution/precipitation, carbonate system, hardness, and complex formation. Classification, nomenclature, physical/chemical parameters and partitioning of organic compounds. Basic redox chemistry including: half cell reactions, Faraday and Nernst equations, and pE-pH diagrams. Four labs. [Offered: W]

Prereq: CHE 102; 2A Environmental Engineering

ENVE 277 LEC,TST,TUT 0.50

Course ID: 014956

Air Quality Engineering

Quantitative introduction to indoor and outdoor air pollution sources, and major processes including emission rates, atmospheric dispersion, chemistry, and deposition. Air quality standards and regulations. Basic atmospheric science and meteorology to support the fate and transport of air pollutants. Overview of control and treatment methods. Indoor air exposure estimates and the function of the HVAC components. [Offered: F]

Prereq: Level at least 2B Civil, Environmental or Geological Engineering

ENVE 279 LEC,TST,TUT 0.50

Course ID: 014957

Energy and the Environment

Conservation of energy, energy balances on closed systems. Steady-state and transient heat transfer via convection, radiation, and conduction. Mechanical and electrical work. Internal energy, enthalpy, and specific heats of solids, liquids and gases. Phase change in natural environmental systems; The basics of heat engines, refrigerators, and heat pumps. Function, evaluation, and design of energy resource technology: wind and hydroelectric turbines, photovoltaics, geothermal energy, biomass and biofuel, natural gas and petroleum extraction, and tidal energy. Renewable energy policy and implications. [Offered: F]

Prereq: Level at least 2B Civil, Environmental, or Geological Engineering.

Antireq: CHE 330, ECE 309, ME 250, SYDE 381

ENVE 280 LAB,LEC,TST,TUT 0.50

Course ID: 014964

Fluid Mechanics

An introduction to fluid mechanics. Fluid properties. Review of fluid statics. Buoyancy. Bernoulli equation. The momentum equation and applications. Laminar and turbulent flow. Dimensionless numbers. Closed conduit flow including friction losses. Pipe network analysis including energy losses and efficiencies. Four lab sessions. [Offered: W]

Prereq: CIVE 105; 2A Environmental or Geological Engineering.

Antireq: CIVE 280

ENVE 298 SEM 0.00

Course ID: 009251

Seminar

General Seminar

Prereq: 2A Environmental Engineering

ENVE 299 SEM 0.00

Course ID: 009252

Seminar

General Seminar

Prereq: 2B Environmental Engineering

ENVE 300s

ENVE 330 LAB,LEC,TST,TUT 0.50

Course ID: 005244

Lab Analysis and Field Sampling Techniques

An introduction to the fundamental concepts of physical and chemical measurement of the environment. Review of basic statistics, quality assurance and control, sources of error, seasonal effects, sample preservation. Practical and essential elements of water, soil and air sampling. Introduction to measurement techniques including: colorimetry, chromatography, spectroscopy, electrochemical probes, remote sensing. Design of monitoring strategies, and use of methods to assess validity of laboratory data. [Offered: S]

Prereq: 3A Environmental Engineering

ENVE 335 LEC,TST,TUT 0.50

Course ID: 014965

Decision Making for Environmental Engineers

Decision-making, optimization, and assessment of environmental and water resource systems and the design process in environmental engineering. Multi-criteria decision-making methods for concept and embodiment engineering design phases. Risk-based system performance metrics and trend tests. Uncertainty estimation via First-Order Uncertainty Analysis and

Monte Carlo Simulation. Formulation and solution of linear, integer and nonlinear optimization models. Multi-objective optimization methods. Sensitivity analysis for decision-making and descriptive (numerical) models. [Offered: W, first offered Winter 2019]

Prereq: Level at least 3B Environmental Engineering.

Antireq: CIVE 332, MSCI 331

ENVE 375 LAB,LEC,TST,TUT 0.50

Course ID: 005248

Physico-Chemical Processes

Fundamentals of coagulation, flocculation, clarification, sedimentation, filtration, adsorption, air stripping, membrane technologies, chemical reduction/oxidation, and disinfection processes with applications to natural and various engineered systems. Quantitative analysis and design of processes and applications to the treatment of drinking water, wastewater, stormwater, groundwater and soils. [Offered: S]

Prereq: CHE 102, ENVE 280; 3A Environmental Engineering.

Antireq: CIVE 375

ENVE 376 LAB,LEC,TST,TUT 0.50

Course ID: 014966

Biological Processes

Common microbial substrates and metabolisms in engineered and natural systems, kinetics of microbial growth, stoichiometry of nutrient uptake, continuous flow stirred tanks with/without recycle, aeration system design, applications to wastewater treatment, solid waste management, groundwater and soil remediation. [Offered: W, first offered Winter 2019]

Prereq: ENVE 375; 3B Environmental Engineering

ENVE 383 LAB,LEC,TST,TUT 0.50

Course ID: 014958

Advanced Hydrology and Hydraulics

Physical and mathematical models of hydrological processes at the landscape scale and hydraulic phenomena in channels. Advanced models of evapotranspiration and snow energy balances. Hydrologic modelling: parameterization, boundary conditions, calibration. Simulation of energy losses, backwater effects, and gradually varying flow profiles in open channels. Sediment transport, scour, and erosion. [Offered: W, first offered Winter 2019]

Prereq: CIVE 382; Level at least 3B Civil, Environmental, or Geological Engineering

ENVE 391 LEC,TST,TUT 0.50

Course ID: 005249

Law and Ethics for Environmental Engineers

Philosophy of environmental controls; introduction to national and international regulatory structures relevant to industrial planning, emissions control, environmental impact assessment, occupational health; stance of government, industry and community pressure groups. Contract law. Professional ethics, including the social responsibility of engineers, conflicts of interest. [Offered: W]

Prereq: 3B Environmental Engineering

ENVE 398 SEM 0.00

Course ID: 009253

Seminar

General Seminar

Prereq: 3A Environmental Engineering

ENVE 399 SEM 0.00

Course ID: 009254

Seminar

General Seminar

Prereq: 3B Environmental Engineering

ENVE 400s**ENVE 400 PRJ,TUT 0.50**

Course ID: 005253

Environmental Engineering Project 1

Students undertake an independent Environmental Engineering design project during the last two terms of their program. The purpose of the project is to demonstrate students' abilities to practise in an Environmental Engineering capacity in their chosen area of expertise, using knowledge gained from their academic and employment experiences. The first part of the project (ENVE 400) will include problem identification, generation and selection of solutions and time management. Incorporation of technical, ecological, social, political and economic issues in the solution for the project will be required. A basic requirement of the proposed solution is that it must be compatible with the principles of sustainability. Requirements include: proposal, progress report, and a final report containing recommendations for part two of the project, ENVE 401. [Offered: F]

Prereq: 4A Environmental Engineering

ENVE 401 PRJ 0.50

Course ID: 005254

Environmental Engineering Project 2

A continuation of ENVE 400. The final design of the major Environmental Engineering project proposed in ENVE 400 will be undertaken. The purpose of this phase of the project is to carry out a detailed technical design of the solution proposed in ENVE 400. Requirements of this part of the two-term project include a final report. [Offered: W]

Prereq: 4B Environmental Engineering

ENVE 472 LAB,LEC,TST,TUT 0.50

Course ID: 005255

Wastewater Treatment

Wastewater quantity and characteristics. Primary treatment and secondary treatment. Reverse osmosis, ultra filtration, adsorption, air stripping, air flotation, chemical precipitation. Sludge treatment and disposal. Groundwater and leachate treatment. Industrial wastewater management. [Offered: F]

Prereq: ENVE 375; 4A Civil, Geological or Environmental Engineering.

Antireq: CIVE 572

ENVE 498 SEM 0.00

Course ID: 009255

Seminar

General Seminar

Prereq: 4A Environmental Engineering

ENVE 499 SEM 0.00

Course ID: 009256

Seminar

General Seminar

Prereq: 4B Environmental Engineering

ENVE 500s

ENVE 573 LEC,TUT 0.50

Course ID: 005256

Contaminant Transport

Importance and complications associated with environmental modelling, the model building process, limitations, and measures of success. Types of contaminants; transport phenomena with a focus on advection-dispersive transport; development of governing equations; types and utility of boundary and initial conditions; and mass balance considerations. Review of completely mixed systems including lakes, streams, source functions, feedback systems, and toxic substance models. Model calibration, sensitivity, and uncertainty: methods and approaches. Solute transport models and solution techniques including random walk, method of characteristics, finite difference method and finite volume method. Aspects of multiphase flow (gas/water and NAPL/water systems) with an emphasis on groundwater problems. Introduction to mass removal technologies for remediation of soil and groundwater systems. [Offered: W]

Prereq: ENVE 321, 375; Level at least 3B Civil, Geological or Environmental Engineering

ENVE 577 LAB,LEC,TUT 0.50

Course ID: 005257

Engineering for Solid Waste Management

The engineering aspects of solid waste management are examined. Attention is given to the engineering design and operational aspects of the control of generation, storage, collection, transfer and transport, processing and disposal of solid wastes in landfill site. Design of natural attenuation sites and system reliability features for landfill designs. [Offered: W]

Prereq: Level at least 3B Environmental, Civil or Geological Engineering

ENVIRONMENTAL STUDIES

ENVS 100s

ENVS 105 LEC 0.50

Course ID: 014371

Environmental Sustainability and Ethics

This course examines and evaluates the reasons why the compatibility of commercial activity, ethics and environmental stewardship has been challenged or defended by stakeholders in government, business and civil society organizations. Concepts and activities by which stakeholders describe and debate this compatibility will be discussed. Different cultural perspectives on the compatibility debate will be considered, compared and evaluated. Case studies will test whether and to what extent compatibility may be defended adequately. Private and non-profit enterprises will be considered.

Prereq: Level at least 2A Environment students or departmental consent

ENVS 131 LEC,TUT 0.50

Course ID: 013019

Communications for Environmental Professions

This course provides an introduction to strategies and tools that enhance the effectiveness and impact of communications for environmental professionals. The course focuses on topics such as effective presentation methods in small or large group settings, digital presentation techniques, media relations, and corporate communications strategies.

ENVS 178 LEC,TUT 0.50

Course ID: 005261

Environmental Applications of Data Management and Statistics

This course introduces techniques for collecting, evaluating, and using data-based evidence in environmental research, including descriptive statistics (measures of centre, variation and shape, and measures of association between two variables), statistical research designs, sampling theory, and fundamental probability theory for inferential statistics. The course also develops skills in using statistical software for data display and analysis.

Prereq: Not open to students in the Faculty of Mathematics

ENVS 195 LEC,SEM 0.50

Course ID: 005262

Introduction to Environmental Studies

This course introduces the field of environmental studies through an exploration of environmental issues that contribute to crises and challenges at the global, national and local levels. The course provides an overview of human ecological aspects of environmental studies from an inter-cultural and global perspective, and offers an integrative framework for understanding them.

Antireq: EARTH 122

ENVS 200s

ENVS 200 LAB,LEC 0.50

Course ID: 005263

Field Ecology

Introduces the main concepts and principles of ecology; the cycling of elements; energetics and structural organization of major ecological systems; population dynamics; impact of natural resource management practices and urban and industrial development on the environment; incorporating environmental quality considerations into development activities. The lab sessions include field trips to study natural and disturbed ecosystems, urban and applied ecology.

[Note: Field trip fee normally \$30+HST; will not exceed \$60+HST. WHMIS required.]

Prereq: Level at least 1B

ENVS 201 LEC,SEM 0.50

Course ID: 005264

Introduction to Canadian Environmental Law

Introduction to the basic legal framework that regulates the natural environment in Canada. The course provides students with an understanding of the foundational legal institutions in Canada and their respective roles in environmental regulation. The course includes both public and private law approaches to environmental regulation, and covers the principal regulatory tools used to protect the environment.

Prereq: Level at least 2A.

Antireq: (For Mathematics Students only) AFM 231/LS 283, BUS 231W, CIVE 491, GENE 411, ME 401, MTHEL 100/COMM 231

ENVS 220 LEC,TUT 0.50

Course ID: 005266

Ecological Economics

Evaluation of various economic approaches to the environment. The links between economics, systems and the natural environment will be explored and future directions examined.

ENVS 274 FLD,LEC,SEM 0.50

Course ID: 015035

Special Topics in Environment

This special topics course covers material relevant to all students in the Faculty of Environment. Course content is not specific to an individual program and is specified by the instructor at the level indicated by the course number.

Prereq: Level at least 2A

ENVS 278 LEC,TUT 0.50

Course ID: 005271

Applied Statistics for Environmental Research

This course examines further techniques for collecting, evaluating, and using data-based evidence in environmental research. It builds upon ENVS 178, with a focus on inferential statistics, including sampling distributions, confidence intervals, parametric and nonparametric hypothesis tests, and linear regression models. It further develops skills in using statistical software for data analysis and modeling of environmental data.

Prereq: ENVS 178; Environment students only.

Antireq: ARTS 280, ECON 221, SDS 250R, KIN 222, PSCI 314, PSYCH 292, REC 371, SOC 280, STAT 202, 206, 211, 221, 231, 241

ENVS 300s**ENVS 300 LAB,LEC 0.50**

Course ID: 015632

Vascular Plants of Southern Ontario

This is an applied course where students will learn to identify vascular plants using botanical keys. Through lab work and field trips, students will understand vascular plant structure and associated terminology as the basis for plant identification. Students will also learn how to collect specimens to create a herbarium collection and how to conduct vegetation community assessments.

[Note: Field trip fee normally \$60+HST; will not exceed \$80+HST]

Prereq: Level at least 2A.

Antireq: ENVS 474 001 S15; ENVS 474 001 S16; ENVS 474 001 S17

ENVS 374 FLD,LEC,SEM,WSP 0.50

Course ID: 015034

Special Topics in Environment

This special topics course covers material relevant to all students in the Faculty of Environment. Course content is not specific to an individual program and is specified by the instructor at the level indicated by the course number.

Prereq: Level at least 3A

ENVS 395 LEC 2.50

Course ID: 005290

Study Abroad

Study abroad for academic transfer credit under a Faculty of Environment Exchange Program.

Department Consent Required

ENVS 400s**ENVS 400 LEC 0.50**

Course ID: 014975

First Peoples and Business Development

This course examines the cultural, legal, constitutional, geographical and economic context of business development among, with and within First Nations', Métis and Inuit communities.

Prereq: Level at least 3A

ENVS 401 LEC 0.50

Course ID: 005294

Aboriginal Law and Natural Resource Development

Detailed consideration of recent developments in Canadian environmental and resources regulatory regimes.

Prereq: Level at least 3A

ENVS 433 FLD 1.00

Course ID: 005299

Ecotourism and Communities

A field course typically based out of the Waterloo Summit Centre for the Environment in Huntsville, Ontario. The course focuses on the philosophical, socio-cultural, health, and ecological dimensions of ecotourism, and the skills and practices necessary for planning and managing ecotourism for community development and well-being. The course will involve one or more overnight excursions to ecotourism destinations in the Muskoka or Haliburton region.

[Note: Field trip fee: \$500.00+HST to \$1500.00+HST]

Department Consent Required

Prereq: REC 230

(Cross-listed with REC 433)

ENVS 444 LEC 0.50

Course ID: 012661

Ecosystem and Resource Management in Parks/Natural Areas

From the local to the national level, this course examines the role of protecting and managing terrestrial, aquatic and marine ecosystems. This course also examines the tension between the development of natural resources and conservation by exploring a variety of major themes including biodiversity, ecological integrity and restoration. Normally analytical and field-based activities will be included as well as guest lectures from professionals working in the fields of conservation and protected areas.

Prereq: ENVS 200 or BIOL 150; Level at least 3A;

Antireq: REC 437

ENVS 469 LEC 0.50

Course ID: 005302

Landscape Ecology, Restoration and Rehabilitation

Survey of the major concepts and theories of landscape ecology. Application of these concepts to case studies in restoration and/or rehabilitation. Interaction with professionals from government, NGOs or private industry on ecological issues will also be part of the course. The course includes a practical component on the planning of ecological restoration or rehabilitation projects.

[Note: Field trip fee based on destination; will not exceed \$100+HST]

Prereq: ERS 211 or ERS 335; Level at least 4A

ENVS 474 LAB,PRJ,SEM,TUT 0.50

Course ID: 012288

Special Topics in Environmental Studies

This course allows for additions to the program on a short-term basis, and for the development of future permanent courses.

[Note: Field trip fee may be required]

Instructor Consent Required

ENVIRONMENT, RESOURCES AND SUSTAINABILITY**Notes**

Refer to "Schedule of Classes" to determine when courses are offered.

ERS 100s

ERS 100 LEC,TUT 0.50

Course ID: 005304

Foundations: Environment, Resources and Sustainability

Introduces analytical approaches for problem definition and problem solving that are appropriate for a wide range of environment and resource issues. Considers the limitations of approaches that perceive and attempt to manage issues as isolated phenomena. Also examines alternative approaches that recognize the broader context and underlying roots in ethical positions and ecological, economic and institutional systems.

Prereq: Environment, Resources and Sustainability students only.

Antireq: ERS 110

ERS 101 LEC,TUT 0.50

Course ID: 015422

Approaches: Environment, Resources and Sustainability

This course is one of 'solutions-based education' designed to use environmental case studies from local, provincial, national and international communities. We will analyze historical and contemporary cases and consider the interdisciplinary lessons that can be learned from them within the context of climate and technological change, political and economic constraints, community engagement and communication. The specific cases may change year by year depending on current events. Students will be encouraged to critically engage the scholarly, non-governmental, public media literatures and personalities.

ERS 102 LEC,TUT 0.50

Course ID: 015423

Sustainability and the Really Long View

Focusing on the relationship between complexity and energy in bio-physical, ecological and social contexts, we review trends in 'Big History' as it has unfolded from the Big Bang to the Internet. The course explores the implications of this 'deep-time' perspective for our understanding of the great challenge of sustainability.

Prereq: Environment, Resources and Sustainability students only

ERS 200s

ERS 201 LEC,TUT 0.50

Course ID: 015424

Environmental Policy, Politics and Governance

This course provides students with an introduction to processes of environmental policy, politics and governance. The roles of various actors, discourses and institutions involved in environmental policy-making and governance will be examined. These processes will be illustrated through an examination of a range of environmental issues from the local to the global level.

Prereq: Level at least 2A; Environment, Resources and Sustainability students only;

Antireq: ERS 210, ERS 275 001 F15

ERS 202 FLD,LEC,TUT 0.50

Course ID: 015425

Natural Resources Ecology

This course explores the ecology and context of Canada's main natural resources including mining, forestry, energy and agriculture. In addition, this course presents alternatives to status-quo approaches including organic agriculture, sustainable forestry and a movement away from traditional energy.

Prereq: Level at least 2A Environment, Resources and Sustainability students only.

Antireq: ERS 275 001 F16

ERS 215 LEC 0.50

Course ID: 005311

Environmental and Sustainability Assessment I

An introduction to processes and techniques for incorporating environmental considerations in planning and evaluating proposals for future undertakings that may have significant social and biophysical effects. The course provides an overview of methodologies for, and controversies surrounding, the design and conduct of biophysical and socioeconomic impact studies, and the testing of reported findings. The main focus is on the purposes and design of environmental assessment processes, with particular reference to the Canadian federal and Ontario provincial legal mandates, and the evolution of assessment into a sustainability framework.

Prereq: Level at least 1B

ERS 225 LEC 0.50

Course ID: 015426

Gendering Environmental Politics

Social identities such as gender, race, and class shape our interactions with our environment. This course provides the tools to analyze gender and other forms of social difference in the context of environmental and resource issues. This course also examines how governance, policy, and politics can be used to create social and environmental change.

Prereq: Level at least 2A

ERS 234 LEC 0.50

Course ID: 013898

Forest Ecosystems

This course examines the fundamental concepts of forest ecology and the role of forests in terrestrial ecosystems. The course will be divided into four sections, and will integrate case studies to introduce the student to current research problems in the study of forest ecology. Topics include: impacts/dependence of humans on forests; transfer and cycling of energy and nutrients; biophysical interactions; and forest management practices.

Prereq: Level at least 2A

ERS 253 LEC,TUT 0.50

Course ID: 005342

Communities and Sustainability

Exploration of the interconnected roles that communities at various scales can play in a larger transition towards sustainability. Examination of structures, activities, options and initiatives and decision making processes involving a wide range of key concerns and opportunities and applications. Illustrative cases include largely urban communities, the urban periphery and the broader influences that affect them.

Prereq: Level at least 2A

ERS 265 LEC,TUT 0.50

Course ID: 013671

Water: Environmental History and Change

This course explores issues of water management from ancient to recent history. Tensions related to water supply and demand, agriculture and urbanization, health and sanitation, gender and household access to water resources, urban water and wastewater infrastructure, trans-boundary politics and water privatization debates are considered. Readings and detailed assessments of national and international cases from Europe, Western Asia, and North America are used as a basis for in-class discussion and research projects.

Prereq: Level at least 2A Environment, Resources and Sustainability students only.

ERS 270 LEC 0.50

Course ID: 005312

Introduction to Sustainable Agriculture

Provides both survey and detailed examinations of the ethics, science, and techniques involved in sustainable agriculture.

Topics normally include management of crops, soil, water, nutrients, wastes and pesticides, integrated pest management, organic farming, permaculture, ecological farm planning, use of genetically modified organisms, urban agriculture in developing nations, and innovations such as computer modelling and precision farming.

ERS 275 OLN,RDG 0.50

Course ID: 005313

Special Readings/Seminar on Select Topics

Background reading and study in consultation with faculty. Typically utilized when a student must study a topic in connection with other work, but no course offering in that topic is available.

Instructor Consent Required

ERS 283 FLD,OLN 1.00

Course ID: 012892

Ontario Natural History: Species and Patterns

An introduction to natural history, the art and science of identifying organisms, and observing their behaviour and ecological interactions. The students will reside for approximately nine days in a location in Ontario that has exceptional biodiversity. They will learn about local species (with an emphasis on insects, plants, and terrestrial vertebrates), human history and conservation initiatives. Each student must complete a project on an ecological "pattern" in consultation with the professor.

[Note: Field trip fee normally \$350+HST; will not exceed \$440+HST.]

Instructor Consent Required

Prereq: ENVS 200; Level at least 2A

ERS 294 LEC 0.50

Course ID: 010224

The Sacred Earth: Religion and Ecology

An examination of the past and present effects of Christianity and other world religions on human treatment of the natural world. Historical background, recent debates, and contemporary approaches to the ethical issues will be investigated.

[Note: This course fulfils an Area 3C requirement for Religious Studies majors.]

(Cross-listed with RS 285)

ERS 300s

ERS 300 PRJ,TUT 0.50

Course ID: 005370

Social Ecological Systems Analysis

This course provides an opportunity to learn and begin to apply systems-based tools in the context of an interdisciplinary research problem defined by the student in cooperation with the teaching-team. Students are provided with an introduction to the conceptual tools of systems thinking and resilience that help understand the dynamics of social change and social innovation. These conceptual tools will then be applied by students to provide a framework for interdisciplinary research and to develop a richer understanding of a case study of fostering social change and building adaptive capacity.

Prereq: Level at least 2A; Environment, Resources and Sustainability students only;

Antireq: ERS 311

ERS 301 LEC,TUT 0.50

Course ID: 015433

Sustainability Thought, Practice and Prospects

A survey of humans making a living and otherwise interacting with each other and the biophysical environment in a complex world from ancient times to the present. Emphasis on the great agricultural and industrial transitions, reactions to their consequences, the rise of current sustainability concerns, and implications for transitions today in the pursuit of desirable and

viable futures.

Prereq: Level at least 2A; Environment, Resources and Sustainability students only;

Antireq: ERS 310

ERS 315 LEC,TUT 0.50

Course ID: 005339

Environmental and Sustainability Assessment II

Continuing from concepts developed in ERS 215, this course places more emphasis on case studies and projects by students. The course provides a synthesis of ecological, physical, economic, socio-cultural and institutional concerns, as well as experience in the use of impact assessment methodologies and approaches, as a key element in achieving more informed and responsible decision making.

Prereq: ERS 215 and ENVS 200

ERS 316 SEM 0.50

Course ID: 011666

Urban Water and Wastewater Systems: Integrated Planning and Management

Focus on urban water management in North America, Australia, Western Asia and the Global South as illustrative systems or cases. Given changing climate conditions, there is increased likelihood of extreme events (e.g., urban flooding and drought) and new water management challenges. Development and maintenance of urban water and wastewater systems, along with demand and supply management planning, efficiency mechanisms, development and equity concerns, will be examined.

Prereq: Level at least 2A

ERS 317 LEC,TUT 0.50

Course ID: 005332

Waste Management

This course will deal with the solid waste system, landfilling, incineration, energy from waste, recycling, composting, reduction and reuse. The context will be primarily Ontario and municipal waste management.

Prereq: Level at least 2B

ERS 318 LAB,STU 0.50

Course ID: 015556

Photography for Sustainability

Use digital photography to communicate perspectives on sustainability topics; develop and strengthen creative photography and digital image processing skills. [Notes: Course fee required; will not exceed \$50 + HST; some digital photography experience beneficial; access to a RAW-capable digital camera essential.]

Instructor Consent Required

Prereq: Level at least 3A;

Antireq: ERS 375 001 F16; ERS 375 001 F17

ERS 320 SEM 0.50

Course ID: 014369

Economics and Sustainability

This course offers an examination of relationship between the economy, the environment and sustainability. The course aims to provide students with an understanding of the differing viewpoints on the economy-environment relationship and their associated methods, including their strengths, weaknesses and applicability in a policy context.

Prereq: Level at least 3A.

Antireq: ERS 464

ERS 321 LEC 0.50

Course ID: 015427

Coastal Social-Ecological Systems

This interdisciplinary course integrates science and policy issues to consider coastal systems as dynamic and linked systems of people and nature. Course content and case studies emphasize key challenges and drivers of change in coastal systems, as well as frameworks and approaches to understand and sustainably govern coastal settings.

Prereq: Level at least 2A.

Antireq: ERS 375 002 F16

ERS 328 LEC,TUT 0.50

Course ID: 015428

Environmental Politics and System Change

Incremental, transformative and revolutionary system change is seen to derive from a variety of (technological, ecological, institutional, political) drivers. Exploring the history and sociology of environmental politics, the course reviews the drivers of disruptive system change focusing on the role of exogenous shocks, the cumulative impact of environmental science, radical ideas, disruptive technology, mainstream party politics and institutional adaptation, social innovation and traditional 'revolutionary' politics.

Prereq: Level at least 2A

ERS 330 LEC 0.50

Course ID: 005336

Environmental Journalism 1

Introduction to writing (and preparing graphics) for print media on environmental issues, through practical experience working on the environmental journal *Alternatives: Perspectives on Society, Technology and Environment*. Each participant covers an environmental news beat in a selected regional (e.g. Atlantic Canada) or sectoral (e.g. law, technology, waste) topic area.

Instructor Consent Required

ERS 335 FLD,LEC 0.50

Course ID: 013301

Restoration Ecology

This course will promote class discussion of the theoretical foundations of restoration ecology and their relationship to project implementation, current academic and professional practice, and forecast trends in the discipline. There will be an emphasis on how restoration ecology is changing in the face of small and large scale ecosystem and cultural dynamics. Class will include instruction and experience on how consultants and private or NGO sectors address restoration ecology. The course will emphasize experiential education in the form of a project scoped for time allotted and involve site design, experimental design, project implementation, statistical analysis of data, and professional level writing for academic and practitioner audiences.

Prereq: Level 2A.

Antireq: ERS 211

ERS 337 LEC 0.50

Course ID: 015420

ReWilding and Ecological Restoration

Focus is on restoration and conservation at landscape scale, including an emphasis on connectivity, reintroduction of keystone species, novel ecosystems, re-introduction of apex predators, herbivores, and omnivores. Because ReWilding can be infused with various political agendas and ideologies, technocratic issues, policy ambitions, and governance issues, students can expect to experience a course focused on ecology and technical skills but contextualized and connected to the larger concepts of socioecological change and resilience. There may be opportunities for field experiences.

Prereq: ENVS 200 or BIOL 150.

Antireq: ERS 375 001 W17; ERS 375 001 W18

ERS 340 FLD,LEC,OLN 1.50

Course ID: 014098

Ecosystem Assessment

An applied ecology course for those interested in becoming professional ecologists. In keeping with the Ecological Society of America's Professional Ecologist Certification and the Society for Ecological Restoration's Certification Programme, intensive, multiple-weeks of field skill exercises are undertaken including advanced ecological sampling and experimental design, ecological sample analysis, use of provincially recommended protocols such as VSP (Vegetative Sampling Protocol), and intermediate to advanced taxonomic identification skills. May include certification and accreditation opportunities such as the Ontario Benthos Biomonitoring Network (OBBN) and the Ontario Stream Assessment Protocol and training in Electrofishing and Boating (for research). Location of the course will be within southern Ontario.

[Note: Field trip fee normally is \$1000 +HST; it will not exceed \$1500+HST.]

Department Consent Required

Prereq: Level at least 2B

ERS 341 FLD,LEC,OLN 1.50

Course ID: 014099

Professional Conservation and Restoration Practice I

An applied ecology course for those interested in becoming professional ecologists. In keeping with the Ecological Society of America's Professional Ecologist Certification and the Society for Ecological Restoration's Certification Programme, an intensive, multiple-weeks field ecology project that students help design and then implement; students learn how to manage and perform ecosystem restoration and conservation projects. Students also will improve practical site inventory and assessment skills for restoration and conservation goals. Projects may involve site constraints, and potential for bioengineering, bioremediation, vegetation installation and erosion-control measures. Location of the course will be within southern Ontario.

[Note: Field trip fee normally \$750+HST; will not exceed \$1000+HST.]

Department Consent Required

Coreq: ERS 340

ERS 342 FLD,LEC,TUT 1.00

Course ID: 015018

Professional Conservation and Restoration Practice II

An applied ecology course that is designed for those interested in becoming professional ecologists. In keeping with the Ecological Society of America's Professional Ecologist Certification and the Society for Ecological Restoration's Certification Programme, the core vehicle is a 7-10 day field trip that involves on-site discussions of the successes and challenges of ecological restoration and/or conservation projects with practitioners. Normally, these projects are located in the Carolinian Zone and have some focus on coastal areas of Lake Erie. The course will provide a platform for learning the advanced and professional principles of restoration and conservation ecology and the restoration of ecosystem services.

[Note: Field trip fee normally \$750+HST; will not exceed \$1000+HST.]

Department Consent Required

ERS 346 LAB,LEC 0.50

Course ID: 015020

Wildlife Ecology

This course introduces the main concepts and principles of wildlife ecology. Topics include: population dynamics, animal behavior, habitats, genetics, predation, and habitat use. The lab component will introduce students to wildlife data collection, analysis, and interpretation.

Prereq: ENVS 178 or STAT 202; ENVS 200 or BIOL 150

ERS 361 OLN 0.50

Course ID: 013956

Food Systems and Sustainability

This course examines dimensions of food systems sustainability and food security, from production to consumption, from local to global scales, in the Global North and South. Specific themes covered in the course include technological and genetic change in food production, resource depletion and wider environmental impacts of the industrial food system, and policy, market-oriented, and civil society initiatives to bring about change in the food system, including organic production and localizing food systems. [formerly: GEOG/ERS 461] [Offered online only.]

Antireq: ERS 461/GEOG 461/ERS 489/PSCI 489/GEOG 429

(Cross-listed with GEOG 361)

ERS 365 LEC,TUT 0.50

Course ID: 013672

Water Governance

Water governance refers to the processes and institutions through which societies make decisions and take actions that affect water. A profound, world-wide shift in the nature of water governance is occurring because governments can no longer be the primary source of decision making authority regarding water. Instead, through mechanisms that range from markets to co-management arrangements, citizens, non-government organizations and corporations are now playing key roles in water governance. The course explores major water governance challenges in Canada, and assesses different ways of addressing or resolving them.

Prereq: Level at least 3A; Environment, Resources and Sustainability students only.

ERS 370 LEC,TUT 0.50

Course ID: 005345

Corporate Sustainability: Issues and Prospects

A course that examines the ways in which sustainability issues and business operations have interacted, considering progressively 'greener' corporate responses and broader sustainability challenges.

Prereq: Level at least 2B; Not open to Environment and Business students

ERS 372 LEC,TUT 0.50

Course ID: 011667

First Nations and the Environment

First Nation environmental issues are often complex and require a holistic approach where the lines between different disciplines (e.g. natural, physical, health, and social sciences) are often obscured. The environment, as described in this course, includes the natural (biological) and built (social, political) settings. Case studies will be used to illustrate significant issues.

Prereq: Level at least 2A

ERS 373 FLD,LEC,OLN,TUT 0.50

Course ID: 014716

Special Topics in Environment, Resources and Sustainability

Course content varies according to instructor availability and demand for specific topics in environment, resources and sustainability and may include field courses.

[Note: Field trip fee may be charged.]

Instructor Consent Required

Prereq: Level at least 2B

ERS 374 FLD,LEC,OLN,TUT 1.00

Course ID: 014717

Special Topics in Environment, Resources and Sustainability

Course content varies according to instructor availability and demand for specific topics in environment, resources and sustainability and may include field courses.

[Note: Field trip fee may be charged.]

Instructor Consent Required

Prereq: Level at least 2B

ERS 375 OLN,RDG,TUT 0.50

Course ID: 005346

Special Readings/Seminar on Select Topics

Background reading and study in consultation with faculty. Typically utilized when a student must study a topic in connection with other work, but no course offering that topic is available.

Instructor Consent Required

ERS 382 FLD,LEC,OLN 0.50

Course ID: 005326

Ecological Monitoring

This block field course provides students with theoretical and practical knowledge of ecological monitoring through active participation in programs applying protocols developed by the Smithsonian Institute/Man and the Biosphere Program. The course is a collaborative effort with professional staff from selected governmental agencies, and independent organizations.

[Note: Field trip fee normally \$400+HST; will not exceed \$500+HST. Offered: After spring examinations, prior to the fall term.]

Instructor Consent Required

Prereq: ENVS 200 or BIOL 150

ERS 383 LEC 0.50

Course ID: 012580

Tropical Ecosystems

This course examines the fundamental concepts of terrestrial ecosystems in tropical climates. The course has three sections: (1) biophysical aspects (climate, location, landforms, soil, vegetation), (2) tropical resource systems (forest- and agroecosystems) within the framework of conventional and sustainable resource extraction, and (3) current conservation issues. Case studies are presented.

Prereq: ENVS 200 or Instructor Consent

(Cross-listed with BIOL 383)

ERS 400s

ERS 400 LEC,TUT 0.50

Course ID: 015429

Social-Ecological Approaches to Sustainability

This course examines how societies and organizations deal with and respond to social-ecological system complexity, uncertainty and change, and emphasizes tools, strategies and approaches to foster environment and resource sustainability.

Prereq: Level at least 3A; Environment, Resources and Sustainability students only;

Antireq: ERS 410

ERS 401 LEC,TUT 0.50

Course ID: 015430

Sustainability Science and its Critiques

This course is the capstone opportunity for students to engage in an advanced critical analysis regarding the validity and evidence for the notion of sustainability and where it intersects with the full range of the sciences (social, physical, natural) and political action. The course will explore what alternatives exist within and outside of the theoretical framework of sustainability and what implications these all have for the relationship and practical operations between society and the sphere of issues related environment and resources. While there will be some lectures, the intent is to have students participate more intensively in both class and tutorial discussions.

Prereq: ERS 300 and ERS 301; Environment, Resources and Sustainability students only

ERS 402 SEM,TUT 0.50

Course ID: 015431

Senior Honours Research Seminar

This course focuses upon research on complex problems that are typical when examining how to foster environmental sustainability and sustainable use of resources. The seminar format is designed to allow students to engage in deeper discussions about how to approach and attempt to resolve these complex problems. There will be tutorials to facilitate discussion in smaller groups. Learning opportunities will vary from term to term and may include small projects.

Prereq: Level at least 4A; Environment, Resources and Sustainability students only;

Antireq: ERS 413

ERS 403A PRJ 0.50

Course ID: 005401

Senior Honours Thesis

This course is for students who have defined a problem related to the mission and scope of the School of Environment, Resources and Sustainability and will undertake original research that leads to production of a thesis. ERS 403A normally consists of final revisions to a concise research proposal and beginning of the research tasks; this process may vary slightly, depending on the nature of the research. The research process and thesis write-up will continue and be concluded in ERS 403B.

[Note: Students who wish to take this course should begin intensive planning and discussion with potential advisors in a field relevant to their intended research. Students must secure agreement with a tenured/tenure track professor in SERS to act as the thesis advisor no less than 4 months before the course's initiation. Preparation is expected to begin 6-12 months in advance to the course's initiation.]

Instructor Consent Required

Prereq: Level at least 3B; Environment, Resources and Sustainability students only.

Antireq: ERS 402; ERS 411A

ERS 403B PRJ 0.50

Course ID: 005402

Senior Honours Thesis

This course is a continuation of ERS 403A. It normally consists of a continuation of the research process that began in ERS 403A and leads to the completion of the research and the thesis write-up. It is for students who have defined a problem related to the mission and scope of the School of Environment, Resources and Sustainability and will undertake original research that leads to production of a thesis. The procedures outlined in ERS 403A must be followed.

Instructor Consent Required

Prereq: Level at least 3B; Environment, Resources and Sustainability students only.

Antireq: ERS 402; ERS 411B

ERS 404 LEC,TUT 0.50

Course ID: 005377

Global Environmental Governance

Examination of the ways in which world society is striving to address environmental challenges by means of 'global governance' - that is, international organizations and institutions intended to deal with these challenges. The history of international environmental politics will be reviewed, specific organizations and other actors involved in global environmental governance will be examined and the management of particular global environmental challenges investigated.

Prereq: Level at least 3A

(Cross-listed with PSCI 432)

ERS 406 LEC 0.50

Course ID: 015023

Paths to Sustainability

Experiential and reflective course examines everyday significance of several 'metaphors we live by' both as citizens and as environmentalists. Examines links between language, worldview and sustainability by contrasting metaphors used in sustainability discourse, including ecological balance and health, ecosystem services, planetary boundaries, resilience and restoration.

Prereq: Level at least 3A

ERS 413 LEC 1.00

Course ID: 013962

Senior Honours Research Seminar

This course consists of intensive readings, seminar discussion and a major one-term research paper. It will be taken instead of ERS 411A/B or ERS 412A/B. One particular socio-ecological thematic area will be used in areas such as environmental health, environmental decision-making, climate change, ecological restoration, environmental history, etc. A major analytical research paper and presentation will be required, as well as participation in weekly seminar discussions.

Prereq: Level at least 3B; Environment, Resource and Sustainability students only;

Antireq: ERS 411A/B, ERS 412A/B

ERS 415 LEC 0.50

Course ID: 005386

Environmental and Sustainability Assessment III

Continuing from concepts developed in ERS 215 and ERS 315, this course will focus on the latest concepts and applications of assessment principles and practices. The course focus will vary from year to year following development in the field. Topics may include assessment into land use planning and community design, policy and program assessment, and assessment of new technologies and alternative futures.

Prereq: ERS 315

ERS 422 FLD,OLN,RDG 0.50

Course ID: 014683

Biosphere Reserves as Social-Ecological Systems

A term-long reading course introducing students to social-ecological systems, using the UNESCO Biosphere Reserve in Georgian Bay. Internationally known as "experiments in sustainable development," biosphere reserves pursue conservation of biodiversity, sustainable resource management, and aim to build social and ecological resilience. Students will link theories from their readings to guest lectures and excursions that address aquatic ecosystems, sustainable forestry, species at risk management, and indigenous knowledge.

[Note: Field trip fee normally \$400+HST; will not exceed \$450+HST.]

Department Consent Required

Prereq: Level at least 3A

ERS 431 SEM 0.50

Course ID: 015432

Ecological Consequences of Climate Change

This course focuses on the ecological consequences of climate change and associated effects on biodiversity. This course examines the challenges a changing climate poses for ecology, conservation biology research and management. The evidence that we will use in this course will be taken from scientific papers, expert knowledge systems and a variety of alternative approaches.

Prereq: Level at least 3A

ERS 443 FLD,LEC,TUT 1.00

Course ID: 015025

Ecosystem Field Research

This field research course is designed to involve students in high level intensive research on the function and/or structure of ecosystems as they change because of successional and human processes. Students will normally undertake an experimental approach to an ecosystem-based problem and evaluation outcomes of their experiment or long-term data sets. The course will be focused on one ecosystem per offering, e.g. marine, aquatic, terrestrial forest, mountain. It is expected that the course will be off-campus at a field station or protected area within North America but there may be opportunities to deliver it outside of North America. When offered, the syllabus will provide details on exact location.

[Note: Field trip fee normally \$2500+HST; will not exceed \$3125+HST.]

Department Consent Required

Prereq: ENVS 178 or STAT 202; ENVS 200 or BIOL 150

ERS 446 LAB,LEC 0.50

Course ID: 015021

Wildlife Management

This course introduces the main concepts and principles for the management of wildlife species. This course builds on ERS 346 and explores the application of the principles from that course to the management of wildlife. The lab component will build on the skills of wildlife data collection, analysis, and interpretation presented in ERS 346.

Prereq: ENVS 178 or STAT 202; ENVS 200 or BIOL 150, ERS 346

ERS 454 SEM 0.50

Course ID: 014682

Parks and Protected Areas: Issues and Trends

Government decisions to conserve rather than develop natural resources are nationally and internationally significant, but are often controversial. This course examines public policy objectives, issues and diverse perspectives related to the conservation of marine and terrestrial environments through the establishment and ongoing management of parks and protected areas. Lectures, seminar discussions and assignments engage students in the exploration of key public policy conservation issues.

Prereq: Level at least 3A

ERS 462 LEC 0.50

Course ID: 013955

Global Food and Agricultural Politics

This course examines the global food and agriculture system. Specific themes to be covered include political and governance issues related to the Green Revolution, global food corporations, agricultural trade liberalization, food aid, international agricultural assistance, the global agro-chemical industry, and agricultural bio-technology.

Prereq: Level at least 3B.

Antireq: ERS 489/PSCI 489/GEOG 429

(Cross-listed with GEOG 462, PSCI 488)

ERS 473 FLD,LEC,TUT 0.50

Course ID: 014718

Special Topics in Environment, Resources and Sustainability

Course content varies according to instructor availability and demand for specific topics in environment, resources and sustainability and may include field courses.

[Note: Field trip fee may be charged.]

Instructor Consent Required

Prereq: Level at least 3B

ERS 474 FLD,LEC,OLN,TUT 1.00

Course ID: 010174

Special Topics in Environment, Resources and Sustainability

Course content varies according to instructor availability and demand for specific topics in environment, resources and sustainability and may include field courses.

[Note: Field trip fee may be charged.]

Instructor Consent Required

ERS 475 OLN,RDG 0.50

Course ID: 005388

Special Readings/Seminar on Select Topics

Background reading and study in consultation with faculty. Typically utilized when a student must study a topic in connection with other work, but no course offering that topic is available.

Instructor Consent Required

ERS 484 LEC 0.50

Course ID: 012719

Soil Ecosystem Dynamics

This course examines the role of soil in the environment, its importance as a natural resource in agricultural and forest productivity, and the effects on soil resources as a result of different management practices. It is divided into three sections: 1) introduction to soil composition, formation, and physical, chemical and biological characteristics of soil; 2) soil degradation and management approaches to rehabilitation; 3) soil pollution and the role of soil in maintaining environmental integrity.

Prereq: ENVS 200 or Instructor Consent

(Cross-listed with GEOG 404)

ENVIRONMENT, RESOURCES AND SUSTAINABILITY**Notes**

Refer to "Schedule of Classes" to determine when courses are offered.

FILM 200s**FILM 246W LEC 0.50**

Course ID: 015711

German Film (WLU)

Department Consent Required

FILM 257W LEC 0.50

Course ID: 015710

The Western (WLU)

Department Consent Required

FINE ARTS**Notes**

1. Students should consult the "Fine Arts Course Offerings" lists, available from the [Fine Arts web page](#) or the undergraduate coordinator, before each term, to ensure that the courses they select are offered. Budget restrictions, enrolment, and availability of faculty may cause some courses to be withdrawn.
2. Students should expect material costs to range between \$60 and \$200 per studio course.
3. For 100-level introductory courses in art history, film, and media, please see [VCULT \(Visual Culture\)](#) or contact the Visual Culture co-ordinator.
4. For 300-level studio topics courses, including FINE 307 and FINE 392, please consult the [Fine Arts web page](#) or the undergraduate co-ordinator before the start of each term for a list of all topics offered.

FINE 100s**FINE 100 STU 0.50**

Course ID: 013490

Studio Fundamentals

This course introduces the basic principles of drawing as it relates to concepts of 2D, 3D, and time-based media, through a series of drawing exercises and projects.

[Note: This course is primarily for students who are considering a Fine Arts studio academic plan. It includes a significant component of mandatory life drawing from the nude model. Please see the Fine Arts academic plans concerning admission to upper-level studio courses.]

FINE 101 LEC,TUT 0.50

Course ID: 013622

Art History and Visual Culture

This course takes a case study approach to examining the role of the art object as a means of communication within the history of visual culture. Particular attention will also be paid to the unique properties of a range of diverse media, both traditional and new.

Antireq: FINE 110

(Cross-listed with VCULT 101)

FINE 102 LAB,LEC,TUT 0.50

Course ID: 013621

World Cinema and Visual Culture

Introduction to film analysis via national cinemas and their worldwide reception, taking into account the role of new technologies. This course acknowledges not only the importance of multiple languages and cultures on the planet today but also the rapidly growing international contexts, complicated chains of production and distribution, and vastly different cultures of spectatorship.

[Note: All films will be shown with subtitles; no second language expertise is required.]

(Cross-listed with VCULT 100)

FINE 112 LEC 0.50

Course ID: 005422

Modern Art, 1874-1945

A study of the culture of Europe and North America from 1874 (Impressionism) to 1945 (Nazi propaganda) with particular focus on the visual arts. Topics such as 'primitivism', Cubism, 'abstraction', artists' reactions to calamitous world events such as World War I, and various methodologies, including semiotic and Marxist analyses, will be explored through reading and writing assignments.

[Note: Art History course]

Antireq: FINE 211

FINE 130 STU 0.50

Course ID: 013957

Introduction to Digital Imaging

This online course is an introduction to current imaging software that students use to explore contemporary topics through digital imaging. This course is taught from a Fine Arts perspective.

[Note: Studio course. Not open to students who have completed FINE/GBDA 228 or FINE/GBDA 229.]

Antireq: FINE 204 section 081 (online) taken fall 2011 or winter 2012

Only offered Online

FINE 150 LEC,STU 0.50

Course ID: 011369

Appreciation and Expression

The course delivers an introduction to a variety of basic techniques and concepts relevant to contemporary 2D, 3D, and digital art practices, through a series of structured studio exercises and assignments.

[Note: Formerly FINE 200. Studio Course. This is a repeatable course, subject to different content; it may be completed a total of two times. This course cannot be used to fulfil Fine Arts Studios degree requirements.]

FINE 200s

FINE 202 STU 0.50

Course ID: 013491

Painting

This course explores issues of representation and abstraction, with a focus on painting and colour theory and practice.

[Note: Studio course]

Prereq: FINE 100 or 120 and 121; Portfolio Review Milestone

FINE 204 STU 0.50

Course ID: 013500

Topics in Studio Practice

This course consists of topics in studio practice. The topics can change from term to term.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

FINE 205 LEC 0.50

Course ID: 013501

Topics in Art History

This course consists of topics in art history. The topics can change from term to term.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

FINE 206 LAB,LEC 0.50

Course ID: 013502

Topics in Film Studies

This course consists of topics in film studies. The topics can change from term to term.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

FINE 209 LEC 0.50

Course ID: 012716

Modern Art, 1940-1970

This course explores two dominant themes in art of the mid-twentieth century: Abstract Expressionism and Pop Art, and their variants in the United States, Canada, and Europe.

[Note: Art History course]

Prereq: FINE 112.

Antireq: FINE 219

FINE 210 LEC 0.50

Course ID: 005425

Art, 1780-1875

A study of art and architecture in European and American culture between c. 1780 and c. 1875. Some of the pertinent themes discussed include: art and revolutions; art and the Industrial Revolution; the rise of landscape painting; the urban environment; the exotic; and the erotic. Cross-cultural influences and the complex relationship between the traditional and the 'modern' are particularly emphasized.

[Note: Art History course]

FINE 212 LEC 0.50

Course ID: 005427

Renaissance Art, 1300-1500

An examination of the art of the fourteenth and fifteenth centuries in Europe. Amongst the many themes that will be explored in this course are: mediums (including exploitation of oil paint); scientific perspective; humanism; court structures; art and mercantile sectors; and prominent collectors.

[Note: Art History course]

Prereq: Level at least 2A

FINE 213 LEC 0.50

Course ID: 005429

Art of the 16th Century in Europe

Some of the finest works of art in the western world were produced and some of the most successful artists flourished in this tumultuous century that saw the split in the western Christian Church and the continued rise of extraordinarily powerful court families and monarchs. This course will examine these works of art and the artists against this backdrop. Arranged according to patrons, the course also examines particular stylistic trends (Mannerism, the persistence of the Gothic, etc.) as well as other pertinent issues such as collecting; the writing of art history; the teaching of art; and the role of the artist in society.

[Note: Art History course]

Prereq: Level at least 2A

FINE 214 LEC 0.50

Course ID: 005430

Visual Culture of Medieval Europe

This course explores the visual culture of medieval Europe from the 4th century to the 13th century. The primary focus of this course is the dynamic intersection of cultures and faiths with particular emphasis on emergent and evolving Christianity, Islam, and Judaism, as expressed in architecture, sculpture, manuscripts, metalwork, textiles, and more.

[Note: Art History course]

FINE 215 LEC 0.50

Course ID: 005431

Art of the 17th Century in Europe

Art of the 17th Century. This course focuses on art produced in Italy, Spain, France, England and the Netherlands in the 17th century. Various types of art (history painting, portraiture, still life, etc.) and architecture (churches, palaces, city homes, etc.) are discussed in relation to the primary political, religious and societal concerns that characterize the different geographical regions.

[Note: Art History course]

Prereq: Level at least 2A

FINE 216 LEC 0.50

Course ID: 005483

Topics in First Nations' Visual Culture

A study of historical and contemporary aspects of First Nations' visual culture. The particular emphasis will vary according to the specialization and interests of the instructor.

[Note: Art History course]

FINE 217 LEC,SEM 0.50

Course ID: 005500

Art of the 18th Century in Europe

This course is designed to introduce students to the culture of eighteenth century Europe. Particular attention is paid to France and Britain but these countries are discussed within the wider context of Europe and, at times, much of the world. By looking at the art, artists, patrons and collectors, some of the issues that will be discussed include cosmopolitanism, nationalism, empire-building, "taste", consumerism and women in society.

[Note: Art History course. Formerly FINE 331]

Prereq: Level at least 2A.

FINE 220 STU 0.50

Course ID: 005435

Oil Painting

Various technical methodologies of oil painting and pictorial composition are developed in this course through a series of explorations in observation and abstraction. The plurality of approaches available to painters today is set within a contemporary critical context.

[Note: Studio course]

Prereq: FINE 202

FINE 221 STU 0.50

Course ID: 005438

Acrylic and Mixed Media

This course takes a materially specific approach to painting projects involving acrylic and mixed media. Emphasis is placed on creative problem solving in the context of contemporary art practice.

[Note: Studio course]

Prereq: FINE 100 or 120 and 121; Portfolio Review Milestone

FINE 222 STU 0.50

Course ID: 005439

Principles of Sculpture

This studio course is designed to introduce students to a variety of traditional and contemporary approaches, materials, processes, and conceptual concerns related to working in sculpture. Through demonstrations, presentations, critiques, and discussions, students gain expertise and develop a sculptural vocabulary.

[Note: Studio course]

Prereq: FINE 100, or 120 and 121; Portfolio Review Milestone

FINE 223 STU 0.50

Course ID: 005440

Methods and Materials of Sculpture

This studio course emphasizes practical applications of traditional and contemporary materials, processes, and conceptual concerns.

[Note: Studio course]

Prereq: FINE 100 or 120 and 121; Portfolio Review Milestone

FINE 224 STU 0.50

Course ID: 005442

Expressive Drawing

Expressive drawing techniques are emphasized through study with the life model. Conceptual drawing projects provide the student with the opportunity to produce bodies of work.

[Note: Studio course. This course includes a significant component of mandatory life drawing from the nude model.]

Prereq: FINE 100 or 120 and 121; Portfolio Review Milestone

FINE 225 STU 0.50

Course ID: 005443

Observational Drawing

Observational techniques are used to develop an understanding of the principles and concepts of drawing practice.

[Note: Studio course. This course includes a significant component of mandatory life drawing from the nude model.]

Prereq: FINE 100 or 120 and 121; Portfolio Review Milestone

FINE 226 STU 0.50

Course ID: 013492

Experimental Drawing

Experimental drawing is a course for those who wish to challenge their ideas about drawing and image making. An emphasis will be placed on contemporary approaches to drawing and the development of individual forms of expression.

[Note: Studio course. This course includes a significant component of mandatory life drawing from the nude model.]

Prereq: FINE 100 or 120 and 121; Portfolio Review Milestone

FINE 227 STU 0.50

Course ID: 005453

Photography

Students will explore black and white analogue (film) photography techniques and history, taught through a series of exercises, with an emphasis on fine arts practice.

[Note: Formerly FINE 228E. Studio course. Students are required to own or have access to a fully manual 35mm film camera.]

Prereq: FINE 100 or 120 and 121; Portfolio Review Milestone

FINE 228 STU 0.50

Course ID: 005452

Digital Imaging

In this course students are introduced to digital tools through a series of exercises and assignments that cultivate both artistic expression and technical skill. Topics include photography, design, typography, and critical and cultural theory taught from a fine art perspective.

[Note: Studio course. Previous experience with digital image manipulation is useful.]

Prereq: Fine 100 or 130; Portfolio Review Milestone.

Antireq: DAC 203/301/ENGL 304; FINE 228/GBDA 228 taken prior to Fall 2017

FINE 229 STU 0.50

Course ID: 005456

Hybrid Digital Media

This course uses a variety of digital software to explore the place of digital technology in contemporary art practice. Group discussions and individual assignments are major components of this course.

[Note: Studio course]

Prereq: Fine 100 or 130; Portfolio Review Milestone.

Antireq: DAC 203/301/ENGL 304; FINE 229/GBDA 229 taken prior to Fall 2017

FINE 230 STU 0.50

Course ID: 005445

Printmaking

Students are introduced to a variety of printmaking processes. Techniques explored include etching, engraving, monoprinting, collograph, and lithography. Training in traditional skills is combined with opportunities for individual expression.

[Note: Formerly FINE 226A. Studio course.]

Prereq: FINE 100 or 120 and 121; Portfolio Review Milestone

FINE 231 STU 0.50

Course ID: 013494

Mixed Multiples

The course examines the field of traditional printmaking which has expanded to include new and emerging photo-based technologies and ideas that focus on the concept of the multiple.

[Note: Studio course]

Prereq: FINE 100 or 120 and 121; Portfolio Review Milestone

FINE 232 STU 0.50

Course ID: 013495

Video and Sound

This course explores time-based media within a contemporary art context focusing on video and sound. Students learn how to record and edit material through a series of short self-directed projects. Approaches range from stop-motion animation, live-action, and performance to sound and installation.

[Note: Studio course]

Prereq: FINE 100 or 120 and 121; Portfolio Review Milestone

FINE 241 LEC 0.50

Course ID: 005478

Survey of Greek Art and Architecture

A survey of Greek art and architecture from the earliest times to the coming of the Romans. Material studied may include the art of the Bronze Age, the development of Greek sculpture, the evolution of the Acropolis at Athens and the change in art and architecture after Alexander the Great.

Prereq: Level at least 2A

(Cross-listed with CLAS 241)

FINE 242 LEC 0.50

Course ID: 005480

Survey of Roman Art and Architecture

A survey of Roman art and architecture from the earliest times to the age of Constantine the Great. Material studied may include the art of the Etruscans, the evolution of Roman portraiture, innovations in architectural materials and forms, the use of art and architecture by the Emperors and the change to Late Antique art.

Prereq: Level at least 2A

(Cross-listed with CLAS 242)

FINE 243 FLD 0.25

Course ID: 013496

Topics in Fine Arts Experiential Learning

This course enables Fine Arts students to gain valuable work experience within an art-related environment. Collaboration between students, professional artists, and art institutions creates a unique learning experience that complements the student's program of study.

[Note: Graded on a credit/no credit basis. A minor field trip fee may apply.]

Department Consent Required

Prereq: Level at least 2A Fine Arts students; Portfolio Review Milestone

FINE 244 LAB,LEC 0.50

Course ID: 014402

History of Visual Media to 1910

This course provides a chronological and thematic overview of the history of visual media examining technologies such as the printing press, photography, early cinema, and the representation of perspective.

Antireq: FINE 250

FINE 245 LAB,LEC 0.50

Course ID: 014391

History of Film and Visual Media from 1900 to Today

The course provides a chronological and thematic overview of the history of visual media in Modernity and Postmodernity. It starts at the beginning of the 20th century with the rise of cinema and ends with discussion of the digital age.

Antireq: FINE 250, 251

FINE 252 LEC 0.50

Course ID: 005468

Religion in Popular Film

This course examines how religion has been a central concern and inspiration for filmmakers and how popular films have informed and shaped our understanding of religion.

[Note: Film Studies Course. This course fulfils an Area 3B requirement for Religious Studies majors.]

(Cross-listed with RS 270R)

Also offered Online

FINE 253 LEC 0.50

Course ID: 005469

Special Topics in Religion and Film

Each semester, this course focuses on a specific genre or theme to explore the complex relationship between cinema and religion. Topics may include science fiction, fantasy, horror, comedy, and documentary films.

[Note: Film Studies course. This course fulfils an Area 3B requirement for Religious Studies majors. This course is repeatable up to five times, subject to different content.]

(Cross-listed with RS 271R)

FINE 256 LAB,LEC,SEM 0.50

Course ID: 014390

Experimental Film

The course introduces students to the history, methodologies, theories, and aesthetics of non-narrative experimental film with a focus on intersections between film and visual and performing arts.

FINE 257 LAB,LEC,SEM 0.50

Course ID: 014389

Video, New Media & the Digital Turn

This course analyzes the shift in visual practices of the 20th century transformed by the arrival of various digital technologies. An emphasis is placed on the increasing interdisciplinarity of new media, as well as their multi-sensory nature.

FINE 258 LAB,SEM 0.50

Course ID: 015175

Aspects of the Cinemas of the Americas

This course takes a historical and thematic approach to analyzing the history, context, and various practices of cinema in the Americas.

FINE 259 LAB,SEM 0.50

Course ID: 015176

Aspects of European Cinema

This course offers a wide-ranging set of approaches to historical, contextual, and practical topics in the history of European cinema production.

FINE 262 LAB,SEM 0.50

Course ID: 013221

Global Queer Cinema

This course introduces the varied production of world-wide gay, lesbian, bisexual, and transgender cinema. Inquiry will focus on how queer cinematic production serves as a vehicle for documentation and education, aesthetic and sexual experimentation, as well as cultural export and self-inquiry.

Antireq: FINE 290 taken Fall 2008

(Cross-listed with WS 262)

FINE 271 STU 0.50

Course ID: 014413

Ceramics: Studies in Material Practice

Students will explore ceramic material practice as a method for creative expression. The course will focus on visual and conceptual problem solving, while acquiring technical skills and knowledge of ceramic material. The assignments will incorporate hand building, mold making, surface treatments, and glazing techniques.

[Note: Studio course.]

Prereq: FINE 100, or FINE 120 and 121; Portfolio Review Milestone

FINE 272 STU 0.50

Course ID: 005441

Clay Studies

Students will explore the creative development of clay and examine cultural, historical, and personal modes of expression using a variety of construction techniques. Students will explore figurative and abstract sculptural concepts to develop a working knowledge of clay as a sculptural medium. The emphasis is on design, form and visual thinking.

[Note: Formerly FINE 223A. Studio course.]

Prereq: FINE 100 or 120 and 121; Portfolio Review Milestone

FINE 274 STU 0.50

Course ID: 013493

Figure and Anatomy

Students will explore the practice of drawing through the thorough study of the human figure and anatomy. Through a series of studio projects in diverse and mixed media, students will confront the dual challenges of careful observation and personal expression.

[Note: Studio course. This course includes a significant component of mandatory life drawing from the nude model and from human cadavers.]

Prereq: FINE 100 or 120 and 121; Portfolio Review Milestone

FINE 275 LEC 0.50

Course ID: 014876

Calligraphy to Conceptual Art: Text as an Image in Islamic and East Asian Visual Arts

Exploring the history of Islamic and East Asian calligraphic arts and the study of Eastern and Western artists, this course examines multiple ways in which writing and other forms of visible language are incorporated into visual arts. Through studio projects, students explore conceptual approaches to text-based image making.

Prereq: Level at least 2A.

Antireq: FINE 204 (section 001) taken Winter 2012 or Winter 2014; SI 375R taken Winter 2014

(Cross-listed with EASIA 231R, SI 231R)

Offered at Renison University College

FINE 281 LEC 0.50

Course ID: 005475

Art and Gender

A study of selected themes dealing with gender in the history of art: e.g., the representation of the human body; portrayal of mythological, spiritual and allegorical figures; professional and amateur artists and their status within societies; etc.

[Note: Art History course]

FINE 282 LEC 0.50

Course ID: 012079

Canadian Art from the 17th Century to 1940

This course examines art in Canada from the beginning of the European settlement in the seventeenth century to the Group of Seven and the Canadian Group of Painters. Some of the issues that will be investigated include the perception of Canada from abroad, the "new world", nation and nationhood, and the invention and appropriation of culture.

[Note: Art History course]

Prereq: Level at least 2A

FINE 293 FLD,LEC,STU 0.50

Course ID: 012455

Fine Arts Abroad

This is a topics course that provides students with an introduction to and a familiarity with the art and culture of a particular destination. Working in the field with landscape, cityscape, and monuments of art, students will employ a variety of media to develop techniques for visual reportage, documentation, note-taking, and journal-keeping. Individual aesthetic responses to a wide range of subject matter will be encouraged.

[Note: Information about current offerings can be obtained from the Department. This is a repeatable course, subject to different content; it may be completed a total of two times. A field trip fee will apply.]

Department Consent Required

FINE 300s

FINE 300 STU 0.50

Course ID: 013505

Studio Practice

This course provides Fine Arts students with an opportunity to study a range of topics that will expand, explore, and refine personal areas of interest in studio practice. Students will be required to undertake a range of classroom assignments in addition to working independently on an area of focus.

[Note: Studio course]

Prereq: FINE 319; At least four 200-level FINE studio courses; Level at least 3A

FINE 301 STU 1.00

Course ID: 013506

Advanced Studio Practice

This is an advanced fine arts studio course with an emphasis on development of the student's individual and independent research interests. Students will be guided by faculty through one-on-one critiques as well as open forums and group critiques.

[Note: Studio course]

Prereq: FINE 300; Level at least 3B Honours Fine Arts students

FINE 302 FLD,RDG,SEM 0.50

Course ID: 013507

Analysis and Research

This course hones critical analysis skills and develops research practices (by exploring artists, materials, techniques, readings, etc.) that will enhance the student's knowledge of contemporary art practice, as well as equipping students to articulate their area of interest within contemporary art. Gallery visits and artists' talks are components of this course.

[Note: A field trip fee of \$100 may be required.]

Prereq: FINE 319; Level at least 3A Honours Fine Arts students.

FINE 304 STU 0.50

Course ID: 013509

Topics in Studio Practice

This course consists of topics in studio practice. The topics can change from term to term.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Department Consent Required

Prereq: Level at least 3A Fine Arts students

FINE 305 SEM 0.50

Course ID: 013510

Topics in Art History

This course consists of topics in art history. The topics can change from term to term.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Department Consent Required

Prereq: Level at least 3A Fine Arts students

FINE 306 LAB,SEM 0.50

Course ID: 013511

Topics in Film Studies

This course consists of topics in film studies. The topics can change from term to term.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Department Consent Required

Prereq: Level at least 3A Fine Arts students

FINE 307 STU 0.25

Course ID: 015151

Advanced Topics in Studio

This course provides Fine Arts students with an opportunity to study a range of advanced topics that will explore, expand, and refine personal areas of interest in studio practice. Advanced topics will be announced from term to term.

[Note: This is a repeatable course, subject to different content; it may be completed a total of six times.]

Prereq: FINE 319; at least four 200-level FINE studio courses; Level at least 3A Fine Arts Studio students only. Fine Arts average at least 65%

FINE 308 STU 0.25

Course ID: 015152

Honours Studio/Seminar

This is an advanced Fine Arts studio course with an emphasis on development of the student's individual and independent research interests. Students will be guided by faculty through critiques as well as open forums.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: At least three 300-level FINE studio courses; Level at least 3B Honours Fine Arts Studio students; Fine Arts average at least 75%

FINE 319 LEC 0.50

Course ID: 005485

Contemporary Art

A survey of contemporary international art movements with emphasis on work since 1970. Readings in contemporary criticism and gallery visits are an integral part of the course.

[Note: Art History course. To be taken in 2B.]

Prereq: VCULT/FINE 101 or FINE 110; FINE 112, 209

FINE 330 FLD,LAB,LEC 0.50

Course ID: 005499

Topics Course in Museums, Galleries, Curatorship

Often taught by the University of Waterloo Curator, this course explores a range of topics dealing with museums, galleries, and curatorial practices. Field visits may be a required component of this course.

[Note: A field trip fee of up to \$100 may be required. This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: Level at least 2A

FINE 332 LEC,SEM 0.50

Course ID: 005501

History of Art Academies

This course examines the history of the institutionalization of the teaching of art. The course is organized as a series of 'case studies' dealing with various formal academies of art and less formal gatherings of artists from the Renaissance to the twentieth century. The aims of the course are to analyze why these institutions were formed, how they were organized, what were their mandates, and what was their status in their contemporary worlds. Some of the themes that will be investigated throughout the course include: art in the service of power and politics, the status of the artist, the ideal human form, the classical and medieval traditions, the impact of the avant-garde, the conflict with authority, and the academy as community.

[Note: Art History course]

Instructor Consent Required

Prereq: Level at least 3A Fine Arts or History or by permission of instructor

FINE 335 WSP 0.50

Course ID: 004694

Design Theory and Practice

Students apply conceptual and theoretical approaches to design in the areas of set/space, light, projection, and costume.

Prereq: Level at least 2A Fine Arts students

(Cross-listed with DRAMA 331)

FINE 338 LEC 0.50

Course ID: 007315

Philosophy of Art

What is art? What is beauty? What do the two have to do with each other? This course introduces students to some fundamental issues in the philosophy of art, and to a variety of philosophical views on these issues.

Prereq: Level at least 2A

(Cross-listed with PHIL 331)

FINE 341 LEC 0.50

Course ID: 012914

Advanced Studies in Greek Art and Architecture

An advanced survey of the art and architecture from a selected time period of Greek history. Material studied may include the art and architecture of the Aegean Bronze Age, and the Archaic, Classical and Hellenistic periods. Archaeological, historical and cultural issues specific to each time period will be discussed through the important media of the day.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: CLAS 241/FINE 241

(Cross-listed with CLAS 341)

FINE 342 LEC 0.50

Course ID: 012915

Advanced Studies in Roman Art and Architecture

An advanced survey of the art and architecture from a selected time period of Roman History. Material studied may include the art and architecture of the Etruscans, the Roman Republic and the Roman Empire. Archaeological, historical and cultural issues specific to each time period will be discussed through the important media of the day.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: CLAS 241/FINE 241

(Cross-listed with CLAS 342)

FINE 343 FLD 0.25

Course ID: 013514

Topics in Fine Arts Experiential Learning

This course enables Fine Arts students to gain valuable work experience within an art-related environment. Collaboration between students, professional artists, and art institutions creates a unique learning experience that complements the student's program of study.

[Note: Graded on a credit/no credit basis. A minor field trip fee may apply.]

Department Consent Required

Prereq: Level at least 3A Fine Arts majors

FINE 344 FLD 0.50

Course ID: 013515

Fine Arts Internship

This experiential learning course is intended to enable Fine Arts students to gain valuable work experience within an art related environment. The course is designed to complement the student's academic program by providing an opportunity for the practical application of skills and concepts.

[Note: Graded on a credit/no credit basis. A minor field trip fee may apply.]

Department Consent Required

Prereq: FINE 343; Fine Arts majors

FINE 359 LAB,SEM 0.50

Course ID: 011606

Topics in German Film

Selected topics in German film.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

(Cross-listed with GER 359)

FINE 362 LAB,LEC 0.50

Course ID: 013634

German Film Classics

Masterpieces of German film from the silent era to present.

[Note: Taught in English.]

Prereq: Level at least 2A

(Cross-listed with GER 362)

FINE 363 LAB,LEC 0.50

Course ID: 013635

German Filmmakers in Hollywood

An examination of the work of filmmakers who have made a mark in both European and American cinema.

[Note: Taught in English.]

Prereq: Level at least 2A

(Cross-listed with GER 363)

FINE 364 LAB,LEC 0.50

Course ID: 013636

German and Russian Film Pioneers

An examination of early German and Russian cinema, and the way these two film industries influenced each other. Influential theories of film from the period will also be studied.

[Note: Taught in English.]

Prereq: Level at least 2A

(Cross-listed with GER 364, REES 364)

FINE 368 LAB,LEC 0.50

Course ID: 013625

International Comics and Animation Film

This course will examine the interconnections of comics (graphic novels, manga, etc.) and animated film, forms of visual communication particular to the 20th and 21st centuries, in the historical and social contexts of various national traditions.

Prereq: Level at least 2A

FINE 383 STU 0.50

Course ID: 015143

Computational Digital Art Studio

An upper-level studio course to create computational projects that function as art works and aesthetic experiences. Students will work in interdisciplinary teams to combine computer science principles with fine art technical and conceptual skills.

[Offered: W]

Prereq: FINE 229, FINE 257, CS 105, CS 106; one of CS 100, CS 200, CS 230; Level at least 3A

(Cross-listed with CS 383)

FINE 392 STU 0.50

Course ID: 005523

Selected Subjects in Fine Arts

Independent studio course under the direction of an individual instructor; graded by a committee of Fine Arts faculty members.

Department Consent Required

Prereq: Level at least 3B Fine Arts students

FINE 393 FLD,LEC,STU 0.50

Course ID: 012456

Fine Arts Abroad

This is a topics course that provides students with an introduction to and a familiarity with the arts and culture of a particular destination. Working in the field with landscape, cityscape, and monuments of art, students will employ a variety of media to develop techniques for visual reportage, documentation, note-taking, and journal-keeping. Individual aesthetic responses to a wide range of subject matter will be encouraged.

[Note: Information about current offerings can be obtained from the Department. This is a repeatable course, subject to different content; it may be completed a total of two times. A significant field trip fee will apply.]

Department Consent Required

FINE 400s

FINE 402 FLD,RDG 0.25

Course ID: 013519

Directed Study

This course is intended to help Fine Arts students make the transition from art school to professional practice by providing an opportunity to examine their own practice within the larger context of the professional art world.

[Note: A field trip fee of \$100 may be required.]

Prereq: Level at least 4A Fine Arts students

FINE 404 STU 0.50

Course ID: 013520

Topics in Studio Practice

This course consists of topics in studio practice. The topics can change from term to term.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Department Consent Required

Prereq: Level at least 4A Fine Arts students

FINE 405 SEM 0.50

Course ID: 013521

Topics in Art History

This course consists of topics in art history. The topics can change from term to term.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Department Consent Required

Prereq: Level at least 4A Fine Arts students

FINE 406 LAB,SEM 0.50

Course ID: 013618

Topics in Film Studies

This course consists of topics in film studies. The topics can change from term to term.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Department Consent Required

Prereq: Level at least 4A Fine Arts students

FINE 407 SEM 0.50

Course ID: 015468

Honours Concept and Research

This seminar course explores aspects of art theory, history, and visual culture that will assist students in situating their work within contemporary art practice.

Prereq: FINE 319; Level at least 4A Honours Fine Arts Intensive Studio Specialization

FINE 472 STU 1.00

Course ID: 005533

Intensive Studio Specialization 1

This course is for students who wish to be practicing artists and who are enrolled in the Intensive Studio Specialization. The course involves an intensive exploration and development of individual studio research through practice, resulting in the production of a significant body of work. Students will be guided by the work of relevant artists, as well as critiques by faculty members, graduate students, visiting artists, and fellow students. Submitted work will be evaluated by a committee of Fine Arts faculty.

[Note: Studio course. Admission by portfolio review.]

Department Consent Required

Prereq: A grade of 75% in each of FINE 300, 301, 302, 303; a cumulative Fine Arts average of 75%; Level at least 4A Honours Fine Arts Studio.

Antireq: FINE 476

FINE 473 STU 1.00

Course ID: 005534

Intensive Studio Specialization 2

This course is for students who wish to be practicing artists, and who are enrolled in the Intensive Studio Specialization plan. Students will develop strategies for independent studio research, and complete a body of work supported and complemented by appropriate documentation. Submitted studio work will be evaluated by a committee of Fine Arts Faculty.

Prereq: FINE 472.

Antireq: FINE 477

FINE 474 STU 0.50

Course ID: 005535

Honours Studio Practicum 1

This course provides Fine Arts students with an opportunity to study a range of topics that will explore, expand, and refine personal areas of interest in studio practice. Students will be required to undertake a range of classroom assignments in addition to working independently on an area of focus. Submitted studio work will be evaluated by a committee of Fine Arts Faculty.

Department Consent Required

Prereq: At least 1.0 unit of 300-level FINE studio courses; Level at least 4A Honours Studio Practice

FINE 475 STU 0.50

Course ID: 005536

Honours Studio Practicum 2

Students will research and execute a series of self-directed projects, addressing historical precedents in the context of the concerns of contemporary art practice, and supported and complemented by appropriate documentation. Submitted studio work will be evaluated by a committee of Fine Arts Faculty.

Department Consent Required

Prereq: FINE 474

FINE 476 STU 0.50

Course ID: 015471

Intensive Studio Specialization 1

This course is for students who wish to be practicing artists and who are enrolled in the Intensive Studio Specialization. The course involves an intensive exploration and development of individual studio research through practice, resulting in the production of a significant body of work. Students will be guided by the work of relevant artists, as well as critiques by faculty members, graduate students, visiting artists, and fellow students. Submitted work will be evaluated by a committee of Fine Arts faculty.

[Note: Studio course. Admission by portfolio review.]

Department Consent Required

Prereq: FINE 308; At least 1.0 unit in 300-level FINE studio courses; a grade of 75% in each 300-level studio course; Level at least 4A Intensive Studio Specialization.

Coreq: FINE 474.

Antireq: FINE 472

FINE 477 STU 0.50

Course ID: 015472

Intensive Studio Specialization 2

This course is for students who wish to be practicing artists, and who are enrolled in the Intensive Studio Specialization plan. Students will develop strategies for independent studio research, and complete a body of work supported and complemented by appropriate documentation. Submitted studio work will be evaluated by a committee of Fine Arts Faculty.

Prereq: FINE 474, 476.

Coreq: 475.

Antireq: FINE 473

FRENCH STUDIES/ÉTUDES FRANÇAISES

Before each term, students should consult the Department of French Studies undergraduate website to ensure that the courses they want are offered. Budget restrictions, enrolment, and availability of faculty may cause some courses to be withdrawn.

Notes

1. *The Department reserves the right to refuse admission to, and/or credit for, any of its language courses to a student who has, in the view of the Department, a level of competence unsuited to that course. Students from immersion programs may not enrol in [FR 101](#), [FR 151](#) or [FR 152](#).*
2. *Students with no prior schooling in French should enrol in [FR 101](#).*
3. *Students with some elementary or secondary school French not exceeding Ontario Grade 10 French or equivalent should enrol in [FR 151](#). Those with Ontario Grade 11 or equivalent should enrol in [FR 152](#).*
4. *Students with Ontario 4U French should enrol in [FR 192A](#).*
5. *Students may enrol in courses for which they have secondary school antirequisites only with the written permission of the Department of French Studies.*

FR 100s

FR 101 LAB,LEC,TUT 0.50

Course ID: 014526

Beginner French

An intensive beginner course for students having no prior knowledge of French. Emphasizes listening, reading, writing, and oral communication skills.

[Note: Not open to students who have completed some elementary or high school French, or FR 151. Not open to students with advanced, near-native or native ability in French.]

Antireq: ARTS 190 taken in Winter 2013, Fall 2013

Also offered Online

FR 151 LAB,LEC,TUT 0.50

Course ID: 005547

Basic French 1

For students with some elementary or secondary school French not exceeding Year Two (Grade Ten in Ontario) or equivalent. Emphasizes comprehension, grammar and basic speaking skills.

[Note: Not open to students who have completed high school French immersion program or FR 152. Not open to students with advanced, near-native or native ability in French.]

Prereq: FR 101 or Ontario Grade 9 or 10 French.

Antireq: Ontario Grade 11 French or 4U Core French or Immersion French or Extended French

Also offered Online

FR 152 LAB,LEC,TUT 0.50

Course ID: 005548

Basic French 2

For students with some elementary or secondary school French, not exceeding Year Three (Grade 11 in Ontario) or equivalent. Emphasizes comprehension, grammar, and basic speaking skills.

[Note: Not open to students who have completed high school French immersion program. Not open to students with advanced, near-native or native ability in French.]

Prereq: FR 151 or Ontario Grade 11 French.

Antireq: Ontario Grade 12 French or 4U Core French or Immersion French or Extended French.

Also offered Online

FR 192A LAB,LEC,ORL 0.50

Course ID: 005551

French Language 1: Module 1

An intensive French Language course. Vocabulary enrichment and development of reading, writing and oral expression.

Prereq: 4U Core French or FR 152.

Antireq: High School Immersion French, Extended French, near-native or native ability in French; FR 192B

Also offered at St. Jerome's University

Also offered Online

FR 192B LAB,LEC,ORL 0.50

Course ID: 005552

French Language 1: Module 2

An intensive French Language course. Vocabulary enrichment and development of reading, writing and oral expression.

Prereq: High School Immersion French or Extended French or FR 192A.

Antireq: Near-native or native ability in French.

Also offered at St. Jerome's University

Also offered Online

FR 200s

FR 203 LAB,LEC 0.50

Course ID: 005565

Introduction to Phonetics of French

An introduction to the structure of the French sound system with a view to improving pronunciation. Careful attention will be paid to the individual student's difficulties.

Prereq: FR 192A or 192B

Also offered at St. Jerome's University

FR 250 LEC 0.50

Course ID: 005579

Intermediate Spoken French

A course intended to develop the oral and aural skills.

[Note: Formerly FR 250A]

Coreq: FR 192B.

Antireq: FR 250A

FR 251 LEC 0.50

Course ID: 005580

French Language 2: Module 1

Intensive work on grammar and written French.

Prereq: FR 192B
Also offered Online

FR 252 LEC 0.50

Course ID: 005582

French Language 2: Module 2

Intensive work on grammar and written French.

Prereq: FR 192B
Also offered Online

FR 255 LEC 0.50

Course ID: 005586

Business French I

A French language course designed to enable the student to carry on standard business practice in spoken and written French.

Prereq: Two of FR 192A, 192B, 197/296
Also offered Online

FR 276 LEC 0.50

Course ID: 011860

Introduction to Literature: Quebec and French Canada

A study of selected contemporary literary works of French Canada.

Prereq: FR 192A or 192B
Also offered Online

FR 291 LEC 0.50

Course ID: 005593

French Civilization 1

This course traces the cultural development of France from its origin to the French Revolution. Emphasis is given to the study of music, art, architecture, literature, ideas, and daily life in their historical context.

[Note: Taught in English.]

Antireq: FR 197/296
Also offered Online

FR 292 LEC 0.50

Course ID: 005594

French Civilization 2

This course completes the study of the cultural development of France from the French Revolution to the present.

[Note: Taught in English.]

Antireq: FR 297
Also offered Online

FR 296 LEC 0.50

Course ID: 011615

French Culture & Literature: Origins to 1715

A survey of French culture and literature from their origins to 1715.

[Note: Formerly FR 197]

Prereq: FR 192A or 192B.

Antireq: FR 197, 291

Also offered Online

FR 297 LEC 0.50

Course ID: 011616

French Culture & Literature: 1715 to the Present

A survey of French culture and literature from 1715 to the present.

Prereq: FR 192A or 192B.

Antireq: FR 292

Also offered Online

FR 300s

FR 303 LEC 0.50

Course ID: 005601

Introduction to Linguistics

An introduction to the basic principles of linguistic analysis (as opposed to traditional grammar) applied to the sounds, vocabulary and sentence structure of contemporary standard French and certain features of current Canadian French. Students' language learning needs will be an important feature of the course.

Prereq: FR 251 or 252

FR 332 LEC 0.50

Course ID: 005605

17th-Century French Literature

A detailed study of selected aspects of 17th-century French literature.

Prereq: FR 197/296, 297

Also offered Online

FR 332A LEC 0.50

Course ID: 005606

17th-Century French Literature

A detailed study of selected aspects of 17th-century French literature.

[Note: Offered at Nantes, France.]

Department Consent Required

FR 332B LEC 0.50

Course ID: 005607

17th-Century French Literature

A continuation of FR 332A.

[Note: Offered at Nantes, France.]

Department Consent Required

FR 343 LEC 0.50

Course ID: 005609

18th-Century French Literature

A detailed study of selected aspects of 18th-century French literature.

Prereq: FR 197/296, 297

FR 343A LEC 0.50

Course ID: 005610

18th-Century French Literature

A detailed study of selected aspects of 18th-century French literature.

[Note: Offered at Nantes, France.]

Department Consent Required

FR 343B LEC 0.50

Course ID: 005611

18th-Century French Literature

A continuation of FR 343A.

[Note: Offered at Nantes, France.]

Department Consent Required

FR 351 LEC 0.50

Course ID: 005613

French Language 3

Intensive development of writing skills through a study of stylistics and advanced composition.

Prereq: FR 251, 252

Also offered Online

FR 353 LEC 0.50

Course ID: 012991

Introduction to Translation

Introduction to the theories and practices of French-English/English-French translation.

Prereq: FR 251, 252

FR 354 LEC 0.50

Course ID: 005616

19th-Century French Literature

A detailed study of selected aspects of 19th-century French literature.

Prereq: FR 197/296, 297

FR 354A LEC 0.50

Course ID: 005617

19th-Century French Literature

A detailed study of selected aspects of 19th-century French literature.

[Note: Offered at Nantes, France.]

Department Consent Required

FR 354B LEC 0.50

Course ID: 005618

19th-Century French Literature

A continuation of FR 354A.

[Note: Offered at Nantes, France.]

FR 355 LEC 0.50

Course ID: 014222

Business French II

A French language course designed to enhance written and oral expression through the study of economic and business topics in the social and economic contexts of Canada and France.

Prereq: Two of FR 251, 252, 255, 297

Also offered Online

FR 363 LEC 0.50

Course ID: 005619

20th-Century French Literature

A detailed study of selected aspects of 20th-century French literature.

Prereq: FR 197/296, 297

FR 363A LEC 0.50

Course ID: 005620

20th-Century French Literature

A detailed study of selected aspects of 20th-century French literature.

[Note: Offered at Nantes, France.]

Department Consent Required

FR 363B LEC 0.50

Course ID: 005621

20th-Century French Literature

A continuation of FR 363A.

[Note: Offered at Nantes, France.]

Department Consent Required

FR 365 LEC 0.50

Course ID: 013006

French Theatre

A study of selected plays in French.

Prereq: FR 197/296, 297

FR 367 LEC 0.50

Course ID: 013107

21st-Century French Literature

A detailed study of selected aspects of 21st-century French literature.

Prereq: FR 197/296, 297

FR 373 LEC 0.50

Course ID: 012936

Languages in Contact: The History of French-English Bilingualism

This course will examine, from a historical and sociolinguistic perspective, the long-standing rivalry of our country's two official languages, the origins of their relationship, and the socio-political and linguistic implications of bilingualism.

Prereq: Two of FR 197/296, 251, 252, 297

FR 375 LEC 0.50

Course ID: 005625

Quebec Literature

A study of selected texts by modern French-Canadian authors.

Prereq: FR 276: one of FR 197/296, 297

Also offered Online

FR 392A LEC 0.50

Course ID: 014374

French Language Practice

Intensive French language practice in an immersion setting.

[Note: Offered at Nantes, France.]

Department Consent Required

Prereq: FR 251, 252

FR 392B LEC 0.50

Course ID: 014375

French Language Practice

A continuation of FR 392A.

[Note: Offered at Nantes, France.]

Department Consent Required

Prereq: FR 251, 252

FR 393A LEC 0.50

Course ID: 005630

French Civilization, 20th-Century French History

An overview of contemporary French civilization.

[Note: Offered at Nantes, France.]

Department Consent Required

FR 393B LEC 0.50

Course ID: 005631

French Civilization, 20th-Century French History

A continuation of FR 393A.

[Note: Offered at Nantes, France.]

Department Consent Required

FR 395A LEC 0.50

Course ID: 005632

French Thought

A survey of the principal thinkers and currents of ideas in France from the Renaissance to the present.

[Note: Offered at Nantes, France.]

Department Consent Required

FR 395B LEC 0.50

Course ID: 005633

French Thought

A continuation of FR 395A.

[Note: Offered at Nantes, France.]

Department Consent Required

FR 399A LEC 0.50

Course ID: 005634

Independent Cultural Study

An independent study course, in which the student chooses an area of French life on which to make a detailed study (topic must be approved by the Department). A written cultural studies report is submitted, on which the student is examined orally.

Department Consent Required

FR 400s

FR 400 LEC 0.50

Course ID: 005635

Advanced Translation

Intensive development of advanced comparative stylistics, translation and composition skills.

Prereq: FR 353; one of FR 351, 392A, 392B

FR 403 LEC 0.50

Course ID: 005640

Topics in Linguistics

A study of selected topics in Linguistics. Topics will be chosen by the professor according to his/her area of specialization.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Prereq: FR 303

FR 410 LEC 0.50

Course ID: 005642

Medieval French Literature

An introduction to French literature of the Middle Ages through the study of representative texts.

Prereq: FR 197/296, 297

FR 424 LEC 0.50

Course ID: 005648

16th-Century French Literature

A focused study of a particular theme of Renaissance (1500-1600) writing.

Prereq: FR 197/296, 297

FR 424A LEC 0.50

Course ID: 010202

16th-Century French Literature

A focused study of a particular theme of Renaissance (1500-1600) writing.

[Note: Offered at Nantes, France.]

Department Consent Required

FR 424B LEC 0.50

Course ID: 010203

16th-Century French Literature

A continuation of FR 424A.

[Note: Offered at Nantes, France.]

Department Consent Required

FR 452 LEC 0.50

Course ID: 005651

Advanced French Language

Intensive study of French composition, style and grammar.

Prereq: One of FR 351, 392A, 392B

FR 471 LEC 0.50

Course ID: 005652

Francophone Literatures in Canada

A detailed study of a selected genre or aspect of French-Canadian literature.

Prereq: FR 276: one of FR 197/296, 297

FR 473 LEC 0.50

Course ID: 005653

Aspects of French Canada

A presentation of traditional and contemporary French Canada in the fields of the arts, literature, music, politics and society.

Prereq: FR 276: one of FR 197/296, 297

FR 484 LEC 0.50

Course ID: 005657

Children's Literature in French

A detailed study of selected aspects of French and French-Canadian children's literature.

Prereq: FR 197/296, 297

FR 485 LEC 0.50

Course ID: 005658

French Women Writers

A study of selected works by women writers in France from the Middle Ages to the 21st-century. The course will focus on the literary features of these works and on their value as reflections of the position of women in French society throughout the period.

Prereq: FR 197/296, 297

FR 486 LEC 0.50

Course ID: 011862

Topics in French and Francophone Cultural Studies

A study of selected topics in French and Francophone cultural studies. Topics will be chosen by the professor according to their area of specialization.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Prereq: FR 197/296, 297

FR 487 LEC 0.50

Course ID: 005660

African and Caribbean French Literature

A detailed survey of selected Francophone writers from outside Europe and Canada.

Prereq: FR 197/296, 297

FR 490 RDG 0.50

Course ID: 005661

Senior Tutorials

A small group of students follows a course of study under the supervision of a faculty member. For details, inquire of the Department.

Prereq: FR 197/296, 297

FR 491 RDG 0.50

Course ID: 005662

Senior Tutorials

A small group of students follows a course of study under the supervision of a faculty member. For details, inquire of the Department.

Prereq: FR 197/296, 297

FR 492 RDG 0.50

Course ID: 005663

Senior Tutorials

A small group of students follows a course of study under the supervision of a faculty member. For details, inquire of the Department.

Prereq: FR 197/296, 297

FR 493 RDG 0.50

Course ID: 005664

Senior Tutorials

A small group of students follows a course of study under the supervision of a faculty member. For details, inquire of the Department.

Prereq: FR 197/296, 297

FR 494 RDG 0.50

Course ID: 005665

Senior Tutorials

A small group of students follows a course of study under the supervision of a faculty member. For details, inquire of the Department.

Prereq: FR 197/296, 297

GLOBAL BUSINESS AND DIGITAL ARTS

GBDA 100s

GBDA 101 LAB,LEC,PRJ,TUT 0.50

Course ID: 013255

Introduction to Digital Media Design

This course introduces students to the theory, principles, and practice of digital media design as they apply to a wide variety of communication contexts. Using design thinking, students will develop creative projects that integrate the needs of a variety of

audiences.

[Note: Offered at Stratford campus.]

Prereq: Global Business and Digital Arts students only.

Antireq: DAC 201/ENGL 203

GBDA 200s

GBDA 201 LAB,LEC,PRJ,TUT 0.50

Course ID: 013257

Digital Media Project 1

This course emphasizes the production fundamentals of video design. Students produce treatments, storyboards, and production plans for a variety of short video projects. Students learn a theoretical vocabulary to analyze, critique, evaluate, and communicate about their projects. The course serves as a hands-on digital media lab where students acquire skills in using a variety of software and digital equipment.

[Note: Offered at Stratford campus.]

Prereq: GBDA 101; Level at least 2A Global Business and Digital Arts students.

Antireq: DAC 202/ENGL 204

GBDA 202 LAB,LEC,PRJ,TUT 0.50

Course ID: 013258

Digital Media Project 2

This course focuses on the design principles guiding dynamic imaging, video capture, editing time-based media, and post-production for digital delivery. The course serves as a hands-on digital media lab where students acquire skills in using a variety of software and digital equipment.

[Note: Offered at Stratford campus.]

Prereq: GBDA 201; Level at least 2A Global Business and Digital Arts students.

Antireq: DAC 202/ENGL 204

GBDA 203 LEC 0.50

Course ID: 013259

Introduction to Digital Culture

This course provides students with a historical overview of various digital technologies and their impact on society and the human condition. Students will be introduced to research methods and theoretical concepts from media theory and cultural studies which will enable them to think, speak, and write critically about technology in an historical and global context.

[Note: Offered at Stratford campus.]

Prereq: Level at least 2A Global Business and Digital Arts students

GBDA 204 LAB,LEC 0.50

Course ID: 013273

Working in Teams and Project Management

This course provides students with an understanding of the human dimensions of project management by focusing on the communication skills necessary to effectively work in teams and manage projects. Drawing from best practices in management and leadership, the course will focus on conflict management, facilitation, team-building, non-routine problem solving in group settings, feedback and assertiveness training, presentation skills, and convening diverse groups.

Prereq: Level at least 2A Global Business and Digital Arts students

GBDA 205 LAB,LEC 0.50

Course ID: 013260

Quantitative Methods

This course introduces students to quantitative data analysis, covering basic descriptive statistical techniques and procedures, and inferential statistics.

Prereq: Level at least 2A Global Business & Digital Arts students.

Antireq: ARTS 280, ECON 221, ENVS 278, ISS 250A/B, KIN 222, 232, PSCI 214/314, PSYCH 292, REC 371, SDS/ISS 250R, SMF 230, SOC/LS 280, STAT 202, 206, 211, 221, 231, 241, SWREN 250A/B, 250R

GBDA 210 LAB,LEC 0.50

Course ID: 014117

Introduction to User Experience Design

In this course, students will learn the basic principles and practices of user experience design and testing. Students will learn how to plan, implement, and interpret tests conducted on digital design applications, focusing both on functionality and on the quality of the user's interaction with these technologies.

[Note: Offered at Stratford campus. Formerly GBDA 103.]

Prereq: Global Business and Digital Arts students only.

Antireq: GBDA 103

GBDA 211 LAB,LEC 0.50

Course ID: 013256

Introduction to Global Business

Students will be introduced to basic business knowledge, with a focus on the opportunities and challenges of doing business in a global context. This course will include discussions about globalization, international trade, national business including emerging markets, cross-cultural business environments, and international business management.

[Note: Offered at Stratford campus. Formerly GBDA 102.]

Prereq: Global Business and Digital Arts students only.

Antireq: GBDA 102

GBDA 212 LAB,LEC 0.50

Course ID: 015586

Portfolio and Professional Communication

In this course, students learn to effectively present themselves and their work through the development and presentation of a professional portfolio. Using projects completed in previous courses, students will prepare a portfolio to communicate the process, outcomes, and impact of their work and will practice presenting their work to different audiences.

[Note: Offered at the Stratford campus.]

Prereq: Level at least 2A Global Business and Digital Arts students

GBDA 228 LAB,LEC,PRJ,TUT 0.50

Course ID: 015469

Digital Imaging for Online Applications

In this course, students are introduced to the digital tools used for website and app development through a series of hands-on learning exercises and assignments that cultivate both creative expression and technical skill. Topics include theory and terminology, design, typography, information architecture, and prototyping.

[Note: Offered at Stratford campus.]

Prereq: GBDA 101; Level at least 2A Global Business and Digital Arts students.

Antireq: GBDA 228/FINE 228 taken prior to Fall 2017

GBDA 229 STU 0.50

Course ID: 015470

Hybrid Digital Media

This course introduces students to contemporary approaches in digital media production through hands-on learning exercises that cultivate both technical proficiency and creative expression. Course topics may vary from term to term.

[Note: Offered at Stratford campus.]

Prereq: GBDA 101; Level at least 2A Global Business and Digital Arts students.

Antireq: DAC 203/301/ENGL 304; GBDA/FINE 229 taken prior to Fall 2017

GBDA 300s

GBDA 301 LAB,LEC,PRJ,TUT 0.50

Course ID: 013261

Global Digital Project 1

In this course, students will create critical design projects that explore the intersection of design, technology, and culture in a global context. Students will experiment with and prototype objects/systems that engage with contemporary ideas and technologies, while reflecting on how these objects/systems shape our everyday experiences. Students will be guided through one or more design cycles that unite design thinking with critical reflection through the practical application of theory.

[Note: Offered at Stratford campus.]

Prereq: GBDA 202; Level at least 3A Global Business and Digital Arts students

GBDA 302 LAB,LEC,PRJ,TUT 0.50

Course ID: 013262

Global Digital Project 2

In this course students will design, prototype, and evaluate interactive digital media projects, focusing on ideation and the design process. They will engage in the advanced study of digital culture, with an emphasis on different ways pleasure and play are leveraged as communication tools.

[Note: Offered at Stratford campus.]

Prereq: GBDA 301; Level at least 3A Global Business and Digital Arts students

GBDA 303 LAB,LEC 0.50

Course ID: 013263

Data and Society

In this course, students will examine different digital phenomena, such as big data, open data, data-driven innovation, the personal information industry, the sharing economy, and the internet of things. Students will also become familiar with national and international principles of privacy protection.

[Note: Offered at Stratford campus.]

Prereq: Level at least 3A Global Business and Digital Arts students

GBDA 304 LAB,LEC 0.50

Course ID: 014240

Marketing in the Digital World

This course focuses on best practices in marketing and communication within a variety of sectors, while examining how emerging technologies present new opportunities to engage audiences.

[Note: Offered at Stratford Campus.]

Prereq: Level at least 3A Global Business and Digital Arts students.

Antireq: ECON 344/ARBUS 302

GBDA 305 LAB,LEC 0.50

Course ID: 013265

Global Development and Business

This course will look at the processes of industrialization and economic development and the relation of these processes to the present state of global economic interconnectedness.

[Note: Offered at Stratford campus.]

Prereq: Level at least 3A Global Business and Digital Arts students

GBDA 306 LAB,LEC 0.50

Course ID: 013266

Ethics and Values in Design

This course will explore the ethical responsibilities that emerge from the nexus of design, business, and globalization. Students will critically reflect upon the ethical considerations behind contemporary business and design practices.

[Note: Offered at Stratford campus.]

Prereq: Level at least 3A Global Business and Digital Arts students

GBDA 310 LAB,LEC 0.50

Course ID: 015588

Advanced User Experience Design and Research

The objectives of this course are to learn data collection, design, and analysis methodologies that are particularly useful for scientific user experience (UX) research. The course will review basic UX and usability methods, and cover topics ranging from contextual inquiry, cognitive task analysis, qualitative methods, and an introduction to quantitative statistical methods.

[Note: Offered at Stratford campus.]

Prereq: Level at least 3A Global Business and Digital Arts students

GBDA 311 LEC 0.50

Course ID: 015589

Introduction to Business Financials

In this course, students will be exposed to a variety of techniques to interpret financial statements. Students will analyze balance sheets, income, and cash flow statements and will engage in the formulation of a comprehensive business plan.

[Note: Offered at Stratford campus.]

Prereq: Level at least 3A Global Business and Digital Arts students

GBDA 312 PRA 0.00

Course ID: 015617

Internship

Students must complete a paid internship, normally in the Spring term after their 3B term. The content of the internship will be tied to the student's program of study and must be a minimum of 12 weeks of full-time employment or equivalent. All internships must be approved by the GBDA Internship Co-ordinator.

[Note: Offered on a CR/NCR basis.]

Prereq: Level at least 3B Global Business and Digital Arts students

GBDA 365 LEC 2.50

Course ID: 014250

Study Abroad

Study abroad for academic transfer credit during a fall term. Discussion and approval of options with the advisor is required. Credit for specific courses will be evaluated following receipt of a transcript of academic results and supporting course outline documentation.

Department Consent Required

GBDA 400s

GBDA 401 PRJ 2.00

Course ID: 013269

Cross-Cultural Digital Business 1

In this course students will study how digital products and services are modified and/or repurposed to suit the needs of a community outside of their origin. Students will work with global business consultants to identify and outline a cross-cultural digital business project with a local or global community.

[Note: Offered at Stratford campus.]

Prereq: Level at least 4A Global Business and Digital Arts students

GBDA 402 PRJ 2.00

Course ID: 013270

Capstone Course: Cross-Cultural Digital Business

In this capstone course, students will research, design, and adapt digital products and services to suit specific cultures or communities. They will work with external stakeholders, such as global industry consultants, community clients, and mentors, in order to iteratively develop and create functional design solutions that are economically and socially feasible.

[Note: Offered at Stratford campus.]

Prereq: Level at least 4A Global Business and Digital Arts students

GBDA 403 WSP 0.50

Course ID: 013271

Extended E-portfolio 1

In this course, students plan, outline, and draft the extended e-portfolio that will be completed in GBDA 404. Students reflect upon, describe, and analyse the work completed in previous project courses. Maintaining an e-portfolio is mandatory for all project courses and provides the students with the key materials for the extended e-portfolio in year four.

[Note: Offered at Stratford campus.]

Prereq: Level at least 4A Global Business and Digital Arts students

GBDA 404 WSP 0.50

Course ID: 013272

Extended E-Portfolio 2

In this course, students continue the work begun in GBDA 403 and complete the extended e-portfolio.

[Note: Offered at Stratford campus.]

Prereq: Level at least 4A Global Business and Digital Arts students

GBDA 410 LEC,PRJ,SEM 0.50

Course ID: 015590

Seminar in User Experience Research

This seminar is an opportunity for students to gain a deeper understanding of a focus area in this field. The seminar-style course is designed to cover an emerging user experience (UX) research area through self-driven student work. Students will build a more comprehensive understanding of a UX research area and explore evidence-based UX research methods and techniques. Focus areas will vary in topic.

[Note: Offered at Stratford campus.]

Prereq: Level at least 4A Global Business and Digital Arts students

GBDA 412 LEC,PRJ 0.50

Course ID: 015591

Special Topics in Digital Cultures

A study of selected topics in digital cultures. Topics will be chosen by the professor according to their area of specialization.

[Note: Offered at Stratford campus.]

Prereq: Level at least 4A Global Business and Digital Arts students

GBDA 413 LEC,PRJ 0.50

Course ID: 015592

Special Topics in Design and Society

A study of selected topics in design and society. Topics will be chosen by the professor according to their area of specialization.

[Note: Offered at Stratford campus.]

Prereq: Level at least 4A Global Business and Digital Arts students

GBDA 414 LEC,PRJ 0.50

Course ID: 015593

Special Topics in Interaction Design

A study of selected topics in interaction design. Topics will be chosen by the professor according to their area of specialization.

[Note: Offered at Stratford campus.]

Prereq: Level at least 4A Global Business and Digital Arts students

GBDA 465 LEC 2.50

Course ID: 014251

Study Abroad

Study abroad for academic transfer credit during a fall term. Discussion and approval of options with the advisor is required. Credit for specific courses will be evaluated following receipt of a transcript of academic results and supporting course outline documentation.

Department Consent Required

Prereq: Level at least 4A Global Business and Digital Arts students

GENERAL ENGINEERING

GENE 00s

GENE 21A LEC 0.50

Course ID: 012565

Topics for Technical Courses Taken on Exchange by Architecture Students

Courses taken at foreign universities by University of Waterloo architecture students while enrolled in an international exchange institution, and reserved for courses without equivalents at the University of Waterloo. These courses are treated as technical electives in the student's program. Such courses are reported on the student's transcript with their original titles in English showing as the topic. The grades for these courses will be either CR or NCR.

Department Consent Required

GENE 21B LEC 0.50

Course ID: 015417

Topics for Technical Courses Taken on Exchange by Biomedical Engineering Students

Courses taken at foreign universities by University of Waterloo engineering students while enrolled in an international exchange institution, and reserved for courses without equivalents at the University of Waterloo. These courses are treated as technical electives in the student's program. Such courses are reported on the student's transcript with their original titles in English showing as the topic. The grades for these courses will be either CR or NCR.

Department Consent Required

GENE 21C LEC 0.50

Course ID: 011799

Topics for Technical Courses Taken on Exchange by Chemical Engineering Students

Courses taken at foreign universities by University of Waterloo engineering students while enrolled in an international exchange institution, and reserved for courses without equivalents at the University of Waterloo. These courses are treated as technical electives in the student's program. Such courses are reported on the student's transcript with their original titles in English showing as the topic. The grades for these courses will be either CR or NCR.

*Department Consent Required***GENE 21D LEC 0.50**

Course ID: 011807

Topics for Technical Courses Taken on Exchange by Systems Design Engineering Students

Courses taken at foreign universities by University of Waterloo engineering students while enrolled in an international exchange institution, and reserved for courses without equivalents at the University of Waterloo. These courses are treated as technical electives in the student's program. Such courses are reported on the student's transcript with their original titles in English showing as the topic. The grades for these courses will be either CR or NCR.

*Department Consent Required***GENE 21E LEC 0.50**

Course ID: 011802

Topics for Technical Courses Taken on Exchange by Electrical Engineering Students

Courses taken at foreign universities by University of Waterloo engineering students while enrolled in an international exchange institution, and reserved for courses without equivalents at the University of Waterloo. These courses are treated as technical electives in the student's program. Such courses are reported on the student's transcript with their original titles in English showing as the topic. The grades for these courses will be either CR or NCR.

*Department Consent Required***GENE 21I LEC 0.50**

Course ID: 011803

Topics for Technical Courses Taken on Exchange by Environmental Engineering Students

Courses taken at foreign universities by University of Waterloo engineering students while enrolled in an international exchange institution, and reserved for courses without equivalents at the University of Waterloo. These courses are treated as technical electives in the student's program. Such courses are reported on the student's transcript with their original titles in English showing as the topic. The grades for these courses will be either CR or NCR.

*Department Consent Required***GENE 21K LEC 0.50**

Course ID: 011800

Topics for Technical Courses Taken on Exchange by Civil Engineering Students

Courses taken at foreign universities by University of Waterloo engineering students while enrolled in an international exchange institution, and reserved for courses without equivalents at the University of Waterloo. These courses are treated as technical electives in the student's program. Such courses are reported on the student's transcript with their original titles in English showing as the topic. The grades for these courses will be either CR or NCR.

*Department Consent Required***GENE 21L LEC 0.50**

Course ID: 011804

Topics for Technical Courses Taken on Exchange by Geological Engineering Students

Courses taken at foreign universities by University of Waterloo engineering students while enrolled in an international exchange institution, and reserved for courses without equivalents at the University of Waterloo. These courses are treated as technical electives in the student's program. Such courses are reported on the student's transcript with their original titles in English showing as the topic. The grades for these courses will be either CR or NCR.

Department Consent Required

GENE 21M LEC 0.50

Course ID: 011805

Topics for Technical Courses Taken on Exchange by Mechanical Engineering Students

Courses taken at foreign universities by University of Waterloo engineering students while enrolled in an international exchange institution, and reserved for courses without equivalents at the University of Waterloo. These courses are treated as technical electives in the student's program. Such courses are reported on the student's transcript with their original titles in English showing as the topic. The grades for these courses will be either CR or NCR.

*Department Consent Required***GENE 21N LEC 0.50**

Course ID: 014649

Topics for Technical Courses Taken on Exchange by Nanotechnology Engineering Students

Courses taken at foreign universities by University of Waterloo engineering students while enrolled in an international exchange institution, and reserved for courses without equivalents at the University of Waterloo. These courses are treated as technical electives in the student's program. Such courses are reported on the student's transcript with their original titles in English showing as the topic. The grades for these courses will be either CR or NCR.

*Department Consent Required***GENE 21Q LEC 0.50**

Course ID: 011801

Topics for Technical Courses Taken on Exchange by Computer Engineering Students

Courses taken at foreign universities by University of Waterloo engineering students while enrolled in an international exchange institution, and reserved for courses without equivalents at the University of Waterloo. These courses are treated as technical electives in the student's program. Such courses are reported on the student's transcript with their original titles in English showing as the topic. The grades for these courses will be either CR or NCR.

*Department Consent Required***GENE 21S LEC 0.50**

Course ID: 011808

Topics for Technical Courses Taken on Exchange by Software Engineering Students

Courses taken at foreign universities by University of Waterloo engineering students while enrolled in an international exchange institution, and reserved for courses without equivalents at the University of Waterloo. These courses are treated as technical electives in the student's program. Such courses are reported on the student's transcript with their original titles in English showing as the topic. The grades for these courses will be either CR or NCR.

*Department Consent Required***GENE 21T LEC 0.50**

Course ID: 011806

Topics for Technical Courses Taken on Exchange by Mechatronics Engineering Students

Courses taken at foreign universities by University of Waterloo engineering students while enrolled in an international exchange institution, and reserved for courses without equivalents at the University of Waterloo. These courses are treated as technical electives in the student's program. Such courses are reported on the student's transcript with their original titles in English showing as the topic. The grades for these courses will be either CR or NCR.

*Department Consent Required***GENE 21U LEC 0.50**

Course ID: 014648

Topics for Technical Courses Taken on Exchange by Management Engineering Students

Courses taken at foreign universities by University of Waterloo engineering students while enrolled in an international exchange institution, and reserved for courses without equivalents at the University of Waterloo. These courses are treated as technical electives in the student's program. Such courses are reported on the student's transcript with their original titles in English showing as the topic. The grades for these courses will be either CR or NCR.

Department Consent Required

GENE 22A LEC 0.50

Course ID: 011809

Topics for List A Complementary Studies Courses Taken on Exchange by Engineering Students

Courses taken at foreign universities by University of Waterloo engineering students while enrolled in an international exchange institution, and reserved for courses without equivalents at the University of Waterloo. These courses are treated as list A complementary studies electives in the student's program. Such courses are reported on the student's transcript with their original titles in English showing as the topic. The grades for these courses will be either CR or NCR.

*Department Consent Required***GENE 22B LEC 0.50**

Course ID: 011810

Topics for List B Complementary Studies Courses Taken on Exchange by Engineering Students

Courses taken at foreign universities by University of Waterloo engineering students while enrolled in an international exchange institution, and reserved for courses without equivalents at the University of Waterloo. These courses are treated as list B complementary studies electives in the student's program. Such courses are reported on the student's transcript with their original titles in English showing as the topic. The grades for these courses will be either CR or NCR.

*Department Consent Required***GENE 22C LEC 0.50**

Course ID: 011811

Topics for List C Complementary Studies Courses Taken on Exchange by Engineering Students

Courses taken at foreign universities by University of Waterloo engineering students while enrolled in an international exchange institution, and reserved for courses without equivalents at the University of Waterloo. These courses are treated as list C complementary studies electives in the student's program. Such courses are reported on the student's transcript with their original titles in English showing as the topic. The grades for these courses will be either CR or NCR.

*Department Consent Required***GENE 22D LEC 0.50**

Course ID: 011812

Topics for List D Complementary Studies Courses Taken on Exchange by Engineering Students

Courses taken at foreign universities by University of Waterloo engineering students while enrolled in an international exchange institution, and reserved for courses without equivalents at the University of Waterloo. These courses are treated as list D complementary studies electives in the student's program. Such courses are reported on the student's transcript with their original titles in English showing as the topic. The grades for these courses will be either CR or NCR.

*Department Consent Required***GENE 23E LEC 0.50**

Course ID: 015172

Topics for Natural Science Elective Courses Taken on Exchange by Electrical Engineering Students

Courses taken at foreign universities by University of Waterloo engineering students while enrolled in an international exchange institution, and reserved for courses without equivalents at the University of Waterloo. To earn credit the exchange courses will include the exploration of the physical and chemical interactions of the natural world and the systematic observation and understanding of physical and natural phenomena through analytical and/or experimental techniques. These courses are treated as Natural Science electives in the student's program. Such courses are reported on the student's transcript with their original titles in English showing as the topic. The grades for these courses will be either CR or NCR.

*Department Consent Required***GENE 23K LEC 0.50**

Course ID: 015171

Topics for Natural Science Elective Courses Taken on Exchange by Civil Engineering Students

Courses taken at foreign universities by University of Waterloo engineering students while enrolled in an international exchange institution, and reserved for courses without equivalents at the University of Waterloo. To earn credit the exchange courses will include the exploration of the physical and chemical interactions of the natural world and the systematic

observation and understanding of physical and natural phenomena through analytical and/or experimental techniques. These courses are treated as Natural Science electives in the student's program. Such courses are reported on the student's transcript with their original titles in English showing as the topic. The grades for these courses will be either CR or NCR.

Department Consent Required

GENE 23Q LEC 0.50

Course ID: 015173

Topics for Natural Science Elective Courses Taken on Exchange by Computer Engineering Students

Courses taken at foreign universities by University of Waterloo engineering students while enrolled in an international exchange institution, and reserved for courses without equivalents at the University of Waterloo. To earn credit the exchange courses will include the exploration of the physical and chemical interactions of the natural world and the systematic observation and understanding of physical and natural phenomena through analytical and/or experimental techniques. These courses are treated as Natural Science electives in the student's program. Such courses are reported on the student's transcript with their original titles in English showing as the topic. The grades for these courses will be either CR or NCR.

Department Consent Required

GENE 23S LEC 0.50

Course ID: 015174

Topics for Natural Science Elective Courses Taken on Exchange by Software Engineering Students

Courses taken at foreign universities by University of Waterloo engineering students while enrolled in an international exchange institution, and reserved for courses without equivalents at the University of Waterloo. To earn credit the exchange courses will include the exploration of the physical and chemical interactions of the natural world and the systematic observation and understanding of physical and natural phenomena through analytical and/or experimental techniques. These courses are treated as Natural Science electives in the student's program. Such courses are reported on the student's transcript with their original titles in English showing as the topic. The grades for these courses will be either CR or NCR.

Department Consent Required

GENE 100s

GENE 101 LAB,LEC,TUT 0.50

Course ID: 014367

Strategies and Skills for Academic Success

The goal for this course is to help students become successful independent learners through learned study skills, a better understanding of their personality type, and an understanding of how personal wellness affects academic success. It takes a modelled approach to teaching learning strategies to students who struggle to meet the demands of a university curriculum. In the lectures, students will be taught various learning strategies that they will be able to apply to successfully meet the demands of their other courses. Students will then apply these modelled strategies in their other courses during a weekly application lab. Students will be expected to demonstrate their understanding of the material through a variety of assignments. The course will include an engineering component.

[Note: Department Consent Required. Offered: S]

Department Consent Required

Prereq: 1A Engineering students only.

Antireq: UNIV 101

GENE 119 SEM 0.00

Course ID: 009263

Problems Seminar

Students may be assigned to a Problems Seminar by the Director or Associate Director of First-Year Engineering or Software Engineering according to their performance during the term. [Offered: F,W,S]

Department Consent Required

GENE 121 LEC,TUT 0.50

Course ID: 005779

Digital Computation

Introduction to electronic digital computers, hardware and software organization, examples of efficient numerical algorithms for basic scientific computations. [Offered: F,W,S]

Prereq: 1A Mechatronics Engineering or level at least 1B Management Engineering or Mechanical Engineering

Antireq: CHE 121, CIVE 121, ECE 150, SYDE 121

GENE 123 LAB,LEC,TUT 0.50

Course ID: 005780

Electrical Circuits and Instrumentation

Charge, current and voltage. Voltage and current sources, resistors, capacitors and inductors. Ohm's Law, Kirchhoff's Laws, nodal analysis, Thevenin and Norton models, instrumentation amplifier circuits, time response, impedance. Function and characteristics of basic electrical transducers. Resolution, precision and accuracy. Basics of data acquisition.

[Note: Normally labs are held alternate weeks. Offered: W,S]

Prereq: Level at least 1B Chemical, Civil, Environmental, Geological, Management or Mechanical Engineering

GENE 191 LEC 0.50

Course ID: 015627

Communication in the Engineering Profession

In this course, students will enhance oral and written technical communication competencies in contexts relevant to the engineering profession as well as career preparation. [Offered: F]

Prereq: Level at least 1A Computer or Electrical Engineering or 2A Management Engineering

GENE 199 LAB,LEC,TUT 0.50

Course ID: 013772

Special Topics in First Year Engineering

Various courses dealing with selected topics related to success in Waterloo Engineering. These courses will be offered as needed.

Department Consent Required

GENE 200s**GENE 299 LEC,TUT 0.50**

Course ID: 013773

Special Topics in Second Year Engineering

Various courses dealing with selected topics of particular interest to second year engineering students. These courses will be offered as resources are available and the material is needed.

Department Consent Required

GENE 300s**GENE 301 DIS 0.50**

Course ID: 005786

Special Directed Studies

This course is provided to allow enrichment for students in Engineering who have fulfilled the requirements of one or more of the courses in the 3A or 3B term by means of passing a course or courses taken during one or more work terms. The course

comprises a special project pursued under the direction of a faculty member, normally in the department of the student's program.

*[Note: Permission of the Associate Chair of the Department in which the student is registered is required. Offered: W,S]
Department Consent Required*

GENE 302 DIS 0.50

Course ID: 005787

Special Directed Studies

This course is provided to allow enrichment for students in Engineering who have fulfilled the requirements of one or more of the courses in the 3A or 3B term by means of passing a course or courses taken during one or more work terms. The course comprises a special project pursued under the direction of a faculty member, normally in the department of the student's program.

*[Note: Permission of the Associate Chair of the Department in which the student is registered is required. Offered: F,W]
Department Consent Required*

GENE 303 DIS 0.13

Course ID: 005788

International Studies In Engineering

Engineering students register for this course for credit towards the Designated Faculty Option in International Studies in Engineering upon return from study or work terms abroad. Credit will be assessed on the basis of a written report and individual interviews. The report may include technical, non-technical, and professional aspects of the foreign residence experience. It may discuss socio-economic aspects of life in the foreign country, and it may compare and contrast conditions in the country or countries involved in the student's international experiences, or trace the social or political histories of those countries. In all cases the report must include materials addressed to the needs of other students considering a similar experience. The instructor for this course is the Option Co-ordinator. Restricted to students who intend to complete the option in International Studies in Engineering. [Offered: F,W,S]

Department Consent Required

GENE 315 DIS 0.50

Course ID: 005789

Special Directed Non-Technical Studies

This course is provided for students who, through academic studies during international exchange programs or other university related scholarly activities, wish to request a course credit for this work. Students wishing to claim this credit must show evidence of university level academic activity not otherwise claimed for credit.

*[Note: Permission of the Associate Chair of the Department in which the student is registered is required. Offered: F,W,S]
Department Consent Required*

GENE 395 LEC 2.50

Course ID: 010162

Engineering Study Abroad

Waterloo students studying abroad for academic transfer credits under an Engineering Exchange Program during a Fall term register at Waterloo under GENE 395. [Offered: F]

Department Consent Required

GENE 396 LEC 2.50

Course ID: 010163

Engineering Study Abroad

Waterloo students studying abroad for academic transfer credits under an Engineering Exchange Program during a Winter term register at Waterloo under GENE 396. [Offered: W]

Department Consent Required

GENE 397 LEC 2.50

Course ID: 010022

Engineering Study Abroad

Waterloo students studying abroad for academic transfer credits under an Engineering Exchange Program during a Spring term register at Waterloo under GENE 397. [Offered: S]

Department Consent Required

GENE 399 LEC,TUT 0.50

Course ID: 013774

Special Topics in Third Year Engineering

Various courses dealing with selected topics of particular interest to third year engineering students. These courses will be offered as resources are available and the material is needed.

Department Consent Required

GENE 400s**GENE 401 PRJ 0.50**

Course ID: 005807

Special Directed Studies

This course is provided to allow enrichment for students in Engineering who have fulfilled the requirements of one or more of the courses in the 4A or 4B term by means of passing a course or courses taken during one or more work terms. The course comprises a special project pursued under the direction of a faculty member, normally in the department of the student's program.

[Note: Permission of the Associate Chair of the Department in which the student is registered is required. Offered: F,S]

Department Consent Required

GENE 402 PRJ 0.50

Course ID: 005809

Special Directed Studies

This course is provided to allow enrichment for students in Engineering who have fulfilled the requirements of one or more of the courses in the 4A or 4B term by means of passing a course or courses taken during one or more work terms. The course comprises a special project pursued under the direction of a faculty member, normally in the department of the student's program.

[Note: Permission of the Associate Chair of the Department in which the student is registered is required. Offered: W]

Department Consent Required

GENE 403 LEC,PRJ 0.50

Course ID: 014282

Interdisciplinary Design Project 1

This is the first course in a two-course sequence where students from more than one engineering program work together to solve an interdisciplinary engineering problem. In the course they will formulate and communicate an interdisciplinary engineering problem or opportunity; develop a feasible design project proposal and plan; generate feasible solutions that address the formulated problem; evaluate alternatives and identify preferred solution; address safety, regulatory, sustainability and professional ethics requirements, as appropriate; effectively manage design project technical and non-technical risks using project management tools and techniques; deliver a report and/or a presentation that summarizes the work completed; work effectively as an interdisciplinary team member and/or team leader.

[Note: Permission of the instructor is required]

Instructor Consent Required

Prereq: Level at least 4A Engineering

GENE 404 LEC,PRJ 0.50

Course ID: 014283

Interdisciplinary Design Project 2

This is the second course in a two-course sequence where students from more than one engineering program work together to solve an interdisciplinary engineering problem. At the end of this course students will be able to re-formulate and re-communicate an engineering problem or opportunity (as appropriate); revise and communicate a feasible design project plan; revise solutions that address the formulated problem (as appropriate); implement and verify design solutions by analysis, test or prototype; communicate design solutions using accepted data formats, working documents and oral presentations; address safety, regulatory, sustainability and professional ethics requirements, as appropriate; effectively manage and communicate design project plans, technical and non-technical risks, using project management tools and techniques; work effectively as an interdisciplinary team member and/or team leader.

[Note: Permission of the instructor is required]

Instructor Consent Required

Prereq: GENE 403; Level at least 4A Engineering

GENE 412 LEC 0.50

Course ID: 005811

Ethics and The Engineering Profession

An analysis from the standpoint of philosophical ethics of moral issues arising in professional engineering practice. Issues include the social responsibility of engineers, conflict of interest and obligation, morally acceptable levels of risk, and moral implications of technology.

Prereq: Level at least 2A Engineering students.

(Cross-listed with PHIL 315)

GENE 415 DIS 0.50

Course ID: 005812

Special Directed Non-Technical Studies

This course is provided for students who, through academic studies during international exchange programs or other university related scholarly activities, wish to request a course credit for this work. Students wishing to claim this credit must show evidence of university level academic activity not otherwise claimed for credit.

[Note: Permission of the Associate Chair of the Department in which the student is registered is required. Offered: F,W,S]

Department Consent Required

GENE 499 LEC,TUT 0.50

Course ID: 013775

Special Topics in Fourth Year Engineering

Various courses dealing with selected topics of particular interest to fourth year engineering students. These courses will be offered as resources are available and the material is needed.

Department Consent Required

GENE 500s**GENE 501 PRJ 2.50**

Course ID: 005816

Directed Studies for Visiting Exchange Students

An assignment of study or project work under the direction of a Faculty member. The specific project is established on the basis of a written proposal that is agreed to by the supervisors at both the host and home institutions. The academic level and the time commitment shall be specified in the proposal. Registration is restricted to international exchange students at Waterloo under an Exchange Agreement with the Faculty of Engineering. Candidates for degrees at the University of Waterloo are not eligible. A student must arrange with a Waterloo Faculty member to serve as advisor prior to registering for this course.

*[Note: A student must arrange with a Waterloo faculty member to serve as advisor prior to registering for this course.
Offered: F]*

Prereq: Engineering exchange students only

GENE 502 PRJ 2.50

Course ID: 005817

Directed Studies for Visiting Exchange Students

An assignment of study or project work under the direction of a Faculty member. The specific project is established on the basis of a written proposal that is agreed to by the supervisors at both the host and home institutions. The academic level and the time commitment shall be specified in the proposal. Registration is restricted to international exchange students at Waterloo under an Exchange Agreement with the Faculty of Engineering. Candidates for degrees at the University of Waterloo are not eligible.

*[Note: A student must arrange with a Waterloo faculty member to serve as advisor prior to registering for this course.
Offered: W]*

Prereq: Engineering exchange students only

GENE 503 PRJ 2.50

Course ID: 005818

Directed Studies for Visiting Exchange Students

An assignment of study or project work under the direction of a Faculty member. The specific project is established on the basis of a written proposal that is agreed to by the supervisors at both the host and home institutions. The academic level and the time commitment shall be specified in the proposal. Registration is restricted to international exchange students at Waterloo under an Exchange Agreement with the Faculty of Engineering. Candidates for degrees at the University of Waterloo are not eligible.

*[Note: A student must arrange with a Waterloo faculty member to serve as advisor prior to registering for this course.
Offered: S]*

Prereq: Engineering exchange students only

GEOLOGICAL ENGINEERING

GEOE 100s

GEOE 153 LAB,LEC,TST,TUT 0.50

Course ID: 011496

Earth Engineering

This course studies earth materials and processes from an engineering point of view through case histories and problem sets. The course develops a geological knowledge for applications to any physical environment and provides an appreciation of the impact of engineering work on the environment. Topics include: mineral and rock identification, the rock cycle, structural geology and tectonics, geology of Canada, effects of water, ice and wind. Students are also introduced to the concept of geologic time, topographic and geologic maps, and the basic principles and tools used to determine geologic history. [Offered: S; Offered as: CIVE 153 (W), ENVE 153 (S), GEOE 153 (S)]

*Prereq: Environmental Engineering or Geological Engineering students only
(Cross-listed with CIVE 153, EARTH 153, ENVE 153)*

GEOE 200s

GEOE 298 SEM 0.00

Course ID: 009264

Seminar

General seminar course covering current topics in Geological Engineering. [Offered: S]

Prereq: 2A Geological Engineering

GEOE 299 SEM 0.00

Course ID: 009265

Seminar

General seminar course covering current topics in Geological Engineering. [Offered: F]

Prereq: 2B Geological Engineering

GEOE 300s

GEOE 398 SEM 0.00

Course ID: 009266

Seminar

General seminar course covering current topics in Geological Engineering. [Offered: S]

Prereq: 3A Geological Engineering

GEOE 399 SEM 0.00

Course ID: 009267

Seminar

General seminar course covering current topics in Geological Engineering. [Offered: W]

Prereq: 3B Geological Engineering

GEOE 400s

GEOE 400 LAB,PRJ 0.50

Course ID: 005820

Geological Engineering Design Project 1

Students are expected to carry out a design project to demonstrate their capability to engage in the practice of engineering as a profession. A topic must be identified and resolved by the student in consultation with the supervising professor and course coordinator. The topic may be analytical, numerical, experimental, or field-oriented, utilizing knowledge gained from academic and employment experiences. A written proposal, literature search and an oral presentation are required.

Professional engineering standards and a design approach are required for the GEOE 400-401 Design Project. [Offered: F]

Prereq: 4A Geological Engineering

GEOE 401 LAB,PRJ 0.50

Course ID: 005821

Geological Engineering Design Project 2

A continuation of GEOE 400 Geological Engineering Design Project 1, and the same standards and requirements apply. A progress report, a final report in thesis format and an oral presentation are required. All other courses in the Geological Engineering Program are listed under the course descriptions in Earth Sciences or Civil Engineering. [Offered: W]

Prereq: 4B Geological Engineering

GEOE 498 SEM 0.00

Course ID: 009268

Seminar

General seminar course covering current topics in Geological Engineering. [Offered: F]

Prereq: 4A Geological Engineering

GEOE 499 SEM 0.00

Course ID: 009269

Seminar

General seminar course covering current topics in Geological Engineering. [Offered: W]

Prereq: 4B Geological Engineering

GEOGRAPHY AND ENVIRONMENTAL MANAGEMENT**Notes**

Please review the Schedule of Classes to determine when courses are offered.

GEOG 100s**GEOG 100 LEC 0.50**

Course ID: 011981

On Becoming a Geographer

An introduction to geographic themes and methods of inquiry. The emphasis will be placed on practical skills including literature searches, field observation, scholarly debate and professional writing.

[Note: Field trip fee normally \$10+HST; will not exceed \$25+HST]

Prereq: Year 1 or 2 Geography and Environmental Management students

GEOG 101 LEC 0.50

Course ID: 005823

Human Geographies: People, Space and Change

An introduction to human geography through key subfields of the discipline, examining population change, the rise of cities, our relationship to nature, social inequalities, economic forms, cultural difference and environmental change at the local and global scale.

GEOG 102 LEC 0.50

Course ID: 005824

Global Environmental Systems: Processes and Change

An introductory course in the study of the energy and mass flows that impact the climate and landscape of the Earth system. There is focus on understanding processes of change and variability as well as the impacts of humans on these systems that increasingly define the Anthropocene.

GEOG 181 LAB,LEC 0.50

Course ID: 014542

Designing Effective Maps

Focus is on the issues and foundations of modern digital cartography. Topics covered include geographic coordinate systems, map projections, mapping quantitative data, developing online maps, and the impact of maps on society. Students will learn computer techniques to produce effective maps based on established principles of cartographic design. [Also offered online]

Antireq: GEOG 165

GEOG 187 LAB,LEC 0.50

Course ID: 014543

Problem Solving in Geomatics

A specialized introduction to fundamental concepts and emerging trends in Geomatics and Geographic Information Science (GIS). Focus on methods and techniques of spatial data capture, management, and analysis. Introduction to programming as applied to GIS.

Prereq: Geomatics students only;

Antireq: GEOG 165 or GEOG 181

GEOG 200s**GEOG 201 LEC,PRJ 0.50**

Course ID: 005834

Fluvial Geomorphology

Emphasis on concepts related to fluvial processes, river mechanics, the relationship between environmental change and river regime. Selected topics include fluvial processes and landscape formation, flow and sediment regimes, channel processes, form and behaviour, river response to natural and anthropogenic change, and river management.

Prereq: GEOG 102 or EARTH 121 or 123 or Geomatics students

GEOG 202 LEC 0.50

Course ID: 005839

Geography of the Global Economy

An introduction to globalization of the world economy through an examination of its causes, patterns, and consequences in a variety of geographic contexts.

Prereq: GEOG 101 or Geomatics plans

GEOG 203 LEC,TUT 0.50

Course ID: 011140

Environment and Development in a Global Perspective

Examines the interface between human development and the environment in a global context. Various perspectives are explored to link environmental issues to wealth, poverty, consumption, population, and economic globalization. Case studies, with an emphasis on developing countries, are used to illustrate linkages.

Prereq: ENVS 195 or GEOG 101 or Geomatics plans

GEOG 207 LEC 0.50

Course ID: 015435

Climate Change Fundamentals

Climate change is one of the most profound environmental and social issues affecting communities, nations and individuals. This course is an introduction to this global challenge, including its scientific underpinnings, history, potential impacts on natural systems and human societies around the world, and two societal responses: adaptation and greenhouse gas mitigation. Opportunities to develop sustainable resilient communities, as well as Canadian climate change policy responses, will be highlighted.

Antireq: GEOG 208, GEOG 308

GEOG 209 LAB,LEC 0.50

Course ID: 013045

Hydroclimatology

An introduction to the fundamental processes governing climate and hydrological systems and the links between them. It starts with a discussion of basic atmospheric and hydrological processes and traces the flow of energy and water between the earth's surface and the atmosphere. The water cycle is examined including evapotranspiration, precipitation, runoff and water storage

in the natural reservoirs (including soil and groundwater, lakes and wetlands).

Prereq: GEOG 102 or EARTH 121 or Geomatics plans

GEOG 215 LEC 0.50

Course ID: 012608

China: Diverse and Dynamic

Changing geographies of China are examined and explained. Patterns and processes of change will be systematically analyzed for topics such as the physical environment, resources, development policy, globalization, industrialization, urbanization, and regional development. Diverse cities and regions are compared and the integration of China into the global economy is explored.

GEOG 222 LEC,TUT 0.50

Course ID: 005911

Geographical Study of Canada

An exploration of the geographical bases of Canada's regional identity. How physical, demographic, and economic geographies have combined to create unique regions within Canada.

GEOG 225 LEC,OLN 0.50

Course ID: 015633

Global Environment and Health

This course addresses the range of environmental issues that affect human health, with a global focus. This course will use a range of case studies from around the globe to address issues of measurement (of exposures and outcomes), evaluation (study designs), and policy responses.

[Note: Offered online only]

GEOG 233 LEC 0.50

Course ID: 011097

Geography of Tourism

This course provides foundational understanding of the nature and scope of tourism geographies. In particular, students will become familiar with the significance of tourism to modern society, economy and the environment. Geographical approaches to the study of tourism and contemporary frameworks relevant to human behavior and actions in touristic landscapes will serve as the foundations to understanding tourist spaces, places and identities.

Prereq: GEOG 101 or REC 101

GEOG 270 LEC,TUT 0.50

Course ID: 015557

Remotely Piloted Aircraft Systems (RPAS) Knowledge Requirements

Students will gain knowledge about the requirements and constraints affecting recreational, commercial and research RPAS (Unmanned Aerial Vehicles [UAV], Unmanned Aircraft Systems [UAS]) flights for geomatics applications. Theory and conceptual factors affecting flight, remote sensing, and spatial analysis with very-high resolution data will be discussed. Students will gain knowledge about how to navigate regulatory requirements. They will learn how to link their science and research objectives with geomatics skills to mitigate risk and obtain regulatory approval for legal RPAS flights. Assignments provide a range of experiences to students that may include: applied aspects of flight campaign approval, setup, management; flight training; and integrating imagery with geographic information systems.

(Cross-listed with AVIA 270)

GEOG 271 LAB,LEC 0.50

Course ID: 012605

Earth from Space Using Remote Sensing

Remote sensing of the Earth's systems (atmosphere, land, and oceans) is introduced. The course covers the principles, physics, sensor technology, processing and applications of remote sensing in the electromagnetic spectrum.

Prereq: GEOG 165 or 181 or 187

GEOG 281 LAB,LEC 0.50

Course ID: 007509

Introduction to Geographic Information Systems (GIS)

Introduction to the fundamental concepts and use of Geographic Information Systems (GIS). Students learn about the nature of geographic information and how to store, manipulate and analyze spatial data in a range of application areas. Students will learn underlying theory in lectures and gain a working knowledge of GIS software in lab sessions.

Prereq: GEOG 165 or 181 or 187 or Planning students

(Cross-listed with PLAN 281)

GEOG 293 LEC,TUT 0.50

Course ID: 005982

Approaches to Research in Human Geography

This course develops student skills in the area of research in human geography emphasizing all aspects of design, measurement and evaluation with a particular emphasis on personal transferable skills (e.g., oral and written communication, working as part of a team).

[Note: formerly GEOG 393]

Prereq: Level at least 2A Honours Geography and Environmental Management students, Geography and Aviation students and Geomatics students.

Antireq: GEOG 393

GEOG 294 LAB,LEC 0.50

Course ID: 012888

Approaches to Research in Physical Geography

Introduces skills for conducting research in physical geography. Selected techniques used in climatology, hydrology, geomorphology and/or biogeography research will be demonstrated and the principles behind the techniques will be explained. Students get hands on experience in research design, field and laboratory techniques, data assembly and the interpretation of data.

[Note: formerly GEOG 394]

Prereq: Level at least 2A Honours Geography and Environmental Management students, Geography and Aviation students and Geomatics students.

Antireq: GEOG 394

GEOG 300s

GEOG 300 FLD,LEC 0.50

Course ID: 005895

Geomorphology and the Southern Ontario Environment

Study of the origin and evolution of landforms with emphasis on southern Ontario. Analysis of geomorphic processes. Study of human impact on geomorphological landscapes. The lectures will be supplemented by field trips and field work required for term projects.

[Note: Field trip fee normally \$55+HST; will not exceed \$75+HST.]

Prereq: GEOG 201 or 209; Level at least 2A

GEOG 303 LEC,TUT 0.50

Course ID: 005898

Physical Hydrology

Fundamental processes in physical hydrology are addressed. Components of the water balance are examined to determine the nature of their variation in time and space. Precipitation, interception, infiltration, groundwater and soil water processes, evapotranspiration, runoff and storage will be examined from a theoretical and practical viewpoint, and their linkages demonstrated by lab and fieldwork.

[Note: Field trip fee normally \$20+HST; will not exceed \$55+HST.]

Prereq: GEOG 209

GEOG 304 FLD,LAB,LEC,OLN 0.50

Course ID: 015634

Carbon in the Biosphere

This course investigates stocks and fluxes of carbon in forests, wetlands, and lakes through directed readings and field investigations. This field-based course will focus on measurement methods, data collection and interpretation, and study design. Topics include forest biomass inventory, soil organic matter, soil carbon dioxide and methane exchange, and dissolved organic carbon.

Prereq: GEOG 201 or GEOG 209; Level at least 2B.

Antireq: GEOG 474 002 S17

GEOG 306 LEC 0.50

Course ID: 012402

Human Dimensions of Natural Hazards

This course will investigate the human dimensions of the global experience with natural hazards and associated disasters. The physical nature of a wide range of geophysical and biophysical hazards will be explored, paying particular attention to: the ways in which hazards become dangerous to humans, and the pathways by which humans can either increase or decrease their vulnerability in the face of natural hazards.

[Note: formerly GEOG 206]

Prereq: GEOG 101 or 102 or EARTH 121; Level at least 2A.

Antireq: GEOG 206

GEOG 307 LEC 0.50

Course ID: 015436

Societal Adaptation to Climate Change

Climate change is a pervasive factor affecting the future of society. Recognizing that dangerous climate change cannot be avoided through greenhouse gas emissions reductions alone, adaptation to climate change has emerged as a central component of global climate policy. An in depth understanding of the diverse impacts of climate change on communities, economic sectors and society will provide a foundation for examining adaptation strategies to build resilience to accelerated climate change. Examples will drawn from multiple sectors in both developed and developing world contexts, with an emphasis on solutions and the limits to adaptation.

Prereq: GEOG 207 or GEOG 208 or GEOG 308

GEOG 309 LEC 0.50

Course ID: 005902

Physical Climatology

Principles of physical climatology with emphasis on regional and global change and variability. Topics include radiation and energy balances, general circulation patterns, synoptic development and micro-climatology.

Prereq: GEOG 102 or EARTH 121 or Science and Aviation plans

GEOG 310 LAB,LEC 0.50

Course ID: 012606

Geodesy and Surveying

Concepts of geodesy and surveying, Earth's gravity field and the geoid, and measurement techniques applied to geomatics are examined. Field studies include the use of the level, the total station, and GPS for doing distance and angle measurements, leveling, traversing and topographic surveying.

Prereq: One of GEOG 165, GEOG 181, GEOG 187

GEOG 311 LEC,TUT 0.50

Course ID: 013018

Local Development in a Global Context

The course examines the ability of local communities to influence their development trajectory. The roles and potential for collaboration among public, private, and third sector partners are explored. Social, environmental, and economic goals are interconnected within a sustainable development framework.

Prereq: GEOG 202 or GEOG 203

GEOG 316 LAB,LEC,TUT 0.50

Course ID: 005905

Multivariate Statistics

The theory and application of multivariate statistics, with particular emphasis upon the use of the computer.

Prereq: ENVS 278; Not open to students in the Faculty of Mathematics

(Cross-listed with PLAN 351)

GEOG 318 LAB,LEC 0.50

Course ID: 005908

Spatial Analysis

Advanced quantitative analysis in a spatial context. A selection of techniques from sampling, geostatistics, point pattern analysis and cluster detection, spatial classification, and spatial data mining.

Prereq: ENVS 278; Not open to students in the Faculty of Mathematics

(Cross-listed with PLAN 353)

GEOG 319 LAB,LEC,TUT 0.50

Course ID: 005909

Economic Analyses for Regional Planning

Practical application and critical appraisal of regional analysis techniques used by planners, economic developers and consultants. Problem based approaches to understanding the strength and leverage of business and industrial sectors, projection and forecasting, employment and demographic trends, investment decision-making and cost benefit analysis.

Prereq: ENVS 278

(Cross-listed with PLAN 320)

GEOG 320 LAB,LEC 0.50

Course ID: 014545

The Cryosphere

This course provides a comprehensive overview of the cryosphere and cryosphere-atmosphere interactions. Topics covered include the material and thermodynamic properties of snow and ice, the role of the cryosphere in weather and climate, and the response of the cryosphere to climate change (past, present and future). Students will be introduced to, and experiment with, snow and ice process models. [formerly: GEOG 419]

Prereq: GEOG 209.

Antireq: GEOG 419

GEOG 323 LEC 0.50

Course ID: 005912

Perspectives on International Tourism

The character, problems of, and prospects of tourism are examined through consideration of tourism in a variety of countries and regions, both developed and developing. Topics include the nature and significance of tourism; economic, environmental and social impacts of tourism; and costs and benefits of tourism to destination areas.

*Prereq: One of GEOG 233, REC 230, PLAN 362
(Cross-listed with REC 383)*

GEOG 325 LEC,TUT 0.50

Course ID: 015033

Geographies of Health

A critical examination of major themes related to the distribution, diffusion, determinants and delivery of health and health care with a particular emphasis on the roles of space, place and environment.

Prereq: GEOG 101; Level at least 3A

GEOG 336 LEC,SEM 0.50

Course ID: 015639

Spaces of Citizenship: Identities and Inequality

This course uses international case studies to explore the geographies of citizenship, above and below the scale of the state. It examines how acts of citizenship affect people's sense of identity, community, well-being, and belonging.

Prereq: GEOG 202.

Antireq: GEOG 374 001 F17

GEOG 340 LEC 0.50

Course ID: 005924

Settlements of Rural Canada

An historical perspective is used to explore the shifting identities of Canada's dispersed and nucleated rural settlements. Rural growth, decline and restructuring are examined, including a discussion of how various intervention approaches stimulate changes.

Prereq: GEOG 101

GEOG 349 LEC 0.50

Course ID: 007561

Urban Form and Internal Spatial Structure

An examination of the major factors giving rise to distinctive styles of urban spatial organization. Focus moves from city-wide scale to subareas/sectors - inner city, housing, retailing, etc., with emphasis on understanding and planning for the dynamics of complex environments. Applied issues or problems are dealt with throughout the course.

Prereq: One of GEOG 202, GEOG/ERS 203, GEOG 250 or PLAN 100

(Cross-listed with PLAN 349)

GEOG 351 FLD,LEC 0.50

Course ID: 005934

Geography of Transportation

Focuses on Canadian transportation systems and issues and is organized into three modules: links between transportation and regional economic development, urban land use - transportation interactions, and sustainable transportation. Approximately one-quarter of the course focuses on analytic techniques including network analysis, category analysis, and the gravity model. Particular attention is paid to trends in air travel and related issues.

Prereq: ENVS 178 or Science and Aviation plans

GEOG 356 LEC 0.50

Course ID: 005945

Resources Management

Reviews selected theories, methods, and terminology related to economic, behavioural, institutional and decision-making aspects of resources and environmental problems.

Prereq: GEOG 202 or GEOG 203

GEOG 361 OLN 0.50

Course ID: 013956

Food Systems and Sustainability

This course examines dimensions of food systems sustainability and food security, from production to consumption, from local to global scales, in the Global North and South. Specific themes covered in the course include technological and genetic change in food production, resource depletion and wider environmental impacts of the industrial food system, and policy, market-oriented, and civil society initiatives to bring about change in the food system, including organic production and localizing food systems. [formerly: GEOG/ERS 461] [Offered online only.]

Antireq: ERS 461/GEOG 461/ERS 489/PSCI 489/GEOG 429

(Cross-listed with ERS 361)

GEOG 368 LEC 0.50

Course ID: 007559

Conservation/Resource Management of the Built Environment

Consideration of the constraints and guidelines that an application of the principles of ecology places on the planning and management of resources within urban spaces and the implications for urban design. The theory and history of this subject will be discussed together with urban ecomanagement, the management of waste, urban open space and parks, rehabilitated sites, and environmentally sensitive areas.

Prereq: ENVS 200

(Cross-listed with PLAN 341)

GEOG 371 LAB,LEC 0.50

Course ID: 012607

Advanced Remote Sensing Techniques

Advanced image processing techniques of digital remote sensing measurements (e.g. radar systems, optical and infrared systems) from ground, aircraft and satellite instrument systems. Techniques are applied to the study of physical and human environments.

Prereq: GEOG 271

GEOG 374 LEC,SEM,TUT 0.50

Course ID: 015289

Special Topics in Geography

These courses allow for additions to the program on a short-term basis, and for the development of future permanent courses.

Department Consent Required

Prereq: Level at least 2B

GEOG 381 LAB,LEC 0.50

Course ID: 006014

Advanced Geographic Information Systems

Students learn theoretical and operational approaches to advanced spatial analysis using geographical information systems. Emphasis is placed on the use of automation procedures using models and programming to address a variety of topics that may include but are not limited to digital terrain modeling, suitability analysis, network analysis, and cell-based models. The domain of spatial problems explored may vary by instructor.

Prereq: GEOG/PLAN 255 or GEOG/PLAN 281

(Cross-listed with PLAN 381)

GEOG 387 LAB,LEC 0.50

Course ID: 005943

Spatial Databases

This course focuses on design and development of a GIS database. It addresses theoretical issues regarding data models used in GIS and data modeling techniques used in designing spatial databases. It considers the processing required to input data from a variety of sources and clean and edit a multi-theme database and introduces students to creation and use of internet map services.

Prereq: GEOG/PLAN 255 or GEOG/PLAN 281

(Cross-listed with PLAN 387)

GEOG 391 FLD,TUT 0.50

Course ID: 005978

Field Research

Field research course in which a specific area will be analyzed from a geographic point of view. Individual or group analysis of specific field problems.

[Note: Field trip fee normally \$50+HST; will not exceed \$150+HST.]

Prereq: GEOG 293 or GEOG 294

GEOG 400s

GEOG 404 LEC 0.50

Course ID: 012719

Soil Ecosystem Dynamics

This course examines the role of soil in the environment, its importance as a natural resource in agricultural and forest productivity, and the effects on soil resources as a result of different management practices. It is divided into three sections: 1) introduction to soil composition, formation, and physical, chemical and biological characteristics of soil; 2) soil degradation and management approaches to rehabilitation; 3) soil pollution and the role of soil in maintaining environmental integrity.

Prereq: ENVS 200 or Instructor Consent

(Cross-listed with ERS 484)

GEOG 405 LEC,TUT 1.00

Course ID: 005992

Wetlands

Basic concepts on the distribution, classification, development, hydrology, biogeochemistry, and ecology of wetlands with an emphasis on temperate and boreal/subarctic systems. Human impacts, restoration and reclamation of wetlands are considered with the view of wetlands as functional ecosystems.

[Note: Field trip fee normally \$20+HST; will not exceed \$55+HST.]

Prereq: GEOG 209 or EARTH 123 and ENVS 200

GEOG 407 LAB,SEM 1.00

Course ID: 005994

Environmental Hydrology

An interdisciplinary course that explores ecological processes that are linked to physical hydrology. Particular focus is on the storage and movement of water, solutes and nutrients within selected ecosystems and the ecological impacts of human activities on the ecohydrological system.

Prereq: GEOG 303 or EARTH 123; Level at least 3A

GEOG 408 LAB,LEC 1.00

Course ID: 014541

Earth's Future Climates

This course provides students with experience using numerical models to understand changes in Earth's climate. Building on their knowledge of the fundamental physical processes governing the climate system, students will construct, apply and evaluate a hierarchy of climate models (from simple energy balance models to full ocean-atmosphere General Circulation Models). The predictive ability of climate models, and their validation, will be considered. The different types of uncertainty inherent in climate projections will be explained and the implications assessed.

Prereq: GEOG 309

GEOG 409 LEC,SEM,TUT 1.00

Course ID: 005996

Energy Balance Climatology

A field and lecture course including the radiation and energy balances of various surfaces, the principles of turbulent energy exchange, and the biotic response to the energy environment. These concepts will be illustrated through the collection and examination of field data. The student will be responsible for presentation of a seminar on an assigned topic as well as presentation of the results of research incorporating data collected at the University of Waterloo weather station.

Prereq: GEOG 309

GEOG 410 LAB,LEC 0.50

Course ID: 014106

Global Navigation Satellite Systems

The course covers the essence of Global Navigation Satellite Systems (GNSS), including reference systems, satellite orbits, satellite signals, observables, mathematical models for positioning, data processing, transformation, and applications.

Prereq: GEOG 310

GEOG 411 LEC 0.50

Course ID: 005998

Global and Local Dimensions of Industrial Restructuring

Understanding the implications of globalization for the local and regional economy through examining technological change, multinational corporations, employment and institutions. Course work focuses on analysis of the restructuring of specific industries in the southern Ontario region.

Prereq: GEOG 202 or GEOG/ERS 203; Level at least 3A Honours students only

GEOG 415 PRJ 1.00

Course ID: 015636

Economic Geography Project

Economic geography concepts and techniques are applied to the study of a current economic or social issue facing a local, regional, or national jurisdiction.

Prereq: GEOG 202 and GEOG 293

GEOG 418 LEC,TUT 0.50

Course ID: 014544

Cold Region Climates

This course provides a comprehensive overview of the Arctic climate system. A variety of topics are considered including: key components and processes of the energy and water budgets; the current state of the cryosphere; the relationship between the cryosphere and past variability; the role of the Arctic in the global climate system; and the prediction of future changes using global climate models. Various observational perspectives on the climate system, including conventional measurements, atmospheric reanalysis, and remote sensing are presented.

Prereq: GEOG 209 and GEOG 309

GEOG 420 FLD,LAB,LEC 0.50

Course ID: 015637

Ice Sheets and Glaciers

This course will introduce the basics of glaciology, with a focus on climate change and physical processes. Key areas covered by the course include glacial mass change in a warming climate, ice dynamics, various spatial and temporal scales of glaciation, and geomorphological features caused by glaciation.

Prereq: GEOG 201 or GEOG 209; Level at least 3A.

Antireq: GEOG 474 001 W17

GEOG 423 LEC 0.50

Course ID: 011098

Sustainable Tourism

This course examines sustainability issues relevant to tourism. In particular, conceptual and practical examples related to economic, environmental, and social/cultural sustainability of tourism are critically appraised, combined with reviews of policy and institutional effects on sustainability practices. The course also focuses on best practices in sustainable tourism within government, non-government and business operations.

Prereq: GEOG 233 or 323

GEOG 426 SEM 0.50

Course ID: 006007

Geographies of Development

Examines international development theories and practice, emphasizing the interactions between social, economic, political and environmental dimensions at the micro- and macro-scales. Selected case studies illustrate divergent outcomes of development and the contested process that development represents.

Prereq: GEOG 202 or GEOG/ERS 203; Level at least 3A Honours students

GEOG 428 LAB,LEC 0.50

Course ID: 014145

Spatial Demography

This course develops the capacity of students to apply methods of spatial demography. Spatial demography refers to the statistical study of human population using spatial methods for analyzing demographic data. It can provide insights into the understanding of geographic variations of population's characteristics, which in turn can help to make better plans in building the environment. Through this course, students will learn the basic concepts, data sources, data issues, methodologies, and applications of spatial demography.

Prereq: ENVS 278 and GEOG/PLAN 281

(Cross-listed with PLAN 418)

GEOG 430A LAB 0.50

Course ID: 006008

Field Research in Regional Geography

Detailed analysis of a selected region with major emphasis upon a field examination of the region (several weeks duration). Offering dependent upon faculty availability and student enrolment. For additional information on duration, itinerary and travel costs of course offerings, contact the Geography Undergraduate Advisor.

Prereq: Level at least 3A Honours students only

GEOG 430B LAB 1.00

Course ID: 006009

Field Research in Regional Geography

Detailed analysis of a selected region with major emphasis upon a field examination of the region (several weeks duration). Offering dependent upon faculty availability and student enrolment. For additional information on duration, itinerary and travel costs of course offerings, contact the Geography Undergraduate Advisor.

Prereq: Level at least 3A Honours students only

GEOG 430C LAB 1.50

Course ID: 006010

Field Research in Regional Geography

Detailed analysis of a selected region with major emphasis upon a field examination of the region (several weeks duration). Offering dependent upon faculty availability and student enrolment. For additional information on duration, itinerary and travel costs of course offerings, contact the Geography Undergraduate Advisor.

Prereq: Level at least 3A Honours students only

GEOG 432 LEC 0.50

Course ID: 006442

Health, Environment, and Planning

This course examines the relationship between the environment (built/physical, economic, social, political and natural aspects) and population health. It focuses on conceptual and empirical links among current environment-health issues such as air quality, active transportation, injury prevention, climate change, and mental well-being. Emphasis is placed on the role of urban planners in collaboration with allied professionals (e.g., public health, engineering, law enforcement, architecture) in creating and maintaining healthy built environments to improve population health with a focus on key health issues.

Prereq: One of PLAN 233, HLTH 260, ERS 253, GEOG 325

(Cross-listed with HLTH 420, PLAN 432)

GEOG 436 LEC,SEM 0.50

Course ID: 015638

Feminist Economic Geography: Gender, Identities and Social Change

Using a combination of lecture and seminar, this course examines feminist economic geography's framing of: (1) the gendered division of labour (2) (un)paid care work (3) how different embodied actors engage with the economy and (4) feminist critiques of capitalism and responses to economic crisis.

Prereq: GEOG 202.

Antireq: GEOG 474 001 S17

GEOG 450 SEM,TUT 0.50

Course ID: 006011

Changing Form and Structure of Metropolitan Canada

Selected analysis of processes, problems and planning issues associated with the internal growth and spatial reorganization of Canadian metropolitan areas. Three or four topics are chosen for detailed investigation. These will vary from year to year.

Prereq: One of GEOG 426, GEOG/PLAN 349, PLAN 362, PLAN 431

(Cross-listed with PLAN 450)

GEOG 452 PRJ 1.00

Course ID: 010134

Resource Management Project

Concepts and techniques of resources management and institutional analysis are applied to the study of a current resource or environmental management issue.

Prereq: GEOG 293 or GEOG 294

GEOG 453 LEC 0.50

Course ID: 011527

Urban Stormwater Management

Urban stormwater runoff affects the water quality, water quantity, habitat and biological resources, public health and aesthetic appearance of urban waterways. This course reviews the physical and chemical processes, environmental assessment techniques and best management practices related to stormwater management in the urban systems.

Prereq: Level at least 3A

(Cross-listed with PLAN 453)

GEOG 454 LEC 0.50

Course ID: 014546

Retail Landscapes

A critical examination of the processes that govern retail landscapes in the city and its countryside. Emphasis is placed on understanding the forces that drive the creation, maintenance, and evolution of these settings at a variety of scales. Small-group work provides an opportunity to apply this understanding in a real-world context.

[Note: formerly: GEOG 353]

Prereq: GEOG 202 or GEOG 203 or at least level 3A Planning students;

Antireq: GEOG 353

GEOG 456 FLD,LEC 0.50

Course ID: 015635

Transforming Canadian Resource Management

Past and present approaches to resource management in Canada are examined in order to design the transformations needed for a sustainable Canadian future.

[Note: This course involves a combination of lecture, class discussion and activities, student presentations and a multi-day field trip to Ottawa; field trip fee normally \$300+HST; will not exceed \$600+HST. For students unable to attend the field component, an alternative assessment component will be arranged.]

Prereq: Level at least 3A;

Antireq: GEOG 474 001 W18

GEOG 459 SEM,TUT 1.00

Course ID: 006015

Energy and Sustainability

Renewable and non-renewable energy supply systems are compared using economic and environmental measures. Consumption trends and conservation options are considered at the local and global level. Projects are used to demonstrate the economic and environmental challenges in the design of a sustainable energy system.

Prereq: GEOG 202 or GEOG 203

GEOG 462 LEC 0.50

Course ID: 013955

Global Food and Agricultural Politics

This course examines the global food and agriculture system. Specific themes to be covered include political and governance issues related to the Green Revolution, global food corporations, agricultural trade liberalization, food aid, international agricultural assistance, the global agro-chemical industry, and agricultural bio-technology.

Prereq: Level at least 3B.

Antireq: ERS 489/PSCI 489/GEOG 429

(Cross-listed with ERS 462, PSCI 488)

GEOG 471 SEM,TUT 1.00

Course ID: 006019

Remote Sensing Project

Digital image analysis for resource mapping and evaluation using remote sensing data. Topics range from initial data selection to final map production and assessment. Using commercial image analysis software, students will analyse data for a selected area and produce a portfolio of results. In addition, they will undertake a literature review on a selected topic and present highlights of the review at an end-of-term mini-conference.

Prereq: GEOG 371; Level at least 3A

GEOG 474 SEM 0.50

Course ID: 009503

Special Topics in Geography

These courses allow for additions to the program on a short-term basis, and for the development of future permanent courses.

Instructor Consent Required

Prereq: Level at least 3A Honours students only

GEOG 475 RDG 0.50

Course ID: 009506

Independent Study of Selected Topics

Individual study of specific topics not covered in other courses. Students must not register for this course until a faculty member has agreed to supervise the study and the student has developed a brief outline to be filed with the Associate Chair, Undergraduate Studies.

[Note: The weight of the course is dependent upon the topic selected.]

Department Consent Required

Prereq: Level at least 3A Honours students only

GEOG 481 LAB,PRJ,SEM,TUT 1.00

Course ID: 009505

Geographic Information Systems Project

The development, implementation, and presentation of a response to a set of GIS related project requirements is the focus of this course. Students work in small teams to enhance and develop their abilities to work with GIS and related spatial technologies and analytical methods in an advanced project setting. The nature of the project requirements and themes varies with faculty and student strengths and interests. Projects may emphasize development of software applications, use of programming, or advanced GIS analysis methods, and draw from theme areas such as environment studies and management, human and physical geography, or planning.

Prereq: GEOG/PLAN 387, GEOG/PLAN 381 and ENVS 278

(Cross-listed with PLAN 481)

GEOG 483 LEC 0.50

Course ID: 014547

Geoweb and Location-Based Services

A critical approach to the development, implementation, and evaluation of the Geospatial Web and location-based services. Topics covered include Volunteered Geographic Information, open data, locational privacy, and mobile data collection. Assignments are used to experiment with course concepts.

Prereq: GEOG/PLAN 381

GEOG 487 SEM 0.50

Course ID: 009498

Management Issues in Geographic Information Systems

Built around a set of key issues in the management of Geographic Information Systems. Focuses on middle management concerns and covers topics including GIS needs assessment, benchmarking, the law and spatial data, spatial data warehousing, multi-user GIS modelling and GIS application development. Uses of GIS in both public and private sector organizations are covered.

[Note: formerly: GEOG/PLAN 555]

Prereq: GEOG/PLAN 355 or GEOG/PLAN 381 or GEOG/PLAN 387 or GEOG/PLAN 455.

Antireq: GEOG/PLAN 555

(Cross-listed with PLAN 487)

GEOG 490A PRJ 0.50

Course ID: 006045

Honours Thesis Preparation

Preparatory work and first draft of thesis.

[Note: Students must have a thesis advisor for department consent to be granted.]

Prereq: GEOG 293/393 or 294/394; Level at least 3A Honours

GEOG 490B PRJ 1.00

Course ID: 006046

Honours Thesis Completion

Completion of thesis.

Prereq: GEOG 490A

G E R M A N

Courses in German are offered through the Department of Germanic and Slavic Studies.

Notes

1. A number of German language courses can be taken concurrently. Students majoring in German or preparing for work or study terms in German-speaking Europe are encouraged to take some courses in tandem: GER 201 and GER 211 together; GER 202 and GER 212 together; GER 303, GER 304, GER 307, GER 308, GER 309 together with GER 331 or GER 334.
2. GER and CI courses count towards the new Minor in Cultural Identities (CI); for further information, please ask the Germanic and Slavic Studies undergraduate advisor.
3. Students with advanced German language skills interested in taking literary or cultural studies courses, but who do not have the necessary prerequisite courses, should contact the undergraduate officer for departmental approval to take these courses.

GER 100s

GER 100 LEC,TUT 0.50

Course ID: 013628

Zeitgeist and Popular Culture

An introduction to life, society, and culture in modern Germany, Austria, and Switzerland.

[Note: Taught in English.]

GER 101 LAB,LEC 0.50

Course ID: 006056

Elementary German I

For students with little or no knowledge of German. The basic elements of German grammar with emphasis on group and individual oral practice. Development of skills in listening/comprehension, speaking, reading, and writing. Introduction to aspects of German culture and everyday life. Tapes and computer exercises accompany each chapter of the textbook. Students are encouraged to use them in the language laboratory and at home.

[Note: GER 101 is not open to students with native, near-native or similar advanced ability.]

Antireq: 4U German

Also offered Online

GER 102 LAB,LEC 0.50

Course ID: 006057

Elementary German II

A continuation of GER 101.

[Note: GER 102 is not open to students with native, near-native or similar advanced ability.]

Prereq: GER 101.

Antireq: 4U German

Also offered Online

GER 180 LEC,TUT 0.50

Course ID: 013630

German and Russian Literary Masterpieces

An examination of major Russian and German literary works that have influenced world literature.

[Note: Taught in English.]

(Cross-listed with REES 180)

GER 200s**GER 200 SEM 0.50**

Course ID: 015149

Transcultural Studies

This course provides an introduction to transcultural views of literature, film, language, and literature and media culture (e.g., fairy tales and their adaptation in other cultures; authors who work in multiple languages; transcultural comics; multilingual and transcultural films; local cultures' interaction with global arts and media scenes, etc.).

[Note: Lectures and readings in English. No knowledge of German required.]

GER 201 LAB,LEC 0.50

Course ID: 006070

Intermediate German I

This course continues the work of GER 101/102. It offers practice in speaking, reading, and writing, with vocabulary building, grammar, and exercises in comprehension.

[Note: Students intending to major in German or preparing for work or study terms in German-speaking Europe are encouraged to take GER 201 and 211 concurrently. GER 201 is not open to students with native, near-native or similar advanced ability.]

Prereq: GER 102 or 4U German

Also offered Online

GER 202 LAB,LEC 0.50

Course ID: 006072

Intermediate German II

Strengthening of communicative skills, grammar review, vocabulary building, written practice, conversation on issues of contemporary life in German-speaking countries.

[Note: Students intending to major in German or preparing for work or study terms in German-speaking Europe are encouraged to take GER 202 and 212 concurrently. GER 202 is not open to students with native, near-native or similar advanced ability.]

Prereq: GER 201

Also offered Online

GER 211 LAB,LEC 0.50

Course ID: 014285

Integrative Language Seminar I

This course develops reading, writing, and oral skills, and intercultural competence.

[Note: Students may take GER 201 and 211 concurrently.]

Prereq: GER 102 or 4U German

GER 212 LAB,LEC 0.50

Course ID: 011595

Integrative Language Seminar II

This course builds on GER 211 to develop competence in reading, writing, oral skills, and intercultural competence.

[Note: Students may take GER 202 and 212 concurrently. Formerly GER 204.]

Prereq: GER 201 or 4U German.

Antireq: GER 204

GER 220 LEC,TUT 0.50

Course ID: 013653

Once Upon a Fairy Tale: Fairy Tales, Then and Now

This course studies fairy tales in the broader context of the history of childhood and practices of education and socialization. The course will concentrate on the German and Russian context and in particular on the work of the Brothers Grimm and Alexander Afanasyev, and will also consider fairy tales drawn from a number of different national traditions and historical periods.

[Note: Taught in English.]

(Cross-listed with REES 220)

GER 230 LEC 0.50

Course ID: 015309

Vikings!

This course will examine the Viking Age cultures, which flourished in Northern Europe and beyond from c. 800 to 1100 C.E.. The goal of this course is to familiarize students with the Viking Age and to deepen students' understanding of the processes through which peoples in the present give meaning to the past.

[Note: Taught in English; no knowledge of other languages required.]

Antireq: GER 298 taken Fall 2015

Also offered Online

GER 250 LAB,LEC 0.50

Course ID: 011596

Performance German I

This course focuses on improving the student's oral skills through the preparation and performance of a German play. Students also learn about the theoretical and technical aspects of theatre production.

Prereq: GER 101 or 102.

Antireq: 4U German

GER 261 LEC 0.50

Course ID: 013008

Languages and Society I

This course examines the role that languages play in multilingual societies from a linguistic perspective. It focuses on topics such as dialects, language contact and change, bilingualism, language choice, and language and identity.

[Note: Taught in English.]

(Cross-listed with ENGL 220A, REES 261)

GER 262 LEC 0.50

Course ID: 013009

Languages and Society II

This course examines the role that languages play in multilingual societies from a social and cultural perspective. It focuses on topics such as plurilingualism and multilingualism, language maintenance and loss, language planning and politics, multilingual and heritage language education.

[Note: Taught in English.]

(Cross-listed with ENGL 220B, REES 262)

GER 271 LEC 0.50

Course ID: 006084

German Thought and Culture: Objects

An exploration of human-made objects that open up perspectives on German-speaking society and culture. Objects to be studied might include the Berlin Wall, the swastika, Luther's Bible, donairs, and Volkswagens. Students acquire skills in cultural analysis and learn about major developments in literature, philosophy, religion, art, architecture, and music.

[Note: Taught in English.]

Also offered Online

GER 272 LEC 0.50

Course ID: 006085

German Thought and Culture: People

An exploration of key figures whose contributions to the arts and intellectual life have shaped German-speaking society and culture. Persons to be studied might include Friedrich Nietzsche, Sigmund Freud, Leni Riefenstahl, and Hannah Arendt. Students acquire skills in cultural analysis and learn about major developments in literature, philosophy, religion, art, architecture, and music.

[Note: Taught in English.]

Also offered Online

GER 286 LEC 0.50

Course ID: 015496

Great German Thinkers

An introduction to and examination of the thought of one important figure (such as Leibniz, Kant, Nietzsche, or Heidegger) or school (such as Idealism, Romanticism, or phenomenology) of German philosophy. The choice of the philosopher(s) studied varies from term to term.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

(Cross-listed with PHIL 286J)

Offered at St. Jerome's University

GER 298 FLD,SEM 0.50

Course ID: 014480

Topics in Cultural Studies

Selected topics in cultural studies.

[Note: This is a repeatable course, subject to different content; it may be completed a total of two times.]

GER 299 LEC 0.50

Course ID: 014481

German Abroad

This immersion course provides students with an introduction to and a familiarity with selected topics in German-speaking environments. The topics range from history and culture, to language and linguistic varieties in the German-speaking world, as well as arts and the German-speaking media landscape. Course offerings include classes abroad as well as field trips.

[Note: Information about current offerings can be obtained from the Department. This is a repeatable course, subject to different content; it may be completed a total of two times.]

Department Consent Required

GER 300s

GER 301 SEM 0.50

Course ID: 012718

Language, Culture, and Identity

This course provides an introductory overview of fundamental concepts of language, culture, and identity and relates them to foreign/second language learning and teaching. The course is not language-specific but rather addresses general questions related to learning and using more than one language.

[Note: Taught in English.]

(Cross-listed with APPLS 301)

GER 303 LAB,LEC 0.50

Course ID: 011597

Interactive German Language and Culture

This course develops German language skills and cultural awareness. Discussions include such topics as Heimat, nation, migration, and study abroad. Students will engage with and reflect on different social and cultural perspectives through interviews, videos, and texts. Online interactions, including with people in and from Germany, form an integral part of the course.

[Note: Offered through University of Guelph in alternating years, but always available to both University of Waterloo and University of Guelph students.]

Prereq: One of GER 202, 211, 212

Only offered Online

GER 304 LAB,LEC 0.50

Course ID: 011598

Reading and Translating

Students learn strategies for understanding a variety of texts such as newspaper reports, manuals, and fiction. Translation exercises are used to improve language skills.

Prereq: One of GER 202, 203, 204, 211, 212

GER 307 LEC,TUT 0.50

Course ID: 013631

German for Professional Purposes

This language course teaches students the skills needed to function in German business and professional environments. Praxis-oriented language and intercultural training are combined with a discussion of the German business world.

Prereq: One of GER 202, 203, 204, 211, 212.

Antireq: GER 305, 306

GER 308 LEC,TUT 0.50

Course ID: 013632

German through Comics

German-language comic strips and graphic novels enable students to explore modern language use. Colloquial German language skills are sharpened in this course, and the place of the comic strip and graphic novel in society is discussed.

Prereq: One of GER 202, 203, 204, 211, 212

GER 309 LAB,SEM 0.50

Course ID: 014286

The Structure of German

Students in this course investigate grammar phenomena in electronic corpora (large principled collections of texts) to develop their language awareness and the accuracy and appropriateness of their written German.

Prereq: One of GER 202, 203, 204, 211, 212

GER 331 SEM 0.50

Course ID: 011599

Exploring the German Language

An introduction to the study of linguistics with a focus on developing the German language skills necessary for linguistic analysis.

Prereq: One of GER 203, 204, 211, 212

GER 334 LEC,TUT 0.50

Course ID: 013633

Exploring German Literature

An introduction to the study of prose, poetry, and theatre. Periods in German literary history, forms of literary expression, and the methodologies used to analyze these forms are examined. Special attention is also paid to developing the German language skills necessary for literary interpretation.

Prereq: One of GER 203, 204, 211, 212

GER 350 LAB,LEC 0.50

Course ID: 011602

Performance German II

A course for more advanced learners of German who wish to improve their oral skills through the preparation and performance of a German play. Students also learn about the theoretical and technical aspects of theatre production.

Prereq: GER 201 or 4U German

GER 359 LAB,SEM 0.50

Course ID: 011606

Topics in German Film

Selected topics in German film.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

(Cross-listed with FINE 359)

GER 362 LAB,LEC 0.50

Course ID: 013634

German Film Classics

Masterpieces of German film from the silent era to present.

[Note: Taught in English.]

Prereq: Level at least 2A

(Cross-listed with FINE 362)

GER 363 LAB,LEC 0.50

Course ID: 013635

German Filmmakers in Hollywood

An examination of the work of filmmakers who have made a mark in both European and American cinema.

[Note: Taught in English.]

Prereq: Level at least 2A

(Cross-listed with FINE 363)

GER 364 LAB,LEC 0.50

Course ID: 013636

German and Russian Film Pioneers

An examination of early German and Russian cinema, and the way these two film industries influenced each other. Influential theories of film from the period will also be studied.

[Note: Taught in English.]

Prereq: Level at least 2A

(Cross-listed with FINE 364, REES 364)

GER 383 LEC 0.50

Course ID: 012957

Culture in the Third Reich: Racism, Resistance, Legacy

An examination of German culture during the Nazi period (1933-1945). The course will analyze representations of Nazi ideology in the arts (film, art, architecture, and propaganda), the literature of exile and "inner emigration," and the impact of the Nazi legacy on post-war German culture.

[Note: Taught in English.]

Also offered Online

GER 385 LEC,TUT 0.50

Course ID: 013650

Culture Behind the Iron Curtain

An examination of the culture of the Soviet Union, the German Democratic Republic, and other states that experimented with socialism in the 20th century. Representations of Marxist-Leninist and Stalinist ideologies in literature, cinema, and the arts; the role of the state in directing cultural expression; and resistance to totalitarian control of culture are examined. Western representations of the Cold War are also studied.

[Note: Taught in English. GER 385 will have a German language component for students in German academic plans. REES 385 will have a Russian language component for students in Russian and East European academic plans.]

(Cross-listed with REES 385)

GER 395 LEC 2.50

Course ID: 006125

Waterloo in Germany Program

Study abroad at a German university in the fall term.

Department Consent Required

GER 396 LEC 2.50

Course ID: 006128

Waterloo in Germany Program

Study abroad at a German university in the winter term.

Department Consent Required

GER 397 LEC 2.50

Course ID: 011867

Waterloo in Germany Program

Study abroad at a German university in the spring term.

Department Consent Required

GER 398 FLD,SEM 0.50

Course ID: 014483

Topics in Cultural Studies

Selected topics in cultural studies.

[Note: This is a repeatable course, subject to different content; it may be completed a total of two times.]

GER 399 LEC 0.50

Course ID: 014484

German Abroad

This immersion course provides students with an introduction to and a familiarity with selected topics in German-speaking environments. The topics range from history and culture, to language and linguistic varieties in the German-speaking world, as well as arts and the German-speaking media landscape. Course offerings include classes abroad as well as field trips.

[Note: Information about current offerings can be obtained from the Department. This is a repeatable course, subject to different content; it may be completed a total of two times.]

Department Consent Required

GER 400s

GER 407 LEC 0.50

Course ID: 011197

Applied Apprenticeship

For Honours German students interested in a career in international business. The course involves an apprenticeship in an industrial setting in Germany, Austria or Switzerland of no less than twelve weeks combined with weekly written reports, a presentation, and a final report. The course is offered on a credit/non-credit basis and cannot be used to meet the Core German Course requirement. Due to the costs involved with working in a foreign country, paid positions are eligible for credit in the course.

Prereq: GER 306

GER 420 SEM 0.50

Course ID: 012634

Topics in Language Pedagogy

Topics in the instruction of German and other foreign/second languages.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times. Taught in English.]

(Cross-listed with REES 420)

GER 431 SEM 0.50

Course ID: 011604

Senior Seminar

Topics in German literary and cultural studies, and linguistics chosen by the instructor in consultation with the department. These courses reflect research interests of the faculty and form part of a well-rounded undergraduate education in "Germanistik".

[Note: This is a repeatable course, subject to different content; it may be completed a total of ten times.]

Coreq: GER 331 or 334

GER 490 RDG 0.50

Course ID: 006143

Senior Honours Project

German Honours students in their third or fourth year may complete, with departmental permission, a major project, the results of which must be presented in a substantial essay. The topic should reflect the student's field of interest.

[Note: Requests for permission should be submitted to the undergraduate officer, in consultation with the intended faculty advisor, and should include an outline of the project and a bibliography. The project will be assessed and graded by two faculty members.]

Department Consent Required

Prereq: Level at least 3A

GER 495 RDG 0.50

Course ID: 006144

Reading Course in Approved Topics

Reading course in topics chosen in consultation with an advisor.

Department Consent Required

GERONTOLOGY

Notes

Course offerings are subject to minimum enrolment requirements and availability of instructors.

GERON 200s

GERON 201 LEC 0.50

Course ID: 006420

Aging and Health

This course focuses on the challenges facing older adults and on strategies to promote successful aging. A basic understanding of the physical aging process is explored, distinguishing between pathological states/illness and normal change. Many physical changes and associated functional decline are affected by modifiable factors such as sedentary lifestyles, substance abuse, and diet. Education, environment, and personal supports also play key roles in preventing illness and accidents (e.g. falls, driving accidents, and medication errors). The course addresses the interests of those working with older adults, and anyone who has older grandparents, parents, or friends.

(Cross-listed with HLTH 201)

GERON 218 LEC 0.50

Course ID: 006428

Psychology of Death and Dying

Variations in the meaning and significance of death and dying will be considered from a psychological perspective, with particular attention to the contexts (e.g., cultural, familial, life-span developmental) in which these variations occur.

Prereq: PSYCH 101/101R or 121R; Level at least 2A

(Cross-listed with HLTH 218, PSYCH 218)

GERON 245 LEC 0.50

Course ID: 006430

Canadian Health Systems

This course examines Canadian health systems by considering organizational principles, health resources, service utilization, health care planning, and health promotion strategies. There is a focus on societal and political issues which affect the health of the society through the delivery system.

Prereq: Level at least 1B; Gerontology or Option in Aging Studies students only

(Cross-listed with HLTH 245)

GERON 255 LEC 0.50

Course ID: 006156

The Biology of Aging

An introductory study of the biological processes of aging at the molecular, cellular and systemic levels. Topics include an examination of the theories of aging, methods used to study the aging process, the role of diseases and chronological changes in the organism during senescence.[Offered: S]

(Cross-listed with SCI 255)

Only offered Online

GERON 300s

GERON 310 LEC,TUT 0.50

Course ID: 006426

Development, Aging and Health

The physiology of human growth, development and aging is examined, with special reference to the influence of diet, environment, exercise and disease on the normal processes.

[Note: Formerly HLTH 210/KIN 210/GERON 210]

Prereq: BIOL 130; Gerontology or Option in Aging Studies students only

(Cross-listed with HLTH 310, KIN 310)

GERON 320 LAB,LEC 0.50

Course ID: 006429

Psychosocial Perspectives on Lifespan Development and Health

This course will focus on the normative psychosocial aspects of development of the individual and their influence on the individual's physical and mental health and well-being. Through the use of a developmental systems, lifespan approach, the course will emphasize the life-long process of development.

[Note: Formerly HLTH 220/GERON 220]

Prereq: HLTH 101 and 102, or PSYCH 101/101R/121R; Gerontology or Option in Aging Studies students only

(Cross-listed with HLTH 320)

GERON 352 LEC 0.50

Course ID: 006438

Sociology of Aging

An introduction to individual and population aging. Topics discussed include: aging from a historical and comparative perspective; aging in subcultures; aging and the social structure; aging and social processes; aging and the environment; work and retirement; and aging and leisure patterns.

Prereq: SOC 101/101R or AHS 107; Gerontology or Option in Aging Studies students only

(Cross-listed with HLTH 352, KIN 352, REC 362, SOC 352)

GERON 355 LEC 0.50

Course ID: 013897

Biology of Human Aging

An overview of current aspects of the biology of human aging and the functional changes associated with both normal aging and pathological problems often present in the elderly. Biological theories of aging and normal age-related structural and physiological changes on all of the major body systems will be discussed. Extrinsic factors such as diet and exercise and their role on the aging process will be examined as well as various medical treatments. [Offered: W]

Prereq: BIOL 130

(Cross-listed with BIOL 355)

GERON 400s

GERON 400 LEC 0.50

Course ID: 006440

Interdisciplinary Perspectives on Aging

This course provides an opportunity for critical discussion and analysis of a range of key issues in aging and aging research, and of health system and health policy issues affecting older persons. Speakers will represent a variety of disciplines, reflecting the importance of interdisciplinary perspectives in aging research, as well as the combination of biomedical and psychosocial factors that contribute to healthy aging or to the development of frailty and chronic disease.

Prereq: GERON/HLTH 201; Fourth year Gerontology students only

(Cross-listed with HLTH 400)

GERON 401A RDG 0.50

Course ID: 006160

Independent Study in Aging

For the student who desires to pursue a particular topic in depth through independent research and/or extensive reading. A faculty member must approve a student's project prior to registration for this course.

Department Consent Required

GERON 401B RDG 0.50

Course ID: 006161

Independent Study in Aging

For the student who desires to pursue a particular topic in depth through independent research and/or extensive reading. A faculty member must approve a student's project prior to registration for this course.

Department Consent Required

G R E E K

Courses in Greek are offered through the Department of Classical Studies.

Notes

1. *Students should consult with the departmental Undergraduate Advisor for the latest information on course offerings. Some courses are offered in rotation.*
2. *Senior standing in Greek is normally defined as successful completion of GRK 201 and 202; exceptional students may also be admitted to 300- or 400-level courses with instructor's permission. For 400-level courses a 300-level course is strongly recommended as a preliminary.*

GRK 100s**GRK 101 LEC,TUT 0.50**

Course ID: 006164

Introductory Ancient Greek 1

A course designed for students beginning the study of ancient Greek or who have not yet reached the level expected in GRK 201/202. The teaching approach emphasizes exposure to simple texts as soon as possible, but students desiring minimal competence in reading should go on to do GRK 102.

Antireq: GRK/RS 133

GRK 102 LEC,TUT 0.50

Course ID: 006165

Introductory Ancient Greek 2

Continuation of GRK 101. Most of the rules of Greek grammar will be covered by the end of the year, and students should have a minimal competence in reading prose texts; but for the remaining grammar and further practice students should go on to do GRK 201.

Prereq: GRK 101 or GRK/RS 133

GRK 105 LAB,LEC 0.50

Course ID: 013426

Introductory Modern Greek

This course will introduce the student to the fundamentals of modern Greek grammar and will develop basic vocabulary. Emphasis will be placed on the skills of reading, writing, speaking, and listening/comprehension. The course is designed for those who have no previous knowledge of modern Greek or only limited experience with the language.

GRK 133 LEC 0.50

Course ID: 008292

New Testament Greek 1

An introduction to Greek grammar with appropriate grammatical exercises and development of vocabulary.

[Note: This course fulfils an Area 2A requirement for Religious Studies majors.]

Antireq: GRK 101

(Cross-listed with RS 133)

Also offered Online

GRK 134 LEC 0.50

Course ID: 008293

New Testament Greek 2

The completion of the study of Greek grammar and syntax with appropriate exercises and translation of various texts of the Greek New Testament.

[Note: This course fulfils an Area 2A requirement for Religious Studies majors.]

Prereq: GRK 133/RS 133

(Cross-listed with RS 134)

Also offered Online

GRK 200s**GRK 201 LEC 0.50**

Course ID: 006166

Intermediate Greek

The course will complete the study of Greek grammar and move on to unadapted readings in Greek authors.

Prereq: GRK 102

GRK 202 LEC 0.50

Course ID: 006169

Selections from Greek Authors

A course designed to follow GRK 201 including both literature and grammar review. Authors normally read are Plato and Homer.

Prereq: GRK 201

GRK 233 LEC 0.50

Course ID: 008363

Intermediate New Testament Greek

Readings in the New Testament, in the Septuagint, Papyri and the Apostolic Fathers. Advanced grammar and syntax arising from the readings.

[Note: This course fulfils an Area 2A requirement for Religious Studies majors.]

Prereq: RS 134

(Cross-listed with RS 233)

Also offered Online

GRK 300s

GRK 331 LEC 0.50

Course ID: 012919

Advanced Studies in Greek: Prose

A selection of material from one author or several authors within the field of Greek prose. Topics and selections may include oratory, history, philosophy, Demosthenes, Herodotos, Xenophon, Plato and Aristotle.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: GRK 202

GRK 332 LEC 0.50

Course ID: 012920

Advanced Studies in Greek: Poetry

A selection of material from one author or several authors within the field of Greek poetry. Topics and selections may include epic, tragedy, comedy, lyric poetry, Homer, Sophokles, Aristophanes, Simonides, and Pindar.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: GRK 202

GRK 341 LEC 0.50

Course ID: 013048

Advanced Studies in Greek: Selected Topics

An investigation of selected themes, topics, time periods or genres in Greek.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: GRK 202

GRK 351 LEC 0.50

Course ID: 006175

Greek Composition, Grammar and Reading

Composition, translation and grammar with intensive analysis of selected passages.

Prereq: GRK 202

GRK 400s

GRK 421 LEC 0.50

Course ID: 012922

Greek Epigraphy

An introduction to Greek inscriptions as evidence for the Greek language and Greek political, religious, legal, social and economic history.

Prereq: A 300-level GRK course

GRK 451 SEM 0.50

Course ID: 012185

Senior Greek Composition, Grammar and Reading

Advanced composition, translation and grammar with intensive analysis of selected passages.

Prereq: GRK 351

GRK 490 RDG 0.50

Course ID: 009960

Senior Studies in Greek: Selected Topics

A selection of material from one author or several authors or an investigation of selected themes, topics, genres at the senior level. Topics or authors may include epic, tragedy, history, philosophy, Hellenistic poetry, Hesiod, Euripides, Menander, Thucydides, Apollonius, Callimachus, and Nonnos.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: A 300-level GRK course

GRK 491 RDG 0.50

Course ID: 009961

Senior Studies in Greek: Independent Study

Under special circumstances, and with the approval of the Department, a student or small group of students may arrange to pursue individualized readings under the supervision of a faculty member.

Prereq: A 300-level GRK course

HISTORY**HIST 100s****HIST 102 DIS,LEC 0.50**

Course ID: 006196

War and Society in Europe, 1914-1945

This course explores the impact of World Wars I and II on European society, with a special emphasis on the experiences of the ordinary person.

Antireq: HIST 102C

HIST 103 DIS,LEC 0.50

Course ID: 006208

Canadian History Through Biography

An examination through lectures and film of the lives of Canadian men and women who have played formative roles in developing the Canadian nation. Examples will be drawn from such areas as politics, religion, business and labour, social reform, arts and entertainment, and sports.

Antireq: HIST 102E

Also offered at St. Jerome's University

HIST 104 DIS,LEC 0.50

Course ID: 006209

An Introduction to Western Intellectual History Since the Renaissance

An exploration of some of the questions and answers posed by thinkers on the human predicament from Renaissance and Reformation times to the modern period. Readings range from Luther to J.P. Sartre, Shakespeare to Marx and Freud.

HIST 105 DIS,LEC 0.50

Course ID: 012594

Rock 'n' Roll and US History

This course explores the politics, culture, media, race relations, and gender relations of the United States after 1945 through the lens of rock and roll.

HIST 106 DIS,LEC 0.50

Course ID: 006211

Canada at War

This course introduces students to the ways in which historians have examined Canada's military experience. Beginning with the Boer War, and continuing through the two World Wars and the post-war era, students examine the political, social, as well as military effects of war on Canada.

HIST 109 DIS,LEC 0.50

Course ID: 014151

Ten Days That Shook the World

Focusing on ten different days that forever transformed the world's history, this course introduces first-year students to moments of dramatic change in diverse time periods and places. Topics may include the Fall of Ancient and Modern Regimes; the Age of Discovery; Religious Cataclysm; Revolutionary Wars; Technological, Intellectual, and Scientific Inventions. Students are introduced to the differing methods that historians use to understand the past.

Antireq: HIST 191 taken Fall 2011 or Fall 2012

HIST 110 DIS,LEC 0.50

Course ID: 010208

A History of the Western World I

This course will survey the emergence and development of the Western world, from prehistory to 1715. Complementing the chronological and narrative overview of Western culture and civilization will be thematic surveys of developments in the arts and humanities, science, and socio-political structures.

HIST 111 DIS,LEC 0.50

Course ID: 010209

A History of the Western World II

This course will survey the emergence and development of the Western world from the 17th century to the present. Complementing the chronological and narrative overview of Western culture and civilization will be thematic surveys of developments in the arts and humanities, science, and socio-political structures.

HIST 113 DIS,LEC 0.50

Course ID: 010343

Canadian Business History: Innovators and Entrepreneurs

This course examines the role of individuals in the growth of business in Canada. While there will be general examination of Canadian economic development, the principal focus will fall upon leading Canadian business persons and their interests and innovations. The relationship to the state of business, the place of education, and the impact of immigration are other topics that the course will consider.

HIST 115 DIS,LEC 0.50

Course ID: 012629

Crusading in the Middle Ages

This course examines the historical events and cultural assumptions that led to the European phenomenon of crusading, or holy war, between 1095 and 1453.

(Cross-listed with MEDVL 115)

HIST 191 DIS,LEC 0.50

Course ID: 013716

Special Topics in History

One or more topics courses will be offered from time to time as announced by the History Department and geared to first-year students. Topics will be dependent upon special interest and/or instructional interests by non-regular or visiting faculty.

[Note: This is a repeatable course, subject to different content; it may be completed a total of two times.]

HIST 200s

HIST 200 DIS,LEC 0.50

Course ID: 006220

History and Film

An introduction to issues in modern cultural history through the study of selected narratives and documentary films with supplementary reading, lectures and discussions.

[Note: This is a repeatable course, subject to different content; it may be completed a total of two times.]

Also offered Online

HIST 201 DIS,LEC 0.50

Course ID: 012751

Columbus and After: New Worlds in the Americas

Beginning with Columbus, this course introduces the history of early America as it was shaped by the encounters between colonizers and colonized. Particular attention is paid to the varied nature of these encounters, and their contested interpretation by historians and others.

HIST 202 LEC 0.50

Course ID: 014792

Introduction to Applied History

This course introduces students to the core methodologies of applied history: archival research, oral history, material and visual culture, and digital history.

Prereq: Level at least 2A

HIST 203 LEC 0.50

Course ID: 014793

Methods of Applied History

This course exposes students to several different forms of applied history, which may include historic mapping, digitization, genealogy, public policy research, corporate history, legal research, tourism, the commemoration industry, historical fiction and creative non-fiction, heritage issues, and the making of historical documentaries. The specific mix of topics addressed in any particular year will vary, depending on the instructor.

[Note: This is a repeatable course, subject to different content; it may be completed a total of two times.]

Prereq: Level at least 2A

HIST 205 DIS,LEC 0.50

Course ID: 006230

History of Western Sport

This course considers the historical impact of Western sport. It traces the history from individual play through amateurism to professionalism, big business, and media. It examines sport's social role within local, national, and international communities, and its relationship to class, gender, leisure, race, and politics.

(Cross-listed with REC 202)

Also offered Online

HIST 206 DIS,LEC 0.50

Course ID: 012596

The Victorian Age

During the reign of Queen Victoria (1837-1901), Britain experienced profound change with the expansion of its population, industry, and empire. Poverty and gender and racial discrimination persisted in spite of a marked expansion in political rights. This course will address both progressive and regressive forces during this era, focusing on issues of culture, politics, imperialism, and society.

Prereq: Level at least 2A

HIST 207 LEC 0.50

Course ID: 015513

The Beatles and the Sixties

The Beatles - their lives, their music, their films, and their impact - are this course's lens to examine the social, political, and cultural upheavals and transformations of the 1960s, and to consider memory, nostalgia, and mythmaking about that storied decade. Primary focus is on the U.K. and U.S., with consideration of Beatlemania as a global phenomenon.

Antireq: HIST 291 (001) Winter 2017

HIST 209 DIS,LEC 0.50

Course ID: 006239

Smallpox to Medicare: Canadian Medical History

Starting with Aboriginal medicine, the course examines topics such as the rise of the medical and nursing professions, changing public attitudes to health and disease, and the evolution of the Canadian health insurance system.

HIST 210 DIS,LEC 0.50

Course ID: 006241

History of Ancient Law

A historical introduction to law in the ancient world. Babylonian, Assyrian, Hittite, and Roman law, legal practices, and concepts will be examined.

(Cross-listed with CLAS 210, LS 235)

HIST 211 DIS,LEC 0.50

Course ID: 006243

British History to 1485

A survey of the main stages in the transition of Britain from a remote province of the Roman Empire to a prominent state in post-Reformation Europe. Within the chronological framework, political and constitutional as well as ecclesiastical and social developments will be examined.

Offered at St. Jerome's University

HIST 212 LEC 0.50

Course ID: 014922

The Computing Society

This course examines the historical and current relationships between computer technology and society. It explores the impact and consequences of computing from a societal perspective, but also considers various nontechnical factors and values that have shaped computing technology and practice. The scope of the course will range from early mechanical aids, through the

mid-20th century invention of electronic digital computers, to the networks and mobile applications of the 21st century. Technological studies relating to gender, education, employment and war will be used as focal points. Material artifacts will form a core element of the course.

(Cross-listed with STV 210)

HIST 213 DIS,LEC 0.50

Course ID: 006246

A History of Popular Culture

This course introduces students to the history of Western popular culture and may include the study of popular literature, spectacle and performance, witchcraft, crime, sexual attitudes, consumption, sports, advertising, and the media.

HIST 214 DIS,LEC 0.50

Course ID: 012407

History of Women in the Modern United States

This course will examine women's social, political, cultural, and economic position in the United States from 1920 to the present. We will study the evolving understandings of women's "proper place" in society, which has varied based upon race, class, ethnicity, and region. We will consider women's daily lives and the forces that brought women into the public sphere. Topics covered will include women's political activism, legal position, sexuality, and paid and unpaid labour.

Prereq: Level at least 2A

HIST 216 LEC 0.50

Course ID: 015512

From Gutenberg to Zuckerberg: A (Long) History of the Internet

This course contextualizes the information age around us: it examines both the technological story of the rise of the Internet, and the longer human story about the evolving concept of information, communication over time and space, and the ubiquity and complexity of the systems at the heart of our globalized world.

HIST 220 DIS,LEC 0.50

Course ID: 006342

The Vietnam War

The Vietnam War, the longest war in U.S. history, was fought on two fronts, by American G.I.s abroad and anti-war protesters at home. Those two subjects, as well as a history of the war from Vietnamese perspectives, are the focus of this course.

HIST 221 DIS,LEC 0.50

Course ID: 006263

Racism and Response in Canadian History

The "race problem" has appeared on the Canadian public agenda, but the issue is not of recent origin. This course examines Euro-Canadian attitudes and practices toward non-European minorities from pioneer times to the present and sets racial policies in the context of the evolution of a Canadian national identity.

HIST 223 DIS,LEC 0.50

Course ID: 006267

The Holocaust in History

An examination of the Holocaust in the context of the history of modern racism. Study topics will include historic anti-Judaism, scientific racism and the development of modern antisemitism, Nazi 'race' ideology, wartime policies from ghetto to genocide, resistance movements, Nuremberg trials, Holocaust denial, and universal lessons from the Holocaust.

HIST 224 DIS,LEC 0.50

Course ID: 012983

Food, Culture, and History

This course will examine the role of foodstuffs and foodways in world history, with an emphasis on Canada in the 20th century. Themes such as colonialism, immigration, ethnic identity, religion, gender, famine, and political policy will be examined to explore how food, and its associated habits and customs, has been central to the evolution of cultural patterns of the past.

Offered at Conrad Grebel University College

HIST 225 LEC 0.50

Course ID: 013734

History of Education in Canada

This course considers the development of education as an institution within Canadian society and provides an understanding of significant educational issues and policies from a historical perspective.

Prereq: Level at least 2A.

Antireq: ISS/SDS 205R

(Cross-listed with SDS 205R)

HIST 226 DIS,LEC 0.50

Course ID: 010212

Canada in World War II

The Canadian experience in World War II is still a subject of considerable debate. This course will employ lectures, films, and discussion groups to examine the war's impact on the social, economic, political, and military life of the country from 1939 to 1945.

HIST 227 DIS,LEC 0.50

Course ID: 013083

The French Revolution and Napoleonic Europe

This course will examine the causes and consequences of the French Revolution and the impact of Napoleon's reign in France and Europe.

Prereq: Level at least 2A

HIST 230 DIS,LEC 0.50

Course ID: 012170

Introduction to the Modern Middle East

This course examines the modern political history of the Middle East, with an emphasis on international affairs. It examines the colonization of the Middle East, the rise of national self-determination and nation-states, enduring Arab-Israeli conflicts, the Cold War, and the impact of U.S. foreign policy in shaping the modern Middle East.

Prereq: Level at least 2A

(Cross-listed with PSCI 257)

HIST 231R DIS,LEC 0.50

Course ID: 011391

The History of East Asian Communities in Canada

This course examines the evolution of the Chinese, Japanese, and Korean communities in Canada as well as their significance for Canadian economic, social, and political life in the 19th and 20th centuries.

(Cross-listed with EASIA 220R)

HIST 232 LEC 0.50

Course ID: 011120

A History of Peace Movements

A survey of individuals and groups that have created popular movements for peace globally and locally throughout history. The scope will be international, with a particular focus on the nineteenth- and twentieth-century movements. The choice of

peace movements will allow for a contrast in comparison of ideology, strategy, and impact.

(Cross-listed with PACS 203)

HIST 234 DIS,LEC 0.50

Course ID: 008323

The Catholic Church in Canada

An examination of the role played by the Church in the social, political, and economic life of Canada from 1867 to the present.

[Note: This course fulfils an Area 2B requirement for Religious Studies majors.]

(Cross-listed with RS 245)

Offered at St. Jerome's University

HIST 235 DIS,LEC 0.50

Course ID: 008318

History of Christianity

The development of Christianity in its Roman Catholic, Eastern Orthodox, and Protestant traditions from the time of Christ to the present.

[Note: This course fulfils an Area 2B requirement for Religious Studies majors.]

(Cross-listed with RS 240)

HIST 236 DIS,LEC 0.50

Course ID: 006194

Law and Society in the Middle Ages

A study of the laws and legal procedures of the Middle Ages. This course examines the relationship between legal procedures and institutions and the medieval societies that produced them.

Prereq: Level at least 2A

(Cross-listed with LS 236)

HIST 237 DIS,LEC 0.50

Course ID: 006279

The Ancient Near East and Egypt

A study of the civilizations of the ancient Near East focusing on Mesopotamia (Sumer and Akkad, the Babylonian Dynasty, and the Third Dynasty of Ur), Hatti, Assyria, Egypt, and Persia.

Prereq: Level at least 2A

(Cross-listed with CLAS 237)

Offered at St. Jerome's University

HIST 239 DIS,LEC 0.50

Course ID: 006281

History of Modern China, 1911 to the Present

Some of the topics studied in this course include: the three stages of warlordism, the May Fourth Movement, and the structure of society in the People's Republic of China.

HIST 242 LEC 0.50

Course ID: 004278

Greek History

A survey of ancient Greek history, from the Bronze Age to Alexander the Great, emphasizing particularly its political and military aspects.

Prereq: Level at least 2A

(Cross-listed with CLAS 251)

HIST 243 DIS,LEC 0.50

Course ID: 006285

European Business History: From Workshop to Factory and Beyond

This course examines the changing nature of work and the workplace in Europe and the impact of those changes on European society. The objective of this course is to develop a better understanding of today's workplace and its challenges by exploring its historical roots and the forces that gave it shape.

HIST 247 DIS,LEC 0.50

Course ID: 006291

Mennonite History: A Survey

This course covers Mennonite origins, teachings, migrations, settlement patterns, divisions, leaders, institutions, and religious and social practices, indeed all facets of Mennonite history in various national settings.

Offered at Conrad Grebel University College

Also offered Online

HIST 250 DIS,LEC 0.50

Course ID: 006298

What is History? An Introduction to Historical Thinking

This course provides a collegial learning setting within which students are introduced to techniques of historical writing and research, and some examples of the best of recent historical scholarship.

Prereq: Level at least 2A History

HIST 252 LEC 0.50

Course ID: 004279

Roman History

A survey of ancient Roman history, from the Republic to the Empire, emphasizing particularly its political and military aspects.

Prereq: Level at least 2A

(Cross-listed with CLAS 252)

HIST 253 DIS,LEC 0.50

Course ID: 006302

Canada: Cultures and Conflicts in the Colonial Era

This course examines the major themes in pre-Confederation Canadian history including the rise and fall of New France, the creation of British North American societies in the Maritimes and Upper Canada, and economic and political development.

HIST 254 DIS,LEC 0.50

Course ID: 006304

Canada Since 1867: A New Nation

This course examines Confederation, the rise of political parties, Canadian external relations, western discontent, the impact of both World Wars and political and economic changes in Canada since 1867.

HIST 255 DIS,LEC 0.50

Course ID: 014392

History of Childhood and Youth in Canada

This course offers a Canadian history of childhood and youth. While childhood may seem like a timeless, eternal concept, it is actually a modern one. This course considers age as a category of analysis, complementing other key concepts such as gender,

class, and ethnicity/race.

Antireq: HIST 291 (section 001) taken Fall 2012; SDS 220R

HIST 256 DIS,LEC 0.50

Course ID: 015578

Murder in Canadian History

This course examines several major murder cases in Canadian history in order to provide insight into Canada's history and explore how the nation has developed legally, politically, economically, and socially.

Prereq: Level 2A.

Antireq: HIST 291 (RDG 001) taken Spring 2016, HIST 291 (RDG 001) taken Spring 2017

HIST 257 DIS,LEC 0.50

Course ID: 006309

America: From Slavery to Civil War

This historical survey focuses on the emergence of the United States as a nation. The topics explored may include indigenous peoples, slavery, race, gender, labour, immigration, urbanization, culture, sectionalism, politics, and ideologies.

HIST 258 DIS,LEC 0.50

Course ID: 006310

The United States: From World Power to the War on Terror

This course begins in the aftermath of the Civil War and ends at the present day. Topics may include major social movements, the place of the United States in world politics, immigration and imperialism, and the economy.

HIST 260 DIS,LEC 0.50

Course ID: 006314

Europe: 410-1303

The political, cultural, economic, and ecclesiastical development of Europe from the fall of the Roman Empire to the end of the High Middle Ages.

Prereq: Level at least 2A

(Cross-listed with MEDVL 260)

Offered at St. Jerome's University

HIST 262 DIS,LEC 0.50

Course ID: 006316

Early Modern Europe 1450-1700

This course examines European life in the Early Modern Period (1450-1700) and investigates the social, political, religious, and intellectual changes during the Renaissance, the Reformations, and the era of explorations.

HIST 263 DIS,LEC 0.50

Course ID: 006317

The Age of Revolution: Europe in the 19th Century

This period marks the emergence of modern-day Europe. The course focuses on the way in which European society, politics, and culture changed, and why. It also examines the continent's descent into war in 1914.

HIST 265 DIS,LEC 0.50

Course ID: 011792

Eastern Europe Since 1945

An introduction to the social, economic and political history of the countries of Eastern Europe since 1945. Topics may include the implementation of Communism, daily life, the secret police, women, opposition, and revolution.

HIST 266 DIS,LEC 0.50

Course ID: 012316

The British Empire 1857-1956

This course assesses the transformation of the British Empire from its position of comparative strength in the mid-nineteenth century to decolonization and the emergence of the Commonwealth after the Second World War. Topics of study include systems of power and control, the impact of Empire at home, and the manner in which imperialism influenced colonial subjects.

Prereq: Level at least 2A

HIST 268 DIS,LEC 0.50

Course ID: 012597

A Global History of Empires

This course examines the role of empires in modern history. It examines how empires were formed, how they functioned, how they were resisted, and how they collapsed. While the focus will be on the European empires, we also assess other examples, including the empires of the Ottomans, the Japanese, the Chinese, and the United States.

[Note: Formerly HIST 114]

Prereq: Level at least 2A

HIST 269 LEC 0.50

Course ID: 014393

Aboriginal History of Canada

This course examines the history of aboriginal peoples within Canada from before contact to the present. It emphasizes the relationship between aboriginal peoples (First Nations, Inuit, Métis) and settler society, forms of indigenous resistance and assertions of rights, the diverse nature of communities and cultures, and the relationship between local and national histories.

Anitreq: HIST 291 (section 002) taken Fall 2012

HIST 271 DIS,LEC 0.50

Course ID: 014394

Global Indigenous Issues

This course examines the histories of Indigenous peoples from around the world, covering areas such as educational assimilation, the internationalization of Indigenous rights, lands and resource development conflicts, Indigenous-state relations, language and cultural revitalization, and international political activism. We examine local Indigenous histories and place these experiences into the larger global context.

Prereq: Level at least 2A.

Antireq: HIST 391 (section 003) taken Winter 2013

HIST 275 DIS,LEC 0.50

Course ID: 006219

The Modern World in Historical Perspective

This survey of the 20th century explores the non-Western world's response to a series of selected global themes: the rise of the West; post-colonialism; war and peace; human migration; culture; international organizations; climate change; human rights; disease; and globalization.

[Note: Formerly HIST 130]

Prereq: Level at least 2A.

Antireq: HIST 130

HIST 277 DIS,LEC 0.50

Course ID: 011574

Canadian Legal History

This course examines the Canadian legal system from colonial times to the present with particular emphasis on such themes as law and the economy, courts and judiciary, the legal profession, family and criminal law, women and the law, and civil liberties.

(Cross-listed with LS 237)

HIST 278 DIS,LEC 0.50

Course ID: 012630

Red Star vs. Swastika: Russia and WWII

This course examines the Eastern Front in World War II. It investigates such themes as the impact of totalitarian state systems and radical ideologies on the war; interwar diplomacy; key campaigns; genocide; the wartime economies; propaganda; resistance and collaboration; the plight of prisoners of war; women on the battlefield; and relations among members of the opposing coalitions.

Prereq: Level at least 2A

HIST 282 DIS,LEC 0.50

Course ID: 013925

History of Modern South Asia 1750-2000

This course provides an overview of the political developments and conflicts that have shaped modern South Asia from 1750 to 2000 through an examination of the region's cultures, political systems, encounters with Western imperialism, nationalist movements, and the impact of the Cold War.

Prereq: Level at least 2A.

Antireq: HIST 291 taken Fall 2009, Winter 2011.

Offered at St. Jerome's University

HIST 285W LEC 0.50

Course ID: 015708

Ancient Art Beyond the West (WLU)

Department Consent Required

HIST 289 SEM 0.50

Course ID: 015085

JFK: The Decision-Maker Behind the Myth

This course re-examines John F. Kennedy's presidency, refuting myths about his decision-making in war and peace. Students grapple with historical sources in a trans-media platform. They are invited to relate the past to contemporary issues of war and peace in an intensive learning experience.

Antireq: HIST 291 (section 002) taken Fall 2014, (Section 001) taken Winter 2016

HIST 291 DIS,LEC 0.50

Course ID: 012065

Special Topics in History

One or more term courses will be offered from time to time as announced by the History Department. Topics will be dependent upon special research and/or instructional interests of faculty.

[Note: This is a repeatable course, subject to different content; it may be completed a total of five times.]

HIST 302 DIS,PRJ 0.50

Course ID: 014395

Applied History Project

This course provides the opportunity to design, research, and produce a history project in a multimedia format. Students incorporate archival, visual culture, and oral history research in their projects and examine the politics, ethics, and practice of historical research and its presentation to wide audiences.

Prereq: Level at least 2A.

Antireq: HIST 291 (section 002) taken Winter 2013

HIST 303 DIS,LEC 0.50

Course ID: 014396

History Gone Digital: An Introduction to History with the Web

Digital history, the application of new and emerging technologies to the study of history, is an exciting new field. This course explores the literature on digital history and then puts theory into practice by exploring the digital collection, evaluation, and production of historical knowledge.

Prereq: Level at least 2A.

Antireq: HIST 291 (section 001) taken Winter 2013

HIST 304 DIS,LEC 0.50

Course ID: 008378

Heresy and Religious Crises in Late Medieval Europe

An exploration of the impact of social crises on late medieval religious modes of expression. Topics will include the Great Famine, the Black Death, the Avignon Papacy and Western Schism, the development of heretical movements, and the eventual disintegration of European religious unity.

[Note: This course fulfils the Area 2B requirement for Religious Studies majors.]

Prereq: Level at least 2A

(Cross-listed with MEDVL 304, RS 342)

HIST 305 DIS,LEC 0.50

Course ID: 014469

Historical Memory and National Identity

What factors create a national identity: historical events or socially-constructed historical memory? By analyzing key themes such as elite and popular culture, historical sites and commemorations, sports, and iconic public events, this course demonstrates how nation-states and other communities have created a series of evolving national identities.

Antireq: HIST 391 (section 001) taken Winter 2012, Winter 2013

HIST 309 DIS,LEC 0.50

Course ID: 011393

The Discourse of Dissent

A study of the social, historical, and rhetorical dimensions of collective action. Topics may include health and welfare movements, civil rights and anti-war protests, and environmentalism.

Prereq: Level at least 2A

(Cross-listed with ENGL 309G, SPCOM 434)

HIST 311 DIS,LEC 0.50

Course ID: 012595

International Relations, 1890-1951

This course examines the international relations of the great powers from the rise of Wilhelmine Germany in the 1890s to the first steps of European integration in the early 1950s. Attention will be paid to the formation of foreign policy, alliances, leadership, war-making, and peace-making.

Prereq: Level at least 2A

HIST 312 LEC,TUT 0.50

Course ID: 015064

The First World War

This course examines the origins, conduct, and wider international legacy of the First World War. The course has an international outline, but with a particular Canadian focus as it explores tactics, strategy, and the soldier's experience, as well as the War's lasting economic, political, and cultural impacts.

Prereq: Level at least 2A

HIST 313 DIS,LEC 0.50

Course ID: 012364

History of the Family in North America

This course will consider the history of private interactions between family members in North America, as well as the family's relationship to public forces such as politics, the law, social movements, and the economy. Other topics covered in this course include changing conventions of courtship and dating, marriage, divorce, parenthood, and childhood.

Prereq: Level at least 2A

HIST 314 DIS,LEC 0.50

Course ID: 012315

The American Civil Rights Movement

This course will explore the Civil Rights movement in the United States from the 1950s to the 1970s. Topics will include the origins and evolution of the movement, tactics, key figures, and the role of the federal government.

Prereq: Level at least 2A

HIST 315 DIS,LEC 0.50

Course ID: 012714

U.S. and the World

This course examines the history of foreign relations of the United States from the "Age of Imperialism" through the "War on Terror". Topics will include the Great War, Wilsonianism, World War II, the Cold War, human rights, and post-9/11 U.S. foreign policies.

Prereq: Level at least 2A.

Antireq: HIST 208/280

HIST 316 DIS,LEC 0.50

Course ID: 012631

The Russian Revolution

This course traces the history of the Russian Revolution from 1861 to 1924. It examines the intellectual and social roots of the Revolution, a variety of revolutionary theories, parties, agendas and methods of power struggle, the Bolshevik seizure of power and the ensuing civil war, culminating in the establishment of a communist dictatorship.

Prereq: Level at least 2A

HIST 317 DIS,LEC 0.50

Course ID: 013234

History of Sexuality: The Pre-Modern Period

This course introduces students to the history of Western sexuality, beginning with the ancient world and focusing primarily on the Middle Ages and the transition to modernity.

Prereq: At least one HIST course; Level at least 2A
(Cross-listed with SMF 317)

HIST 318 DIS,LEC 0.50

Course ID: 012964

History of Sexuality: The Modern Period

This seminar introduces students to the history of sexuality. The course focuses on the 19th and 20th centuries.

Prereq: At least one HIST course; Level at least 2A
(Cross-listed with SMF 318)

HIST 321 DIS,LEC 0.50

Course ID: 006346

Human Rights in Historical Perspective

A detailed analysis of selected topics in the history of human rights. Special attention will be paid to revolutionary developments since World War II, and to the emergence of modern human rights policies. Topics will be examined through assigned readings, lectures, and films.

Prereq: Level at least 2A
(Cross-listed with LS 331)

HIST 329 DIS,LEC 0.50

Course ID: 006352

Origins of the Common Law

A study of the common law of England from its introduction in the 11th century to the 15th century. Original documents and court cases will be examined.

Prereq: HIST 236/LS 236
Offered at St. Jerome's University

HIST 340 DIS,LEC 0.50

Course ID: 006359

A Social History of Europe: 1789-1914

European society amidst the dramatic changes of the 19th century. Emphasis is given to the impact of the French and industrial revolutions on class, the family, religion, and living conditions.

HIST 341 DIS,LEC 0.50

Course ID: 006360

The Nazi Occupation of Europe

This course examines the nature and impact of Nazi occupation on Western and Eastern Europe preceding and during World War II and the responses of the people occupied.

HIST 347 DIS,LEC 0.50

Course ID: 014231

Witches, Wives, and Whores

This course explores the ways in which Early Modern European women experienced, participated in, shaped, and responded to the world they inhabited. It investigates the ways in which women negotiated the Early Modern world as it unfolded in the Renaissance, the Reformation, European encounters around the world, and the challenges of everyday life.

Prereq: Level at least 2A.
Antireq: HIST 391 (section 002) taken Winter 2012, (section 001) taken Fall 2012
(Cross-listed with WS 347)

HIST 348 DIS,LEC 0.50

Course ID: 008377

The Radical Reformation

A study of 16th century Anabaptism - a religious Reformation movement dissenting from both Protestantism and Roman Catholicism - its origins, its social, political, and theological content; and its relationship to such independent dissenters as Sebastian Franck.

[Note: This course fulfils the Area 2B requirement for Religious Studies majors.]

(Cross-listed with RS 344)

HIST 350 DIS,LEC 0.50

Course ID: 006296

Canada and the Americas

This course will examine the economic, cultural, and diplomatic aspects of Canada's relationship with the United States, Latin America, and the Commonwealth Caribbean from the time of the American Revolution to the present.

[Note: Formerly HIST 249]

Prereq: Level at least 2A

HIST 351 DIS,LEC 0.50

Course ID: 010213

Canada: The Immigrant Experience

Immigrants and immigration have always been central to Canadians' perceptions of themselves as a country and as a society. This course will examine the immigrant experience and Canada's changing policies and attitudes toward immigration and immigrants from New France to the present.

Antireq: HIST 251

HIST 356 DIS,LEC 0.50

Course ID: 006372

Russia: From Tsars to Putin

This course examines the history of Russia and the Soviet Union from the beginning of the 20th century to the present. Topics include: origins and nature of the Russian Revolution, communist society, Stalinism, the Cold War, and impact of the communist experience on contemporary Russia.

Prereq: Level at least 2B

HIST 358 DIS,LEC 0.50

Course ID: 006373

Nazi Germany

An examination of the social, economic and political history of Nazi Germany. Topics may include the rise of the Nazis, the secret police, war, population policies and mass murder, culture, and women.

HIST 369 DIS,LEC 0.50

Course ID: 012944

The Politics of Decolonization

This course examines the break-up of empires in the mid/late 20th century, and assesses how the colonial experience has shaped relations between and among former imperial polities to the present. Focus is given to questions of political identity in colonial and post-colonial societies, and how these identities shape current political challenges.

Prereq: Level at least 2A

(Cross-listed with PSCI 369)

HIST 371 DIS,LEC 0.50

Course ID: 011384

Ireland Before the Famine

A focus on social and economic determinants of Irish History from the Penal Era to the 19th century struggle for Catholic emancipation and the Great Famine.

[Note: Formerly HIST 271]

Offered at St. Jerome's University

HIST 372 DIS,LEC 0.50

Course ID: 011385

Ireland After the Famine

An exploration of the political, social and cultural history of Ireland from the Famine to the end of the 20th century including the formation of the Irish State, the Republic and the "Troubles".

[Note: Formerly HIST 272]

Offered at St. Jerome's University

HIST 374 DIS,LEC 0.50

Course ID: 006377

Canada's Social History

A topical consideration of key themes, approaches, and chronologies in the history of society in Canada.

Prereq: Level at least 2A.

Antireq: HIST 274

HIST 377R LEC 0.50

Course ID: 014875

Cold War in East Asia

This course examines the origins, developments, and contemporary implications of the Cold War in East Asia.

Prereq: Level at least 2A

(Cross-listed with EASIA 377R)

Offered at Renison University College

HIST 379 DIS,LEC 0.50

Course ID: 006380

Reformation History

A study of the major 16th-century reformers, and their intellectual background in humanism and late medieval scholasticism. Special attention will be given to the Lutheran and Reformed traditions, and their ideological, social, and political expressions.

[Note: This course fulfils an Area 2B requirement for RS majors.]

(Cross-listed with RS 343)

HIST 380 DIS,LEC 0.50

Course ID: 012317

History of the Canadian North: From Pre-contact to the Creation of Nunavut

The idea of "northernness" is central to our national identity, yet few "southern" Canadians have an appreciation of the historical development of Northern Canada. This course will focus on political, social, cultural, and environmental histories, and will introduce students to major themes in Canadian Northern history, from pre-contact to the creation of the territory of Nunavut in 1999.

Prereq: Level at least 2B

Offered at St. Jerome's University

HIST 385 DIS,LEC 0.50

Course ID: 006381

From Macdonald to Laurier: Canada, 1841-1921

A topical examination of major political and social developments over this eighty-year period. These include Irish immigration, Confederation, the Riel rebellions, social reform, the development of labour and business, and the Boer and First World Wars.

Offered at St. Jerome's University

HIST 388 DIS,LEC 0.50

Course ID: 006384

Modern Canada

Lectures, tutorials, and independent research will provide a decade-by-decade examination of the central social, political, and economic themes that have helped characterize "modern Canada".

HIST 389 DIS,LEC 0.50

Course ID: 006385

Canada in World Affairs

An analytical and historical examination of Canadian foreign policy in the international system. Domestic sources of Canadian foreign policy and international sources of Canadian foreign policy are examined in detail.

HIST 391 DIS,LEC 0.50

Course ID: 012066

Special Topics in History

One or more term courses will be offered from time to time as announced by the History Department. Topics will be dependent upon special research and/or instructional interests of faculty.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

HIST 397 RDG 0.50

Course ID: 006390

Directed Studies in Special Topics

Study in a limited field under tutorial guidance. A high standard of written work will be expected.

Department Consent Required

HIST 398 RDG 0.50

Course ID: 006392

Directed Studies in Special Topics

Study in a limited field under tutorial guidance. A high standard of written work will be expected.

Department Consent Required

HIST 400s**HIST 421 DIS,LEC 0.50**

Course ID: 015130

Special Topics in History

A special study of a selected topic in history. Please see course instructor for details.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Prereq: Level at least 3A; at least three HIST courses, one at the 300-level or above

HIST 422 SEM 0.50

Course ID: 015131

Special Topics in History

This seminar is a special study of a selected topic in history. Please see course instructor for details.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Prereq: Level at least 3A; at least three HIST courses, one at the 300-level or above

Also offered at St. Jerome's University

HIST 450 SEM 1.00

Course ID: 015132

The History Capstone

The Capstone challenges students with an opportunity to synthesize and showcase, at a high level of achievement, the disciplinary skills and knowledge they have gained during the course of their studies in History. It encourages students to pursue individual research interests and presentation formats as limited only by historical methodology, academic rigour, and the consent of the instructor.

[Note: This is a repeatable course, subject to different content; it may be completed a total of two times.]

Prereq: Level at least 3B; at least three HIST courses, one at the 300-level or above

Also offered at St. Jerome's University

HIST 491 RDG 1.00

Course ID: 006416

Independent Study in Special Topics

Under exceptional circumstances a student may seek permission to pursue a course of independent study under the direction of a faculty member. The special topic is determined in consultation between them.

Department Consent Required

Prereq: Level at least 4A

HEALTH**Notes**

Course offerings are subject to minimum enrolment requirements and availability of instructors.

HLTH 100s**HLTH 101 LEC,TST,TUT 0.50**

Course ID: 006421

Introduction to Health 1

This course will be of interest to students pursuing careers in health and those with a general interest in health and health care. Various perspectives of the concepts of health and illness will be introduced. Emphasis is on understanding the origins, factors and conditions that determine health throughout the lifespan, how these factors influence one another and the role/impact of health care. Additional topics include how health is measured, the leading causes of death, illness and disability, as well as how health status has changed throughout history. Students will also learn how to research and critically analyze the health literature and discuss important health issues with their peers.

HLTH 102 LEC,TST,TUT 0.50

Course ID: 006422

Introduction to Health 2

This course expands upon the general concepts introduced in HLTH 101 while extending the discussion to include issues such as: additional barriers to health; disease prevention; and methods used to plan, monitor and improve individual and population

health. Discussion will include when various interventions are justified and why, and where and when combinations of policies, treatments, education and other approaches are necessary. The health of Canadians relative to that of people in other countries, as well as the inequalities that exist in health status within Canada and around the globe will be examined. Case examples will be used to illustrate points.

Prereq: HLTH 101

HLTH 103 LEC 0.50

Course ID: 014309

Biological Determinants of Health

This course is an introduction to the biological determinants of health designed for students who have little formal knowledge of biology, but who wish to train for careers in health promotion, public health or other social and community services.

Antireq: BIOL 130

HLTH 173 LEC,SEM 0.50

Course ID: 015093

Contemporary Issues in Health 1

One or more term courses will be offered from time to time as announced by the School of Public Health and Health Systems. Topics will be dependent upon special research and/or instructional interests of the faculty.

Department Consent Required

Prereq: Year 1 School of Public Health and Health Systems students only

HLTH 200s

HLTH 201 LEC 0.50

Course ID: 006420

Aging and Health

This course focuses on the challenges facing older adults and on strategies to promote successful aging. A basic understanding of the physical aging process is explored, distinguishing between pathological states/illness and normal change. Many physical changes and associated functional decline are affected by modifiable factors such as sedentary lifestyles, substance abuse, and diet. Education, environment, and personal supports also play key roles in preventing illness and accidents (e.g. falls, driving accidents, and medication errors). The course addresses the interests of those working with older adults, and anyone who has older grandparents, parents, or friends.

(Cross-listed with GERON 201)

HLTH 202 LEC,TUT 0.50

Course ID: 014310

Principles of Public and Population Health

This course will introduce the student to the basic theories, principles and practice of public and population health.

Prereq: HLTH 101, 102; School of Public Health and Health Systems students only

HLTH 204 LEC,TUT 0.50

Course ID: 015117

Quantitative Approaches to Health Science

An introduction to descriptive and basic inferential statistics and their application to Health Research. Various statistical techniques commonly used in Health Research are covered.

Prereq: Level at least 2A School of Public Health and Health Systems students

HLTH 218 LEC 0.50

Course ID: 006428

Psychology of Death and Dying

Variations in the meaning and significance of death and dying will be considered from a psychological perspective, with particular attention to the contexts (e.g., cultural, familial, life-span developmental) in which these variations occur.

Prereq: PSYCH 101/101R or 121R; Level at least 2A

(Cross-listed with GERON 218, PSYCH 218)

HLTH 230 LEC 0.50

Course ID: 011462

Introduction to Health Informatics

Health informatics is the multidisciplinary field that aims to optimize the collection, storage, organization, retrieval, analysis, and communication of health data, information, and knowledge. Fueled by recent advances in information technology, informatics increasingly plays a vital role in many areas of health. This introductory course gives an overview of health informatics by discussing modern informatics issues and state-of-the-art applications in various sub-fields within health informatics including bioinformatics, medical informatics, and public health informatics.

[Note: Formerly HLTH 330]

Prereq: Level at least 2A School of Public Health and Health Systems or Level at least 2A Mathematics Health Informatics Option students.

Antireq: HLTH 330

HLTH 245 LEC 0.50

Course ID: 006430

Canadian Health Systems

This course examines Canadian health systems by considering organizational principles, health resources, service utilization, health care planning, and health promotion strategies. There is a focus on societal and political issues which affect the health of the society through the delivery system.

Prereq: Level at least 1B; Applied Health Sciences students or Statistics for Health students

(Cross-listed with GERON 245)

HLTH 253 LEC 0.50

Course ID: 008634

Demographic Change in Canada

An introduction to the study of human population, with a focus on mortality, fertility, migration and spatial distribution in Canada. Methods and measures used in demographic research, sources of demographic data, and the health and social implications of the major demographic trends are discussed.

Prereq: Level at least 2A

(Cross-listed with SOC 253)

HLTH 260 LEC 0.50

Course ID: 013200

Social Determinants of Health

Enormous inequalities in health persist both within and between countries. These inequalities can be seen across various axes including gender, ethnicity, and access to material resources. As such, those relatively deprived/underprivileged have substantially poorer health than those better off. The course will demonstrate the extent of inequalities in health, and it will explore current theories explaining how inequalities arise, focusing on behavioural/cultural, psychosocial, and structural/material explanations. The course will also investigate the role of various approaches to economic and social policy in creating or reducing inequalities.

Prereq: HLTH 101, 102 or Level at least 2B Applied Health Sciences students or Honours Social Development Studies Social Policy Specialization students

HLTH 273 LEC,SEM 0.50

Course ID: 015118

Contemporary Issues in Health 2

One or more term courses will be offered from time to time as announced by the School of Public Health and Health Systems. Topics will be dependent upon special research and/or instructional interests of the faculty.

Department Consent Required

Prereq: Year 2 School of Public Health and Health Systems students only

HLTH 280 LEC 0.50

Course ID: 015255

Applied Public Health Ethics

This course explores ethical issues in health sciences, emphasizing population and public health. The course begins by considering canonical ethical theories and frameworks for applying these theories to population health. Specific topics in population health, including the conflict between public health and individual autonomy, the just distribution of health resources, and responsibility for health outcomes will then be discussed. The overall objective of the course is to provide students with tools to discuss and assess ethical arguments and to form their own views on issues within population health.

Prereq: Level at least 2A

HLTH 290 LAB,LEC 0.50

Course ID: 015484

An Introduction to Health Neuroscience

The primary objective of the course will be to explore the dynamic and bidirectional relationship that develops between the brain and physical health over the life span. By investigating the interaction of individual biological factors (e.g., genetic, epigenetic, and life history traits) and social context (e.g., poverty, socioeconomic position), we would hope to understand how the brain acts as both a target and mediator of processes that influence a person's health and vulnerability to disease. Topics such as developmental programming, gene-environment interactions, resilience, and stress physiology will be considered.

Prereq: BIOL 130, PSYCH 101

HLTH 300s**HLTH 301 LEC,TUT 0.50**

Course ID: 014312

Applied Health Promotion: Theory and Practice

This course introduces health promotion history, theories, and change strategies that address individual-level behaviour plus sociocultural, economic, political, and environmental conditions and resources for health. Topics include educational, persuasive, organizational, regulatory, and empowerment approaches. Examples may be drawn from school and workplace programs, mHealth and eHealth, social marketing, community development, and social mobilization and advocacy for policy change.

Prereq: HLTH 202; HLTH 260

HLTH 303 LEC 0.50

Course ID: 014314

Program Planning and Evaluation

In this course the student is introduced to the theory and practice of public and population health programming, management, and evaluation applicable across the broad spectrum of core public health functions.

Prereq: HLTH 202

HLTH 304 LEC 0.50

Course ID: 015256

Health Communication

This course presents an overview of theories, issues, and compelling directions in health communication, with attention to health literacy, the role of the media, public health campaigns, provider-patient communication, and risk communication. Topics may highlight: social marketing; media advocacy; use of mobile phones, social media, and the Internet for health communication; entertainment education; communication in health care settings.

Prereq: HLTH 202; Level at least 3A

HLTH 305 LEC 0.50

Course ID: 014315

Community Development and Engagement in Public Health

In this course students will be introduced to the nature of communities in a variety of forms and functions, to issues and conditions which impact communities, as well as to internal and external forces which shape community action and priority setting in the context of public health. The focus will be on how to engage and empower communities, respect their autonomy, and create functional collaborations.

Prereq: HLTH 202; Level at least 3A School of Public Health and Health Systems students

HLTH 310 LEC,TUT 0.50

Course ID: 006426

Development, Aging and Health

The physiology of human growth, development and aging is examined, with special reference to the influence of diet, environment, exercise and disease on the normal processes.

[Note: Formerly HLTH 210/KIN 210/GERON 210]

Prereq: BIOL 130.

Coreq: BIOL 273

Antireq: HLTH 210, KIN 210, GERON 210 (Cross-listed with GERON 310, KIN 310)

(Cross-listed with GERON 310, KIN 310)

HLTH 320 LAB,LEC 0.50

Course ID: 006429

Psychosocial Perspectives on Lifespan Development and Health

This course will focus on the normative psychosocial aspects of development of the individual and their influence on the individual's physical and mental health and well-being. Through the use of a developmental systems, lifespan approach, the course will emphasize the life-long process of development.

[Note: Formerly HLTH 220/GERON 220]

Prereq: HLTH 101 and 102 or PSYCH 101/101R or 121R

Antireq: HLTH 220, GERON 220 (Cross-listed with GERON 320)

(Cross-listed with GERON 320)

HLTH 333 LEC 0.50

Course ID: 013201

Principles of Epidemiology

This course will introduce students to basic principles and methods used in epidemiology. The course will focus on both experimental and observational research designs, estimating outcome measures, principles for establishing cause and effect relationships, and the effectiveness of interventions to prevent and cure disease.

Prereq: HLTH 204 or KIN 222 or STAT 220 or STAT 230; Level at least 3A School of Public Health and Health Systems students or Level at least 3A Mathematics Health Informatics Option students

HLTH 340 LEC 0.50

Course ID: 006431

Environmental Toxicology and Public Health

An introduction to the basic biological and toxicological processes that determine the effects of environmental pollutants on human health. Emphasis is placed on the mechanisms that give rise to chronic or delayed health effects, such as cancer, genetic mutations, and birth defects.

Prereq: BIOL 130, 273, CHEM 120, and one of KIN 217, CHEM 233, 237

HLTH 341 LEC 0.50

Course ID: 006432

Principles of Pathobiology

An introduction to the study of biological factors governing disease in humans that will use selected diseases to identify risk factors and illustrate pathogenic mechanisms. The role that behaviour has in modifying biological response to disease may also be considered.

Prereq: BIOL 130, 273 and (KIN 217 or CHEM 233 or 237)

HLTH 344 LEC 0.50

Course ID: 013202

Qualitative Methods for Health Research

This course introduces students to the basic qualitative methods, tools, and research designs that are widely used in health research and program evaluation.

Prereq: Level at least 3A School of Public Health and Health Systems students or Level at least 3A Mathematics Health Informatics Option students.

HLTH 350 LEC 0.50

Course ID: 006437

Principles of Environmental & Occupational Health

Methodological approaches to the detection, assessment and management of toxic hazards (especially carcinogens) in the workplace and external environment. The health effects of chemical toxicants on specific human organ systems (lung, nervous system, immune system, etc.) are also examined.

Prereq: Level at least 3A Applied Health Sciences students

HLTH 352 LEC 0.50

Course ID: 006438

Sociology of Aging

An introduction to individual and population aging. Topics discussed include: aging from a historical and comparative perspective; aging in subcultures; aging and the social structure; aging and social processes; aging and the environment; work and retirement; and aging and leisure patterns.

Prereq: SOC 101/101R or AHS 107

(Cross-listed with GERON 352, KIN 352, REC 362, SOC 352)

HLTH 355 LEC 0.50

Course ID: 015257

Public Health Nutrition

You are what you eat... or are you? In this course, we will explore the fundamentals of nutrition, with an emphasis on the potential to reduce disease risk and improve health through diet. Topics considered include the role of diet in non-communicable chronic diseases, the evidence on what constitutes a healthy diet and how current dietary patterns compare, over- and under-nutrition domestically and globally, food and the environment, nutritional pseudoscience, and individual and ecologic approaches to promote healthy eating.

Prereq: HLTH 202 and Level at least 3A or 3A Nutrition Minor

HLTH 370 LEC 0.50

Course ID: 015258

Ecological Determinants of Health

This course will examine the links between ecosystems, global ecological change, and the health and well-being of human communities. It will review the myriad ways in which the Earth, as a living system, is the ultimate determinant of human health. The course is divided into three parts: in the first part key environmental changes are addressed, including climate change, ecotoxicity, resource depletion, species extinction, and stresses on ocean systems as well as the social and human forces that drive these changes. The second part of the course focuses on the implications of these ecological changes and population health. The third part of the course will address potential solutions.

Prereq: Level at least 3A

HLTH 373 LEC,SEM 0.50

Course ID: 015119

Contemporary Issues in Health 3

One or more term courses will be offered from time to time as announced by the School of Public Health and Health Systems. Topics will be dependent upon special research and/or instructional interests of the faculty

Prereq: Year 3 School of Public Health and Health Systems students only

HLTH 400s

HLTH 400 LEC 0.50

Course ID: 006440

Interdisciplinary Perspectives on Aging

This course provides an opportunity for critical discussion and analysis of a range of key issues in aging and aging research, and of health system and health policy issues affecting older persons. Speakers will represent a variety of disciplines, reflecting the importance of interdisciplinary perspectives in aging research, as well as the combination of biomedical and psychosocial factors that contribute to healthy aging or to the development of frailty and chronic disease.

*Prereq: GERON/HLTH 201; Fourth Year School of Public Health and Health Systems students only
(Cross-listed with GERON 400)*

HLTH 401 LEC 0.50

Course ID: 014673

Global Health

We are becoming a global community; increasingly, health concerns are international in nature and impact. The student will build upon core content concerning population and public health theories, international health care systems, and cultural sensitivity to address emerging global health concerns on the perspective of public and population health.

Prereq: HLTH 202, 245. School of Public Health and Health Systems students only

HLTH 402 SEM 0.50

Course ID: 014317

Advanced Health Promotion

This course will build upon material learned in HLTH 202 and 301. The student will have the opportunity to explore health promotion techniques in greater depth through case study and practical applications.

Prereq: HLTH 202, 301; Bachelor of Health Promotion students only

HLTH 405 LEC 2.50

Course ID: 006439

International Exchange

Study abroad on an Exchange Agreement approved by the Faculty of Applied Health Sciences.

Department Consent Required

HLTH 407 LEC 0.50

Course ID: 006441

Coronary Artery Disease - Prevention and Rehabilitation

This course explores the pathophysiology, electrophysiology, risk factors, and assessment and rehabilitation options related to cardiovascular disease. Major emphasis is placed on the utility of exercise in the assessment and rehabilitation of primary and secondary cardiovascular disease.

Prereq: BIOL 273; Level at least 3A

(Cross-listed with KIN 407)

HLTH 410 LEC 0.50

Course ID: 013204

Health Policy

Health care policy exists at federal, provincial, local and institutional levels, and shapes every aspect of the Canadian Health Care System. Its ongoing development, implementation and outcomes are shaped by ideology and empirical evidence through the definition of health issues, setting of priorities for action, and the policy instruments chosen for implementation. This course will introduce students to health policy in Canada and provide them with an understanding of what policy is, how it is developed, who is involved with its production, implementation, and evaluation. Students will learn to critically analyse real world examples of Canadian health policy.

Prereq: HLTH 245, 260; Level at least 4A School of Public Health and Health Systems or Honours Social Development Studies Social Policy Specialization students

HLTH 412 LEC 0.50

Course ID: 015259

Comparative Health Systems

This course addresses the history and development of health systems, and comparison of the social ethics, organization, and financing of different national health systems. Topics include: the design of health systems; strengths and weaknesses of alternative systems for public health and health care delivery; current strategies for health system reform in resource-rich and resource-constrained nations; and ethical issues associated with health system reform. This course uses a case-study, problem-based approach.

Prereq: Level at least 4A

HLTH 420 LEC 0.50

Course ID: 006442

Health, Environment, and Planning

This course examines the relationship between the environment (built/physical, economic, social, political and natural aspects) and population health. It focuses on conceptual and empirical links among current environment-health issues such as air quality, active transportation, injury prevention, climate change, and mental well-being. Emphasis is placed on the role of urban planners in collaboration with allied professionals (e.g., public health, engineering, law enforcement, architecture) in creating and maintaining healthy built environments to improve population health with a focus on key health issues.

Prereq: One of PLAN 233, HLTH 260, ERS 253, GEOG 325

(Cross-listed with GEOG 432, PLAN 432)

HLTH 421 SEM 0.50

Course ID: 012212

Nutritional Aspects of Chronic Disease

Nutrition is integral to the etiology, prevention and treatment of chronic diseases. This course examines nutritional aspects of key chronic diseases affecting the Canadian population. There will be an opportunity for students to explore, in depth, specific conditions and aspects of nutritional assessment or intervention that interest them. Case topics span the lifecycle and such conditions as obesity, eating disorders, diabetes, dyslipidemia, cardiovascular disease and some cancers. As well, students present seminars on a topic of their choice.

Prereq: HLTH 355 or KIN 346; Level at least 4A School of Public Health and Health Systems students

HLTH 432A RDG 0.50

Course ID: 006445

Honours Thesis (A)

An independent research project on an approved topic, supervised by a faculty member. Includes an approved proposal and completion of -- introduction, review of literature, methods, data collection, data analysis and presentation of results in thesis form. Recommended for students planning graduate studies.

Department Consent Required

Prereq: HLTH 333; Level at least 4A School of Public Health and Health Systems students

HLTH 432B RDG 0.50

Course ID: 006446

Honours Thesis (B)

An independent research project on an approved topic, supervised by a faculty member. Includes an approved proposal and completion of -- introduction, review of literature, methods, data collection, data analysis and presentation of results in thesis form. Recommended for students planning graduate studies.

Department Consent Required

Prereq: HLTH 432A

HLTH 433 LEC 0.50

Course ID: 006447

Experimental Methods

This course focuses on the key issues related to the design, conduct, analyses, and interpretation of experimental studies. Examples will be drawn from animal research investigating disease mechanisms and from clinical and population studies investigating efficacy of preventive or therapeutic strategies.

Prereq: HLTH 333; Level at least 4A School of Public Health and Health Systems students

HLTH 435 LEC 0.50

Course ID: 013374

Knowledge Translation for Public Health and Health Care

This course is about bridging gaps between evidence-based knowledge and real world policies and practices. Along with concepts and skills about knowledge synthesis, the focus is on integrated knowledge-to-action processes for engagement, collaboration, implementation, and scale-up to meet objectives of changing policies, behaviours of health care providers and other individuals, and organizational practices. Topics and skills may include use of systematic and scoping reviews of literature, Diffusion of Innovations and Social Marketing frameworks, behavioural economics, policy change strategies, public health ethics, Health Impact Assessments, Critical Public Health perspectives, and issues from current events.

Prereq: HLTH 260 and HLTH 344; Level at least 4A

HLTH 441 LEC 0.50

Course ID: 014318

Advanced Qualitative Methods

This course will build on concepts and theories concerning qualitative methods introduced in HLTH 344. The student will have the opportunity to tailor the material to the core function upon which they are focusing using case study discussion and practical applications.

Prereq: HLTH 333, 344

HLTH 442 LEC 0.50

Course ID: 006448

Epidemiology of Non-Communicable Diseases

This course builds upon the concepts learned in HLTH 333. The primary objective is to provide an understanding of the fundamental concepts, principles and applications of non-communicable disease epidemiology. The course emphasizes understanding of epidemiologic methods and identification of risk and protective factors.

Prereq: HLTH 333; Level at least 4A School of Public Health and Health Systems students

HLTH 443 LEC 0.50

Course ID: 015260

Epidemiology of Communicable Diseases

This course introduces the basic methods for communicable disease epidemiology and discusses important infectious diseases, including their history, ecology and current public health significance. The course focuses on epidemiological methods in infectious disease research, prevention, and control, such as outbreak investigations, disease surveillance, case-control and cohort studies, laboratory tools, molecular epidemiology, dynamics of transmission, and assessment of vaccine field effectiveness. A range of communicable diseases will be discussed including respiratory infections, diarrheal diseases, sexually transmitted diseases, bloodborne diseases, and vector-borne diseases.

Prereq: HLTH 333; Level at least 4A School of Public Health and Health Systems students

HLTH 444 LEC 0.50

Course ID: 006433

Program Evaluation

Building upon the concepts learned in HLTH 333 and HLTH 344 this course provides a comprehensive and systematic introduction to the key concepts, methodologies, and issues related to program evaluation in general and their application to health programs in particular. Administrative and policy implications as well as the technical/methodological evaluation issues that face individuals involved in administering, planning, implementing, and evaluating health programs will be discussed.

Prereq: HLTH 333, 344; Level at least 4A; Health Studies Pre-Health Professions Specialization or Health Research Specialization students or Health Promotion students

HLTH 448 SEM 0.50

Course ID: 012775

Advanced Studies in Social Determinants of Health

This course will provide an in-depth examination of social determinants of health, both in North America and around the world. Students will apply their knowledge and understanding of nonbiological contributors to health by observing, studying and 'unpacking' actual health issues in the local community.

Prereq: Level at least 4A School of Public Health and Health Systems students

HLTH 449 SEM 0.50

Course ID: 012776

Alcohol and Drug Use and Abuse in Contemporary Society

This course will provide an overview of alcohol and drug use and abuse in contemporary society. The student will develop an understanding of how alcohol and other drug problems become defined as social problems and how these definitions influence subsequent intervention strategies. Students will explore the social, political, economic and biological determinants of the use and abuse of alcohol and drugs, and then critically examine real-world policy issues related to prevention, control and cessation of use.

Prereq: Level at least 4A School of Public Health and Health Systems students

HLTH 451 SEM 0.50

Course ID: 012213

Analysis and Management of Health Information in Aging Populations

The course combines an overview of health policy issues and service delivery with methodological considerations in the analysis of health information from a variety of sources. The topics to be addressed may include the role of health information in evidence-based practice and policy development; basic concepts of demography and health information management; secondary data analysis; case-mix based funding systems; performance indicators, quality, and accountability in health care; clinical applications of health data; need analysis; cost analysis; international comparisons.

Prereq: STAT 316; level at least 4A School of Public Health and Health Systems students

HLTH 452 SEM 0.50

Course ID: 012210

Decision Making and Decision Support in Health Informatics

One of the major aims of health informatics is to help health professionals make better decisions. To this end, diverse models and methods of decision making and decision support have been developed and implemented in health care settings. This course reviews theories, methods, and technologies for aiding the process of making decisions in health care.

Prereq: Level at least 4A School of Public Health and Health Systems students

HLTH 453 LAB,LEC 0.50

Course ID: 015673

Computing in Health Informatics

This course focuses on the fundamental computing methods and concepts that are commonly employed in modern health informatics in order to collect, store, organize, process, analyze, and communicate digital health data/information/knowledge. Students will gain both theoretical knowledge and practical experience so that they can apply the learned methods in practice after completing this course.

Prereq: HLTH 230 and (CS 105 or CS 115 or CS 135) and (CS 106 or CS 116 or CS 136)

HLTH 458 LEC 0.50

Course ID: 014378

Social Neuroscience and Health

This is an in-depth course intended for the intensive study of psychological, neuroscientific and social processes that together set the stage for the development of chronic illnesses in the modern world. Topics include exercise neuroscience, health-related decision processes, and neural responses to health risk communications in the media.

*Prereq: KIN 232 or (HLTH 333 or PSYCH 291); KIN 354 (or HLTH 348 or HLTH 360 or PSYCH 253/PSYCH 253R)
(Cross-listed with KIN 458)*

HLTH 461 LAB 0.50

Course ID: 012214

Psychoneuroimmunology

The course provides an introduction to the principles of psychoneuroimmunology (behavioural immunology) and its application to human health and disease. Topics to be included are: immune system-nervous system interactions, neuroendocrine responses to stress, the effects of stress on immunity, cytokines as mediators of behaviour and immune function, behavioural factors that modify immune responses, and selected clinical examples that illustrate the interactions amongst behaviour, immune function, and human health.

Department Consent Required

Prereq: Level at least 4A Health Studies students

HLTH 471 SEM 0.50

Course ID: 010093

Psychopharmacology

The primary objective of the course will be to provide a basic understanding of how drugs can alter the function of neural cells and how these changes can affect mood, cognition, and behaviour. Key topics to be discussed include: a) biological principles of pharmacology, b) general structure and function of the nervous system, c) major neurotransmitter systems of the brain, d) mechanisms of drug action on neurotransmission, and e) pharmacotherapy for mental health illness.

Department Consent Required

Prereq: Level at least 4A Health Studies students

HLTH 472 LEC 0.50

Course ID: 009508

Independent Study

For the student who desires to pursue a particular topic in depth through guided independent research and/or reading. A faculty member must approve a student's project prior to registration. May be repeated in subsequent terms. Depending on student demand and availability of teaching resources, special topics may be presented to small groups in a lecture format. Such topics have included Pharmacology, Behavioural Immunity, Nutrition, The Health Care System.

Department Consent Required

HLTH 473 LEC,SEM 0.50

Course ID: 013205

Contemporary Issues in Health 4

One or more term courses will be offered from time to time as announced by the School of Public Health and Health Systems. Subjects will be dependent upon special research and/or instructional interests of the faculty.

Department Consent Required

Prereq: Level at least 4A School of Public Health and Health Systems students

HLTH 479 SEM 0.50

Course ID: 015674

Child Mental Health Epidemiology

Mental health problems in childhood and adolescence impose a significant burden on the public health system. The course presents the epidemiology of common child mental disorders and includes discussions on theoretical frameworks related to child mental health, measurement of psychopathology, the mental health system, and ethical conduct of research in vulnerable populations. There is heavy emphasis on group work whereby students will develop a research study in the area of child mental health.

Prereq: HLTH 333

HLTH 481 FLD,SEM 0.50

Course ID: 014319

Community Learning Project

Service learning is a method of teaching and reflection designed to use community service as a vehicle to enrich and integrate classroom learning, teach civic responsibility, encourage lifelong civic engagement, and strengthen communities. Students will be required to identify and design community learning placements, including the establishment of specific learning and outcome objectives, and a method of evaluation. Provisions must be approved by the community agency and the course coordinator. Placements are normally 8 to 10 hours per week for 8 weeks. In the final week of the term students will meet to reflect upon and share their experience with fellow students. Students will also complete a written report detailing whether and how they achieved their objectives, what they learned from the process relevant to the practice of health promotion, and how their experience utilized or exemplified course based material and assignments. Reports will be reviewed and graded as pass/fail by both the community partner and a faculty service leader.

Prereq: Year 4 Bachelor of Health Promotion students or Bachelor of Public Health students only

HUMAN RESOURCES MANAGEMENT**HRM 200s****HRM 200 LEC 0.50**

Course ID: 006474

Basic Human Resources Management

Examines the major areas of human resources administration including recruiting, salary administration, labour relations, benefits administration, employee relations, labour law, and organizational behaviour. Reviews the role of human resources administration in organizations and the manner in which human resources executives contribute to the well-being of a total enterprise. [Offered F, W, S]

Prereq: Level at least 2A.

Antireq: BUS 354W/454W

Also offered Online

HRM 300s

HRM 301 LEC 0.50

Course ID: 011707

Strategic Human Resources Management

An examination of the issues and challenges confronted by human resource professionals when planning and forecasting the staffing needs of an organization. Topics covered may include aligning human resource practices with organizational objectives, succession planning, redesign of work systems, and the impact of human resource practices on organizational outcomes.

Prereq: HRM 200; Level at least 2B Human Resources Management students.

Antireq: BUS 418W

HRM 303 LEC 0.50

Course ID: 013563

Compensation

This course deals with the process, issues, and techniques involved in developing and administering a compensation system. Students will gain knowledge from both the theoretical and applied aspects of the compensation function within organizations, including understanding the importance of compensation, assessing and diagnosing compensation issues, and developing appropriate solutions.

Prereq: HRM 200; Level at least 2B Human Resources Management students.

Antireq: BUS 448W

HRM 305 LEC 0.50

Course ID: 013565

Health and Safety

This course introduces the broad and ever-changing field of occupational health and safety. Understanding the multiple dimensions of the various issues - technical, legislative, political, personal - is essential to HR professionals overseeing an organization's health and safety function, and to those dealing with consultants or joint health and safety committees.

Prereq: HRM 200; Level at least 2B Human Resources Management students.

Antireq: BUS 414W

HRM 307 LEC 0.50

Course ID: 013564

Labour Relations

This course draws upon the disciplines of law and history to assess various aspects of the current industrial relations climate. Topics may include employment standards and labour relations legislation, collective bargaining, dispute resolution procedures, contract administration, industrial democracy, and the structure and growth of the Canadian labour movement.

Prereq: HRM 200; Level at least 2B Human Resources Management students.

Antireq: BUS 464W

HRM 400s

Honours Seminar in Human Resources Management - Special Topics

Topics reflect current issues in human resources management. Consult the departmental listings for the upcoming topics. Activities may include oral presentations, class discussions, individual and/or group projects, and written assignments.

Prereq: Three of HRM 301, 303, 305, 307. Human Resources Management students

HUMAN SCIENCES**Notes**

The following courses are administered by St. Jerome's University.

HUMSC 100s**HUMSC 101 LEC,SEM 0.50**

Course ID: 011869

Great Dialogues: Reflection and Action

What is the relationship between thinking and action? Do they pull us in different directions? Can they be integrated? This course investigates how our own dialogue with core texts, from antiquity (e.g., Homer, Plato, Christian Scriptures) to the present (e.g., Joyce, Arendt), offers ways of understanding the dilemmas and issues raised by these texts and present in our culture.

Offered at St. Jerome's University

HUMSC 102 LEC,SEM 0.50

Course ID: 011870

Great Dialogues: Politics and Morality

What is the relationship between politics and morality? Are they opposites? Can they be integrated? This course investigates the way our own dialogue with core texts, from the Renaissance to the present (authors may include Machiavelli, Shakespeare, Wollstonecraft, Marx, Conrad, and Arendt), offers ways of thinking through the dilemmas and issues raised by these texts and present in our culture.

Offered at St. Jerome's University

HUMSC 200s**HUMSC 201 DIS,LEC 0.50**

Course ID: 012363

Great Dialogues: Reason and Faith

What is the nature of, and relationship between, reason and faith? Does this fundamental distinction lead to other distinctions such as those between explanation and revelation, the rational and the intuitive? What impact do such modes of thought have on notions such as providence, perception and truth? What comparisons and contrasts can be drawn between each mode and prevailing modern perspectives? This course investigates how a dialogue with core texts (e.g., Boethius, Aquinas, Dante, Bacon, Milton, Descartes, Hume, Austen) offers ways of understanding these issues.

Prereq: Level at least 2A

Offered at St. Jerome's University

HUMSC 289 LEC 0.50

Course ID: 015574

Special Topics in Human Sciences

An in-depth analysis of research in selected topics in the Human Sciences.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: HUMSC 101

Offered at St. Jerome's University

HUMSC 300s

HUMSC 301 DIS,LEC 0.50

Course ID: 012453

Great Dialogues: The Sacred and the Profane

What is the nature of, and relationship between, the sacred and the profane? This course will examine diverse manifestations of the sacred and the profane by emphasizing the nature of their interaction and the impact on our understanding of contemporary human civilization. A dialogical method in exploring these ideas will be encouraged. Areas to be investigated include space, time, ritual, culture, morality, life and death. The readings will be taken from core texts spanning a wide variety of fields and authors (e.g. Eliade, Wittgenstein, Heidegger, Pieper, Charles Taylor, Mary Douglas, etc.).

Prereq: Level at least 3A or one of HUMSC 101, 102, 201

Offered at St. Jerome's University

HUMSC 389 LEC 0.50

Course ID: 015575

Special Topics in Human Sciences

An in-depth analysis of research in selected topics in the Human Sciences.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: HUMSC 101; Level at least 2A

Offered at St. Jerome's University

HUMSC 400s

HUMSC 401 DIS,LEC 0.50

Course ID: 012454

Great Dialogues: Athens, Jerusalem, and Technological Society

What is the relationship between our Western technological world and its roots in the cultures of ancient Athens (representing the heroic life, the dramatic and tragic life, the political life, the examined life) and Jerusalem (representing liberation from oppression, the focus on justice and mercy, the divine challenge to humans playing god)? Do these cultures offer the potential to challenge the principles on which contemporary technological society rests or have they been surpassed? This course investigates how a dialogue with core texts offers ways of understanding these issues.

Prereq: Level at least 3A; One of HUMSC 101, 102, 201, 301

Offered at St. Jerome's University

HUMSC 489 SEM 0.50

Course ID: 015576

Special Topics in Human Sciences

An in-depth analysis of research in selected topics in the Human Sciences.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: HUMSC 101; Level at least 3A

Offered at St. Jerome's University

HUMSC 490 LEC 0.50

Course ID: 012962

Great Dialogues: Medical Humanities on Health and Life

What is the relationship of health to life? This course will focus on identifying areas of strain or conflict in public health and everyday life in relation to tensions connected to models of health and sickness. It will examine contested representations of the relations of health and life, healing and cure, pleasure and pain, self-governance and negligence, body and mind, and policy and polity. Core texts will span a wide variety of fields, eras, and authors (e.g., Plato, Descartes, Freud, Parsons, Foucault, Gadamer, Garfinkel).

*Instructor Consent Required**Prereq: Level at least 3A; At least one course in Human Sciences**Offered at St. Jerome's University***HUMSC 498 RDG 0.50**

Course ID: 015577

Directed Studies in Human Sciences

Selected study and assignments under the direction of a faculty member.

*Department Consent Required**Prereq: HUMSC 101; Level at least 4A**Offered at St. Jerome's University***INTERNATIONAL DEVELOPMENT****INDEV 00s****INDEV 10 SEM 0.00**

Course ID: 013449

International Development Seminar

INDEV 10 is a non-credit, no-fee seminar series on current topics in International Development. Each session may feature a guest speaker or a field placement information session. Except where otherwise noted INDEV 10 seminars are open to all INDEV students, faculty, staff, and alumni. Participation is not mandatory but encouraged.

*Prereq: International Development students only***INDEV 100s****INDEV 100 LEC,TUT 0.50**

Course ID: 012674

Introduction to International Development

Students obtain an overview of the multi-dimensional and transdisciplinary nature of development. Themes include theories and strategies of development; history of development; relevance of context (culture, economics, and politics); the impact of law and international regulatory bodies; environmental influences; urbanization; the factors of health, literacy and violence; development agencies. Reference is made to particular development problems in specific developing countries.

INDEV 101 LEC,TUT 0.50

Course ID: 014370

Issues in International Development

This course examines key issues in international development. International Development involves the search for sustainable and equitable solutions to poverty primarily but not only in the Global South. The causes and consequences of poverty are

many and varied: environmental degradation; insufficient food production; inequitable access to land and related resources; poor governance; civil war and other types of conflict. The impacts of poverty manifest differently depending on culture, technology, geo-political factors and globalization.

Prereq: INDEV 100

INDEV 200s

INDEV 200 LEC,TUT 0.50

Course ID: 012675

The Political Economy of Development

This course develops students' understanding of how the complex interplay of international economic and political economy factors influence development initiatives and outcomes. The relation of trade, aid, and international institutions (WTO, IMF, World Bank) on development activity is examined using case studies. Different economic views will be examined.

Prereq: INDEV 101

INDEV 202 LEC 0.50

Course ID: 012676

Accounting for Development Organizations

Students will obtain a fundamental understanding of financial and management concepts, and an appreciation of the measurement issues and monetary impact of business decisions on communities, society and the environment. Topics include financial statement reporting and analysis, cost analysis, triple bottom-line reporting, corporate social responsibility including the Global Sullivan Principles, and green accounting.

Prereq: INDEV 101

INDEV 212 WSP 0.50

Course ID: 012677

Problem-solving for Development

Students will obtain an understanding of the fundamental features of creative thinking, decision-making and problem-solving from both a descriptive and a normative point of view. Techniques for analyzing problem-solving and decision-making by individuals and groups with particular attention to the impact of cultural difference among individuals and within teams. Techniques for improving problem-solving and decision-making in a community development context will be considered. Effective negotiation in different cultural contexts will be studied.

Prereq: INDEV 101

INDEV 262 LEC 0.50

Course ID: 015434

Introduction to Global Emerging Cities

This course focuses on the dynamics of growth and change in global emerging cities, with a focus on the urban transition underway in cities, with emphasis on Asia and Africa. Current urban challenges (e.g. social inequality, uneven development, climate change) are discussed, as well as opportunities for innovative planning and sustainable urban development.

(Cross-listed with PLAN 262)

INDEV 275 LAB,LEC,SEM,TUT 0.50

Course ID: 013191

Special Topics in International Development

This course allows for additions to the program on a short-term basis, and for the development of future permanent courses.

[Note: Field trip fee may be required]

Department Consent Required

INDEV 300s

INDEV 300 LEC 0.50

Course ID: 012678

Culture and Ethics

This course surveys a variety of competing ethical positions that have been, and continue to be, adopted by different cultures around the world. Can two competing ethical viewpoints both be right? If not, then what grounds should we adopt to decide between them, and under what circumstances? How can we negotiate the difficulties that such differences pose for our practical judgment and moral theorizing? Students will engage these questions by reading texts in philosophical ethics and meta-ethics, and by applying what they have learned in case studies of ethical differences among cultures.

Prereq: INDEV 200

(Cross-listed with PHIL 227)

INDEV 302 LEC 0.50

Course ID: 012679

Development Agents

This course examines the nature, variety and inter-relationships of and among organizations, institutions, agencies and individuals involved in contemporary development activity. The many and various legal, political and financial factors that affect the organization and operation of development agents are studied with respect to implications for business model, management skills, governance oversight and public policy.

Prereq: INDEV 200

INDEV 304 LAB,LEC 0.50

Course ID: 012680

Language Conversation for Development Field Work

This is a special intensive language course designed to develop a working verbal fluency in the language of the student's field assignment.

Prereq: INDEV 200; International Development students only

INDEV 308 LEC 0.50

Course ID: 012682

Introduction to Social Entrepreneurship

This course uses the case study method to examine the challenges of starting, funding and operating an early-stage social change venture in a developing country. The focus is on ventures that address urbanization and poverty. Students explore the complexities of managing and sustaining growth, the role of governing boards, and the role of private sector partnerships and resources. Innovative public/private partnerships are examined. The challenges and opportunities associated with engaging diverse partners with differing agendas are considered from the perspective of the entrepreneur, investor/donor, local community leaders and legal counsel.

Prereq: INDEV 200 or Environment & Business students

INDEV 375 LAB,LEC,SEM,TUT 0.50

Course ID: 013192

Special Topics in International Development

This course allows for additions to the program on a short-term basis, and for the development of future permanent courses.

[Note: Field trip fee may be required]

Department Consent Required

INDEV 387 LEC 0.50

Course ID: 013860

Global Cities in Global Development

More than half of the world's population resides in urban areas, with the bulk of this growth taking place in the mega-cities of the global South. Many cities in the world are now truly 'global' in their reach and orientation: New York, Shanghai, Mexico City, Johannesburg. Thus, urbanization presents key developmental challenges that face the world's urban population, and highlights the search for sustainable solutions in select cities.

Prereq: INDEV 200

INDEV 388 LAB 0.50

Course ID: 013930

Key Issues in Urban Development

This course focuses on key developmental issues facing Third World cities such as housing, water supply and sanitation, energy, food security, migration and demographic change, and so on. The course also explores the links between North and South as well as comparative local issues facing new immigrants to Canada.

Department Consent Required

Prereq: INDEV 387

INDEV 400s**INDEV 401 PRA 1.50**

Course ID: 012684

International Development Placement 1

INDEV 401 and 402 comprise an 8 month internship abroad with a development project, organization or institute. INDEV 402 immediately follows INDEV 401. Students are expected to fulfil work duties, language milestones and academic assignments. The culmination of both courses is a professional service report based on projects and the wider work undertaken by the student and their organization during their placement.

[Note: Students are responsible for all travel and subsistence costs associated with their international placement]

Prereq: Level at least 4A International Development students

INDEV 402 PRA 1.50

Course ID: 012685

International Development Placement 2

INDEV 401 and 402 comprise an 8 month internship abroad with a development project, organization or institute. INDEV 402 immediately follows INDEV 401. Students are expected to fulfil work duties, language milestones and academic assignments. The culmination of both courses is a professional service report based on projects and the wider work undertaken by the student and their organization during their placement.

[Note: Students are responsible for all travel and subsistence costs associated with their international placement] [Note: The INDEV capstone event is a mandatory component of this course. The event is scheduled during the last week of April and first week of May.]

Prereq: INDEV 401

INDEV 404 SEM 0.50

Course ID: 014686

International Development Theory

This course emphasizes both theoretical and conceptual frameworks, techniques, practices and methods for analysis of development, focusing in particular on the historical and spatial trajectory of international development through an examination of seminal texts.

Prereq: Level at least 4A

INDEV 474 SEM 0.50

Course ID: 013448

Special Topics in International Development

From time to time, courses of special topics may be offered at the fourth-year level, for program enrichment.

Prereq: Level at least 4A; International Development students only

INDEV 475 SEM 0.50

Course ID: 014685

Contemporary Development Issues

This course considers contemporary development issues and strategies, including environment, conflict/post-conflict and transition countries, gender, globalization, human rights, culture and religion, and current thinking, many of which are addressed by perspectives from academia, the NGO sector and development agencies.

Prereq: Level at least 4A

INDEV 476 SEM 0.50

Course ID: 014684

Contemporary Issues in Development Practice

This course focuses on contemporary development issues - environment, gender, migration, climate change, democracy, to name several. It also highlights the ways and means for students to respond to one or more of these issues, particularly as they relate to their field placements.

Prereq: Level at least 4A; International Development students only

INDEV 490A ESS 0.50

Course ID: 014687

Honours Thesis: Project Preparation

The Honours Thesis/Project provides students with an opportunity to pursue a specific research topic or applied project of their choosing relating to the study of International Development. The paper will be prepared over two semesters. 490A involves the guided preparation of a research/project proposal.

Prereq: Level at least 4A; International Development students only

INDEV 490B ESS 1.00

Course ID: 014688

Honours Thesis: Project Completion

The Honours Thesis/Project provides students with an opportunity to pursue a specific research topic or applied project of their choosing relating to the study of International Development. The paper will be prepared over two semesters. 490B involves the formal completion of the thesis/project.

Prereq: INDEV 490A

INDIGENOUS STUDIES**INDG 200s****INDG 201 LEC 0.50**

Course ID: 015692

The Indigenous Experience in Canada

An introduction to the Indigenous experience in Canada with a broad overview of history, culture, and contemporary issues. This course highlights the holism of indigenous perspectives through assigned readings, discussions, projects, and sharing of personal experiences.

(Cross-listed with CDNST 201)

Offered at St. Paul's College

INDG 272 LEC 0.50

Course ID: 003945

Issues in Contemporary Indigenous Communities in Canada

An examination of First Nations and Métis cultures and cultural development from the perspective of local indigenous communities. The course will feature lectures, discussions, and occasional guest speakers representative of the wider indigenous community.

Antireq: NATST 272

(Cross-listed with ANTH 272)

Also offered Online

INDG 300s

INDG 301 LEC 0.50

Course ID: 015695

Critical Theories of Indigeneity in a Global Perspective

This cross-cultural and interdisciplinary course critically examines the definitions of, and debates surrounding, indigeneity, drawing on both indigenous and non-indigenous theorists. The course covers a range of themes, from constitutions and peoplehood to epistemologies and ontologies, and draws on a variety of examples from around the globe.

Prereq: INDG/CDNST 201

Offered at St. Paul's College

KNOWLEDGE INTEGRATION

Notes

There are a number of courses offered by the Department of Knowledge Integration in the Faculty of Environment that focus on the methods and models most useful for interdisciplinary study, research, and practice. These courses are of general interest and are open to all students at the University. Knowledge Integration courses encourage and develop creative, critical and integrative thinking skills, as well as self-awareness, initiative, and collaboration. Students will be expected to demonstrate these skills in their coursework, making connections to the real world beyond the KI classroom.

The Department of Knowledge Integration welcomes students from across campus to INTEG courses but reserves the right to offer priority of access to those individuals whose Academic Plans require those courses.

INTEG 00s

INTEG 10 SEM 0.00

Course ID: 012691

Knowledge Integration Seminar

General seminar on inter-disciplinary topics and integrative practices of special interest to INTEG students, faculty, and alumni. INTEG students must register every term.

INTEG 100s

INTEG 120 LEC,TUT 0.50

Course ID: 012690

The Art and Science of Learning

This course introduces students to state-of-the-art scientific research on learning and cognitive adaptability. There are two learning objectives in this course. First, you will learn about how the mind processes information, and will begin developing new habits to facilitate clear and critical thinking in complex, messy, and stressful circumstances. Second, you will learn how to see the social networks you are embedded in, and how they shape what you think, know, and do. You will use this knowledge to identify opportunities and develop strategies for learning, and for the integration and synthesis of different types of knowledge.

INTEG 121 LEC,STU 0.50

Course ID: 012692

Collaboration, Design Thinking, and Problem Solving

A project course in design and problem-solving across various disciplines. Topics include problem-solving methods and issues in design, including ethics, sustainability, and communication in small groups. Applied design projects require group work and draw on the skills of creative and critical thinking.

[Note: Estimated additional cost to student: \$30.]

INTEG 200s**INTEG 210 LEC 0.50**

Course ID: 015437

Making Collaboration Work

Collaboration and teamwork are essential for solving complex, real-world problems and are therefore in high demand by employers. Yet students rarely have the opportunity to study and apply the theory and best practices for making collaboration work. In this course, you will learn how to leverage this research to acquire a variety of important skills. These include: effective communication in groups, proactively managing group conflict, identifying biases that hinder creativity, and leveraging diversity to improve outcomes. You will also put those skills into practice throughout the course and reflect on how you can apply them in other situations.

Prereq: Level at least 2A; Not open to Knowledge Integration students

INTEG 220 LEC 0.50

Course ID: 012693

Nature of Scientific Knowledge

This course examines how knowledge is produced in scientific disciplines, including the nature of inquiry, as well as types of evidence and expertise across different fields. The course features significant input from scientific practitioners in the form of guest lectures.

Prereq: Level at least 2A

(Cross-listed with PHIL 290)

INTEG 221 LEC 0.50

Course ID: 012694

The Social Nature of Knowledge

This course examines social aspects of knowledge, including ways that characteristics of individual knowers and their communities affect the acquisition, interpretation, production, and transfer of knowledge. In addition, we analyze the consequences this has for the objectivity of knowledge. The course features significant input from researchers in the humanities and social sciences in the form of guest lectures.

Prereq: Level at least 2A

(Cross-listed with PHIL 291)

INTEG 230 FLD,SEM 0.25

Course ID: 012695

The Museum Course: Preparation and Field Trip

Introduction to the issues and intent of the Museum Course. Planning and research for the destination. Field trip to study museums, exhibits, audiences, and curatorial practices on-site in a major museum city. For additional information on itinerary and travel costs, contact the Department.

[Note: Field trip fee normally \$2,500 including all applicable taxes; will not exceed \$3,000 including all applicable taxes. Fee is based on destination.]

Prereq: Knowledge Integration Honours students only or Department Consent.

INTEG 231 PRJ,SEM 0.25

Course ID: 012696

The Museum Course: Field Trip Project

Seminar and projects based on field trip study of museums, exhibits, audiences, and curatorial practices.

Prereq: INTEG 230

INTEG 251 LEC 0.50

Course ID: 014109

Creative Thinking

An introductory, integrative course in the history, psychology, value and practice of creativity across a variety of domains, from scientific research to the fine and performing arts. Students will learn to identify and explain key ideas and historical figures in the study and practice of creative thinking. They'll also learn to reliably generate novel ideas of value, both solo and collaboratively.

Antireq: INTEG 275 Section 1 Taken Winter 2010, 2011, Spring 2011, 2012, Winter 2012

INTEG 275 LEC 0.50

Course ID: 013043

Special Topics in Knowledge Integration

From time to time courses of special study may be added to the program at the second-year level. Students wishing to take such courses should consult the Department's Undergraduate Officer.

INTEG 300s**INTEG 320 LEC 0.50**

Course ID: 012697

The Museum Course: Research and Design

An introduction to the museum, broadly interpreted as the public face of scholarship. Students work in small groups to research an inter-disciplinary topic of personal interest, in-depth, and design a museum exhibit suitable for a particular audience.

Prereq: Level at least 3A

INTEG 321 LEC,STU 0.50

Course ID: 012698

The Museum Course: Practicum and Presentation

An introduction to the museum, broadly interpreted as the public face of scholarship. Students construct and exhibit their designs from INTEG 320, and present public talks on the scholarship and curatorial decisions behind their work.

[Note: Estimated additional cost to student: \$100.]

Prereq: INTEG 320

INTEG 340 LAB,LEC,PRJ 0.50

Course ID: 015438

Thinking Through Research Methods

This course provides an introduction to empirical research design and methods with a focus on applications in the social and information sciences and related fields. You will learn about core issues in research design (e.g., sampling) that transcend specific approaches, and about a variety of techniques for collecting and analyzing quantitative and qualitative data. The course will cover both abstract and practical issues related to methodology and decision making in empirical research. You will have the opportunity to develop and workshop proposals that you may wish to pursue in your senior honours thesis. By the end of the course you will be a more informed consumer and have a basic set of skills for designing and implementing your own empirical research projects. Most importantly, you will have a foundation for future learning about research design and methods.

*Prereq: Level at least 2A***INTEG 375 LEC 0.50**

Course ID: 013044

Special Topics in Knowledge Integration

From time to time courses of special study may be added to the program at the third-year level. Students wishing to take such courses should consult the Department's Undergraduate Officer.

*Prereq: Level at least 2A***INTEG 400s****INTEG 420A PRJ,SEM 0.50**

Course ID: 012699

Senior Research Project A

Each student will work on a short research project under the dual direction of a member of the Knowledge Integration Department and an advisor from a discipline related to the topic. The results of this project will be presented in thesis form, and will be critically examined by members of this and, where pertinent, other departments.

*Prereq: Level at least 4A Knowledge Integration or instructor consent***INTEG 420B PRJ,SEM 0.50**

Course ID: 012700

Senior Research Project B

A continuation of INTEG 420A.

*[Note: formerly INTEG 421]**Prereq: INTEG 420/420A***INTEG 452A LEC,PRJ,SEM,STU 0.50**

Course ID: 014693

Real World Problem Solving A

The first part of a two-term senior project course. Students will work as a design group to address a real world problem over the course of the two-term sequence. With the instructor in an advisory role, students will meet with a real world client, typically from outside the university, to understand the client's problem and needs. The focus of the first term will be a comprehensive design brief, background research and the presentation of one or more proposed solutions for the client's approval.

*Prereq: Level at least 4A Knowledge Integration.**Antireq: INTEG 475 LEC 001 Winter 2012, 2013, 2014, Fall 2012, 2013; INTEG 475 LEC 002 Fall 2011*

INTEG 452B LEC,PRJ,SEM,STU 0.50

Course ID: 014694

Real world Problem Solving B

The culmination of the two-term senior project sequence. Students will continue to develop solutions to meet the client's needs as identified in the first term. The focus of the second term is to continue to prototype, refine, and ultimately implement the solution for the client. In addition to the completed solution, students will present a final complete project brief including an evaluation of the solution together with recommendations for further development.

Prereq: INTEG 452A.

Antireq: INTEG 475 LEC 001 Winter 2012, 2013, 2014, Fall 2012, 2013; INTEG 475 LEC 002 Fall 2011

INTEG 475 LAB,LEC,PRJ,SEM 0.50

Course ID: 013714

Special Topics in Knowledge Integration

From time to time, courses of special study may be added to the program at the fourth-year level. Students wishing to take such courses should consult the Department's Undergraduate Officer.

Prereq: Level at least 3A

INTEG 475A LAB,LEC,PRJ,SEM 0.50

Course ID: 015439

Special Topics in Knowledge Integration

From time to time, a special study course may be added to the program at the fourth-year level. Students wishing to take this course will need to enroll in INTEG 475B in the following term. Consultation with the instructor is advised prior to enrollment.

Prereq: Level at least 4A Knowledge Integration students

INTEG 475B LAB,LEC,PRJ,SEM 0.50

Course ID: 015440

Special Topics in Knowledge Integration

A continuation of INTEG 475A.

Prereq: INTEG 475A

INTERNATIONAL STUDIES**INTST 100s****INTST 101 DIS,LEC 0.50**

Course ID: 012277

Introduction to International Studies

Conflict and cooperation have been the central problems of international politics throughout history, and remain so today. This course introduces aspects of these problems and attempted solutions. Specific topics and approaches vary by instructor.

ITALIAN**Notes**

The following courses are administered by St. Jerome's University.

ITAL 100s

ITAL 101 LAB,LEC 0.50

Course ID: 006518

Introduction to Italian Language 1

An intensive study of the fundamentals of grammar and conversation. The language laboratory will be used.

Antireq: ITAL 155

ITAL 102 LAB,LEC 0.50

Course ID: 006519

Introduction to Italian Language 2

A continuation of ITAL 101, with more emphasis on conversation and everyday uses of language.

Prereq: ITAL 101.

Antireq: ITAL 155

ITAL 155 LEC 0.50

Course ID: 013611

Intensive Introductory Italian Language

This course has been designed with the student of the University of Waterloo School of Architecture in mind. It aims to present the basic principles of the Italian language, geography, and culture in a practical and efficient way in order to facilitate the transition to life in Italy during the student's period of study abroad. Throughout the course, the goal of practical, communicative competence will be emphasized and cultivated via in-class activities and assignments focusing on five areas of performance: listening, speaking, reading, writing, and culture.

Antireq: ITAL 101, 102

ITAL 200s

ITAL 201 LEC,TUT 0.50

Course ID: 006522

Intermediate Italian 1

Advanced study of grammar. Conversation sessions based on intermediate-level readings reflecting contemporary Italian life. Intensive practice in the spoken and written language.

Prereq: ITAL 102 or 155

ITAL 202 LEC,TUT 0.50

Course ID: 006523

Intermediate Italian 2

A continuation of ITAL 201.

Prereq: ITAL 201

ITAL 251 LEC 0.50

Course ID: 006524

Issues in Contemporary Italian Society

Through lectures, class discussions, and compositions in Italian, this course studies diverse aspects of contemporary Italian society including politics, history, the arts, and popular culture.

Prereq: ITAL 201, 202

ITAL 255 LEC 0.50

Course ID: 006525

Italian for Business and Technology

This course strengthens writing skills in Italian with emphasis on technological vocabulary, composition, business terminology, and correspondence.

Prereq: ITAL 251

ITAL 300s**ITAL 311 LEC 0.50**

Course ID: 006528

Medieval Italian Literature

An introduction to the Italian literature of the Middle Ages, with special reference to selections from the major works by Dante, Petrarch, and Boccaccio.

[Note: Taught in English. Students registered in ITAL 311 will have additional Italian language requirements.]

Prereq: ITAL 201, 202

(Cross-listed with ITALST 311)

Offered at St. Jerome's University

ITAL 312 LEC 0.50

Course ID: 006529

Renaissance Italian Literature

An introduction to the Italian literary production of the fifteenth and sixteenth centuries, focusing on selections from the major works of the period, including some by Machiavelli, Ariosto, and Tasso.

[Note: Taught in English. Students registered in ITAL 312 will have additional Italian language requirements.]

Prereq: ITAL 201, 202

(Cross-listed with ITALST 312)

Offered at St. Jerome's University

ITAL 370 LEC 0.50

Course ID: 013233

Women Writers of the Italian Renaissance

This course explores selected works by women writers of the Italian 16th century by focusing on their modes of adherence or challenges to the patriarchal literary and cultural canon of the day. It will examine early modern gender issues and innovative forms of self-expression as reflected in the writings of such women as Veronica Franco, Gaspara Stampa, Vittoria Colonna, Tullia D'Aragona, and Isabella di Morra. The course attempts to explore these writers' stances as both consumers and producers of culture, as well as their contribution to the debate on women fashionable at the time.

Prereq: ITAL 201, 202; Level at least 3A

(Cross-listed with ITALST 370, WS 370)

Offered at St. Jerome's University

ITAL 391 LEC 0.50

Course ID: 006530

The Italian Novel and Cinema

A survey of some of the principal novels of the twentieth century in Italy in association with their cinematic versions by eminent Italian film directors.

[Note: Taught in English. Students registered in ITAL 391 will have additional Italian language requirements.]

Prereq: ITAL 201, 202
(Cross-listed with ITALST 391)
Offered at St. Jerome's University

ITAL 392 LEC 0.50

Course ID: 006531

Modern Italian Poetry and Theatre

This course studies the works of major Italian poets and playwrights, modern and contemporary, paying special attention to works by women authors.

[Note: Taught in English. Students registered in ITAL 392 will have additional Italian language requirements.]

Prereq: ITAL 201, 202
(Cross-listed with ITALST 392)
Offered at St. Jerome's University

ITAL 394 FLD 0.50

Course ID: 012273

Italian Studies in Italy

Italian literature, art, culture and history studied abroad in Italy.

[Note: Normally offered in the spring term. Information about current offerings can be obtained from the Department.]

Instructor Consent Required
(Cross-listed with ITALST 394)
Offered at St. Jerome's University

ITAL 396 RDG 0.50

Course ID: 006532

Special Topics/Directed Readings

This course gives the student an opportunity to study authors and works of special interest which are not covered in other courses.

[Note: Taught in English. Students registered in ITAL 396 will have additional Italian language requirements. This is a repeatable course, subject to different content; it may be completed a total of two times.]

Instructor Consent Required
(Cross-listed with ITALST 396)
Offered at St. Jerome's University

ITAL 397 RDG 0.50

Course ID: 006533

Special Topics/Directed Readings

Winter term of ITAL 396/ITALST 396.

[Note: Taught in English. Students registered in ITAL 397 will have additional Italian language requirements. This is a repeatable course, subject to different content; it may be completed a total of two times.]

Instructor Consent Required
(Cross-listed with ITALST 397)
Offered at St. Jerome's University

ITALIAN STUDIES

Notes

The following courses are administered by St. Jerome's University.

ITALST 100s

ITALST 111 LEC 0.50

Course ID: 012274

Women, Family, Sex and Tradition

The course studies the themes of family, sex, and tradition as well as violence and identity as they are addressed in the art, the cinema, and the literature of Italian women.

[Note: Taught in English.]

Offered at St. Jerome's University

ITALST 200s

ITALST 260 LEC 0.50

Course ID: 011970

Great Works in Italian Literature

This course is a chronological survey of Italian literature from the thirteenth century to the twentieth century. It will introduce the student to the most representative works in Italian literature. Special emphasis will be given to literary and cultural backgrounds of the authors and their works.

[Note: Taught in English.]

Prereq: Level at least 2A

Offered at St. Jerome's University

ITALST 265 LEC 0.50

Course ID: 015541

Mafia Culture and the Power of Symbols, Rituals, and Myth

The course analyzes the visual media representation of the Mafia in North America. It focuses on the manner in which North American visual culture often glorifies the Italian Mafiosi's lifestyle. As this characterization of both the Mafia and the Mafiosi began with the archetypal figures of the bosses, special attention will be given to the visual practices of the 1930s, to Francis Ford Coppola's "The Godfather" trilogy, as well as to the television series "The Sopranos." The goal is to deconstruct the romanticized portrayal of the Italian and Italian-American gangster lifestyle created on visual media and television by analyzing the atrocities committed by organized crime.

[Note: Taught in English.]

Antireq: ITALST 396 taken Winter 2017 (Topic: Mafia Culture and Myth)

Offered at St. Jerome's University

ITALST 270 LEC 0.50

Course ID: 011972

Modern Italy

An examination of the evolution of modern Italy from 1789 to the present. The events which transformed Italy from a "geographic expression" into a modern unified state, including economic, social, political, and cultural developments, will be studied.

[Note: Taught in English.]

Prereq: Level at least 2A

Offered at St. Jerome's University

ITALST 271 LEC 0.50

Course ID: 011973

Italian Canadian Experience

An examination of Canada's fourth largest ethno-cultural group, from the early colonial period to the present. Emphasis will be placed on the changing nature of immigration and the evolution of the Italian community since the late nineteenth century.

[Note: Taught in English.]

Prereq: Level at least 2A

Offered at St. Jerome's University

ITALST 291 LEC 0.50

Course ID: 006526

Italian Culture and Civilization 1

A survey of developments in Italian culture -- history, literature, and the arts -- up to and including the Renaissance.

[Note: Formerly ITAL 291. Taught in English.]

Prereq: Level at least 2A

Offered at St. Jerome's University

ITALST 292 LEC 0.50

Course ID: 006527

Italian Culture and Civilization 2

A survey of developments in Italian culture -- history, literature, painting, and music -- in the post-Renaissance period, with emphasis on modern Italy.

[Note: Formerly ITAL 292. Taught in English.]

Prereq: Level at least 2A

Offered at St. Jerome's University

ITALST 300s

ITALST 311 LEC 0.50

Course ID: 006528

Medieval Italian Literature

An introduction to the Italian literature of the Middle Ages, with special reference to selections from the major works by Dante, Petrarch, and Boccaccio.

[Note: Taught in English. Students registered in ITAL 311 will have additional Italian language requirements.]

Prereq: Level at least 2B

(Cross-listed with ITAL 311)

Offered at St. Jerome's University

ITALST 312 LEC 0.50

Course ID: 006529

Renaissance Italian Literature

An introduction to the Italian literary production of the fifteenth and sixteenth centuries, focusing on selections from the major works of the period, including some by Machiavelli, Ariosto, and Tasso.

[Note: Taught in English. Students registered in ITAL 312 will have additional Italian language requirements.]

Prereq: Level at least 2B

(Cross-listed with ITAL 312)

Offered at St. Jerome's University

ITALST 360 LEC 0.50

Course ID: 011898

Dante's Divine Comedy

This course examines the various strands of what is one of the greatest works in Western literature, Dante's Divine Comedy. The course will engage students in a critical reading of the text's various layers of meaning, which emphasize perennial issues of our human condition.

[Note: Taught in English.]

Prereq: Level at least 2B

Offered at St. Jerome's University

ITALST 370 LEC 0.50

Course ID: 013233

Women Writers of the Italian Renaissance

This course explores selected works by women writers of the Italian 16th century by focusing on their modes of adherence or challenges to the patriarchal literary and cultural canon of the day. It will examine early modern gender issues and innovative forms of self-expression as reflected in the writings of such women as Veronica Franco, Gaspara Stampa, Vittoria Colonna, Tullia D'Aragona, and Isabella di Morra. The course attempts to explore these writers' stances as both consumers and producers of culture, as well as their contribution to the debate on women fashionable at the time.

Prereq: Level at least 3A

(Cross-listed with ITAL 370, WS 370)

Offered at St. Jerome's University

ITALST 391 LEC 0.50

Course ID: 006530

The Italian Novel and Cinema

A survey of some of the principal novels of the twentieth century in Italy in association with their cinematic versions by eminent Italian film directors.

[Note: Taught in English. Students registered in ITAL 391 will have additional Italian language requirements.]

Prereq: Level at least 2A

(Cross-listed with ITAL 391)

Offered at St. Jerome's University

ITALST 392 LEC 0.50

Course ID: 006531

Modern Italian Poetry and Theatre

This course studies the works of major Italian poets and playwrights, modern and contemporary, paying special attention to works by women authors.

[Note: Taught in English. Students registered in ITAL 392 will have additional Italian language requirements.]

Prereq: Level at least 2A

(Cross-listed with ITAL 392)

Offered at St. Jerome's University

ITALST 394 FLD 0.50

Course ID: 012273

Italian Studies in Italy

Italian literature, art, culture and history studied abroad in Italy.

[Note: Normally offered in the spring term. Information about current offerings can be obtained from the Department.]

Instructor Consent Required

(Cross-listed with ITAL 394)

Offered at St. Jerome's University

ITALST 396 RDG 0.50

Course ID: 006532

Special Topics/Directed Readings

This course gives the student an opportunity to study authors and works of special interest which are not covered in other courses.

[Note: Taught in English. Students registered in ITAL 396 will have additional Italian language requirements. This is a repeatable course, subject to different content; it may be completed a total of two times.]

Instructor Consent Required

Prereq: Level at least 3A

(Cross-listed with ITAL 396)

Offered at St. Jerome's University

ITALST 397 RDG 0.50

Course ID: 006533

Special Topics/Directed Readings

Winter term of ITAL 396/ITALST 396.

[Note: Taught in English. Students registered in ITAL 397 will have additional Italian language requirements. This is a repeatable course, subject to different content; it may be completed a total of two times.]

Instructor Consent Required

Prereq: Level at least 3A

(Cross-listed with ITAL 397)

Offered at St. Jerome's University

J A P A N E S E**Notes**

1. Students who are interested in the Japanese language courses should be aware that the completion of at least three courses in a subject is recommended for a minimum working knowledge of the language. The Japanese and East Asian culture courses may provide useful background for students intending to spend time in the Far East.
2. Students who have previous experience with or who have studied the Japanese language at the elementary or secondary school level should not enrol in first-year level courses of the same language. Such students should consult the Renison Registrar's Office regarding the appropriate level to enter.
3. Students are not permitted to enrol in more than one Japanese language course in a term.
4. Renison University College reserves the right to refuse admission to, and/or credit for, any of its language courses to a student who has, in Renison's view, a level of competence unsuited to the course(s).

JAPAN 100s**JAPAN 101R LAB,LEC,TST,TUT 0.50**

Course ID: 006535

First-Year Japanese 1

An introductory course for students who have little or no knowledge of Japanese to develop basic listening, speaking, reading, and writing skills. Practical oral and written exercises incorporating the Hiragana Writing System provide a firm grammatical foundation for further study.

[Note: JAPAN 101R is not open to students with native, near-native, or similar advanced ability.]

Antireq: JAPAN 111R

JAPAN 102R LAB,LEC,TUT 0.50

Course ID: 006536

First-Year Japanese 2

Listening, speaking, reading, and writing skills acquired in JAPAN 101R are further developed. Practical oral and written exercises incorporating the Katakana Writing System are used to develop a more solid grammatical base.

Prereq: JAPAN 101R or 111R.

Antireq: JAPAN 112R

JAPAN 111R LAB,LEC,TUT 0.50

Course ID: 006537

Japanese for Business 1

An introductory course to develop basic comprehension, speaking, reading, and writing skills specifically related to the Japanese business culture. This course is designed for students with little or no previous knowledge of Japanese.

[Note: JAPAN 111R is not open to students with native, near-native, or similar advanced ability.]

Antireq: JAPAN 101R

JAPAN 112R LAB,LEC,TUT 0.50

Course ID: 006538

Japanese for Business 2

A continuation of JAPAN 111R designed to further develop listening, speaking, reading, and writing skills. Language skills required for the business environment are stressed.

Prereq: JAPAN 101R or 111R.

Antireq: JAPAN 102R

JAPAN 200s

JAPAN 201R LAB,LEC 0.50

Course ID: 006539

Second-Year Japanese 1

A continuation of the study of grammar and vocabulary through development of listening, reading, writing, and speaking skills. Some study of Japanese culture is also included. By the end of the course, 120 Kanji (Chinese characters in their Japanese readings) will have been introduced.

Prereq: JAPAN 102R or 112R

JAPAN 202R LAB,LEC 0.50

Course ID: 006540

Second-Year Japanese 2

In this course, students continue to develop their language skills with an increased emphasis on spoken Japanese. In addition, students work on improving grammatical accuracy and vocabulary development as well as continue to acquire basic information about Japanese culture. The writing of an additional 200 Kanji is taught.

Prereq: JAPAN 201R

JAPAN 300s

JAPAN 301R LAB,LEC 0.50

Course ID: 006541

Third-Year Japanese 1

This course concentrates on advanced conversation, polite forms, and idioms. It provides an opportunity to revise and practise the Hiragana and Katakana writing forms. Upon completion, students should be able to write 800 characters and use a Japanese dictionary with ease.

Prereq: JAPAN 202R

JAPAN 302R LAB,LEC 0.50

Course ID: 012783

Third-Year Japanese 2

This course builds on the materials learned in JAPAN 301R by employing current newspaper articles for reading practice, thematic discussions, and writing exercises in order to enhance students' skill in the use of the Japanese language.

Prereq: JAPAN 301R

JAPAN 391R LEC,RDG,SEM 0.50

Course ID: 015127

Special Topics

This course deals with advanced topics in Japanese language and literature. Students are expected to have at least an intermediate level of language proficiency.

[Note: This is a repeatable course, subject to different content; it may be completed a total of five times.]

Prereq: JAPAN 202R

JEWISH STUDIES

Notes

Students should consult with the Jewish Studies Office for the latest information on course offerings. Some courses are offered in rotation.

JS 100s

JS 105A LEC 0.50

Course ID: 008290

Classical Hebrew 1

Biblical Hebrew for beginners. A study of the alphabet, and some of the basic vocabulary and grammar of the language.

[Note: This course fulfils an Area 1B or Area 2A requirement for Religious Studies majors but not both. Taught at Laurier as NE 111.]

(Cross-listed with RS 131)

JS 105B LEC 0.50

Course ID: 008291

Classical Hebrew 2

A continuation of RS 131/JS 105A. Most of the rules of grammar will be covered in this course and students will begin to read texts in the original language.

[Note: This course fulfils an Area 1B or Area 2A requirement for Religious Studies majors but not both. Taught at Laurier as NE 112.]

Prereq: JS 105A/RS 131

(Cross-listed with RS 132)

JS 114 LEC 0.50

Course ID: 014871

Jews and Jewishness

This course examines the central elements that make up contemporary Jewish identity/identities, traditional and otherwise, with particular focus on the North American Jewish experience and the nature of Jewish modernity. It explores historical, literary, religious, and social issues that have contributed to the formation of these identities.

(Cross-listed with RS 114)

Only offered Online

JS 120 LEC 0.50

Course ID: 010108

Relationships in the Bible (Old Testament)

Students will be introduced to the Hebrew Bible by way of selected readings which deal with a particular aspect of the human predicament. The focus will be on exploring relationships via narrative passages in the Old Testament and particularly in the Book of Genesis. The following relationships will be discussed: (a) Spousal (b) Human/God (c) Parent/child (d) Siblings (e) Gender issues in narratives of rape, incest, seduction and dominance.

[Note: Knowledge of Hebrew is not required. This course fulfils an Area 1B or Area 2A requirement for Religious Studies majors but not both.]

(Cross-listed with RS 111)

JS 125 LEC 0.50

Course ID: 010110

Great Texts in the Jewish Tradition

This course will trace the development of biblical exegesis in the Jewish tradition. Interpretive methods and approaches to problems in the text such as redundancy, contradiction, and gaps will be surveyed, commencing with the Bible itself, through the classical period of the Talmud and concentrating on major medieval commentators. (The biblical episode of the 'Binding of Isaac' will be used as a paradigm to illustrate various approaches to the text.)

[Note: Knowledge of Hebrew is not required. This course fulfils an Area 1B requirement for Religious Studies majors.]

(Cross-listed with RS 212)

JS 130 LEC 0.50

Course ID: 010109

Power and Corruption in the Bible (Old Testament)

This course will deal with the period of the Prophets, e.g., Joshua, Kings, and Samuel. It will examine the uses and abuses of power analyzing the historical narratives and study the conflict between Saul and David, the political as well as the moral rise and fall of David.

[Note: Knowledge of Hebrew is not required. This course fulfils an Area 1B or Area 2A requirement for Religious Studies majors but not both.]

(Cross-listed with RS 112)

JS 131 LEC 0.50

Course ID: 012721

Big Ideas of the Bible

The Bible is the most translated and most read document in human history. This course explores central biblical ideas, from creation to the end of time, violence to redemption, and political intrigue to family ties, and examines their impact on Judaism, Christianity, and Western Culture.

[Note: This course fulfils an Area 2A requirement for Religious Studies majors.]

(Cross-listed with RS 130)

JS 200s

JS 203 LEC 0.50

Course ID: 011635

Jewish Responses to the Holocaust

The catastrophe and devastation of the Holocaust and the radical nature of its evil demanded responses within contemporary Jewish thought, identity, and experience. This course will explore philosophical, theological (Jewish law, rabbinic), literary (novels, poetry, memoirs, plays), and artistic (museums, memorials) attempts to deal with the issues the Holocaust raises.

[Note: This course fulfils an Area 1B requirement for Religious Studies majors.]

(Cross-listed with RS 211)

JS 205 LEC 0.50

Course ID: 008297

The Hebrew Prophets

A study of the biblical prophets with special attention to their religious experience, social critique, visions of the future, and the writings that bear their names.

[Note: This course fulfils an Area 1B or Area 2A requirement for Religious Studies majors, but not both.]

(Cross-listed with RS 232)

JS 210 LEC 0.50

Course ID: 010111

Jewish Philosophy

The course will explore the thought of various Jewish scholars throughout history on issues that were vital to their faith. The texts studied will be representative of the philosophical and rabbinic traditions on such matters as the nature of God, the problem of evil, creation, miracles, prophecy, and providence.

[Note: Knowledge of Hebrew is not required. This course fulfils an Area 1B requirement for Religious Studies majors.]

(Cross-listed with RS 214)

JS 211 LEC 0.50

Course ID: 012171

Kabbalah: Jewish Mysticism

This course will survey the roots, history, and symbolism of the Jewish mystical tradition known as Kabbalah. Students will be introduced to the major texts, charismatic mystical masters, and schools of Kabbalah, beginning with the ancient Rabbis through to contemporary exponents such as Hasidim and messianic groups. Particular attention will be focused on the Zohar (Book of Splendour) and popular appeals to the mystical tradition.

[Note: Knowledge of Hebrew is not required. This course fulfils an Area 1B requirement for Religious Studies majors.]

(Cross-listed with RS 213)

JS 215 LEC 0.50

Course ID: 014248

Visions of Israel in Judaism: From Biblical to Modern Times

This course surveys the significance of the land of Israel in Judaism from historical, textual, and religious perspectives. Topics covered include the politics of Ancient Israel, the concept of Israel in prayer and the rabbinic and medieval Jewish imagination, portrayals of Israel in Christian and Muslim texts, and the origins, visions, and challenges of Zionism and the modern State of Israel.

[Note: This course fulfils an Area 1B requirement for Religious Studies majors]

(Cross-listed with RS 230)

Only offered Online

JS 217 LEC 0.50

Course ID: 008308

Judaism

An introduction to the religious tradition of the Jews, in terms of beliefs, practices, ideals, and institutions from the beginning to the present time.

[Note: This course fulfils an Area 1B requirement for Religious Studies majors.]

(Cross-listed with RS 210)

JS 233 LEC 0.50

Course ID: 011636

The Holocaust and Film

An examination of the Holocaust as portrayed in feature films and documentaries. Do cinematic attempts capture the horror of the Holocaust faithfully, or trivialize it? The background to anti-semitism, use of religious imagery in propaganda films, and what counts as "success" or "failure" in cinematic representations are discussed.

[Note: This course fulfils an Area 3B requirement for Religious Studies majors.]

(Cross-listed with RS 272)

JS 236 LEC 0.50

Course ID: 008301

Paul: Life and Letters

The career and thought of the apostle Paul, at once a Jew, a Graeco-Roman, and a Christ believer, living within the Roman Empire. Attention is given to issues such as spirit, Jewish Law, grace, freedom and slavery, Christ, church, politics, gender and sexuality.

[Note: This course fulfils an Area 2A requirement for Religious Studies majors.]

(Cross-listed with RS 236)

Also offered Online

JS 237 LEC 0.50

Course ID: 012724

Insiders and Outsiders in the Bible

This course explores the tension between insiders and outsiders in the Bible, examining the rationale for and implications of issues such as purity, holy war, the chosen people, and the Gentiles.

[Note: This course fulfils an Area 2A requirement for Religious Studies majors.]

(Cross-listed with RS 237)

JS 250 LEC 0.50

Course ID: 011983

Special Topics

One or more special courses will be offered at different times. Consult the Department for current offerings.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

(Cross-listed with RS 215)

JS 300s

JS 301 DIS,LEC 0.50

Course ID: 011155

Canada and the Holocaust

An analysis of the response to the Holocaust, from 1933 to 1945, and the legacy of the event since the war in Canadian society.

JS 338 LEC 0.50

Course ID: 012720

Seeking Wisdom in the Bible

This course explores the theme of wisdom in the Bible and related literature in the period from ancient Israel to the first century CE. It examines the varied cultural influences on biblical wisdom traditions.

[Note: This course fulfils an Area 2A requirement for Religious Studies majors.]

Prereq: One of RS 130/JS 131, RS 235, RS/JS 236

(Cross-listed with RS 338)

JS 350 SEM 0.50

Course ID: 011187

Special Topics in Jewish Studies

One or more special courses will be offered at different times. Consult the Department for current offerings.

JS 400s

JS 450 SEM 0.50

Course ID: 011188

Special Topics in Jewish Studies

One or more special courses will be offered at different times. Consult the Department for current offerings.

KINESIOLOGY

Notes

Course offerings are subject to minimum enrolment requirements and availability of instructors.

KIN 00s

KIN 1 SEM 0.00

Course ID: 009275

Discussion of Behavioural Issues

This is a discussion course

Prereq: NBAOPT students

KIN 10 LEC 0.00

Course ID: 006542

Ergonomics Option Seminar

A seminar for students to present and discuss ergonomic issues regarding their previous semester's work term and to participate in debate of ergonomic issues

Prereq: Ergonomics Option Plan students only

KIN 100s

KIN 100 LEC 0.50

Course ID: 006543

Human Anatomy: Limbs and Trunk

Functionally-oriented regional anatomy of the limbs and trunk. A brief introduction to neuroanatomy is included.

KIN 100L LAB 0.25

Course ID: 006544

Human Anatomy Lab

Regional gross anatomy of the limbs and back (and the central nervous and cardiovascular systems, briefly) is examined using pre-dissected human cadavers. For the limbs and back, emphasis is placed on structures (muscles, nerves, and bones) involved in movement at the joints.

Prereq: Kinesiology students only

KIN 104 LEC 0.50

Course ID: 013465

Fundamentals of Kinesiology

An introduction to the issues and approaches used in kinesiology. Presentation of case studies will illustrate the foundational knowledge and procedures used by kinesiologists. Emphasis will be placed on practical skills, critical analysis, problem solving, and the integration of knowledge across the breadth of kinesiology.

Prereq: Kinesiology students

KIN 104L LAB 0.25

Course ID: 006545

Fundamentals of Kinesiology Lab

This lab provides exposure to practical measurement skills in the tests measuring cardiovascular function, neuromuscular function and body composition. Note: Labs offered alternate weeks.

Prereq: Kinesiology students only

KIN 121 LEC 0.50

Course ID: 006550

Biomechanics of Human Activity

Understanding human activity from a mechanical perspective prepares the student to address major issues which include reducing the risk of injury, optimizing exercise prescription, and understanding clinical evaluations. Specifically, concepts related to functional anatomy, muscle and passive tissue mechanics, anthropometry, electromyography, and linked segment mechanics are introduced and applied to clinical, occupational and athletic situations.

[Note: Labs offered alternate weeks.]

Prereq: KIN 100, PHYS 111

KIN 121L LAB 0.25

Course ID: 015476

Biomechanics of Human Activity Lab

This laboratory course provides student with some of the practical tools used to assess human activity from a biomechanical perspective. The labs have been designed to assist with your knowledge and understanding of material discussed in the KIN 121 lectures. Note: Labs are offered alternate weeks.

Prereq: Kinesiology students

KIN 140L LAB 0.25

Course ID: 011558

Sport Injury Management Lab

This lab provides exposure and training in the management of injuries in an athletic population. Techniques include musculoskeletal assessment, emergency treatment, taping and splinting supports, heating, icing, stretching, and fitting protective equipment. Current first aid and CPR certification required.

Prereq: Year 1 or 2 Kinesiology students

KIN 146 LEC 0.50

Course ID: 015477

Introduction to Human Nutrition

An introductory course on human nutrition. Students will be introduced to core topics in nutrition including function of nutrients, nutrient requirements, diet assessment and planning, food composition and the complex interrelationships between food, nutrition, and health. Factors that affect the human diet such as biology, psychology, sociology, environment and political policy will also be examined, as well as key areas of nutrition focus for life stage groups.

KIN 200s**KIN 202 LEC 0.50**

Course ID: 015478

Physiological and Metabolic Responses and Adaptations to Exercise

This course is designed to provide students with a molecular, cellular and systems level understanding of the physiological and metabolic responses to different types and intensities of exercise. Physiological and metabolic adaptations to different types of chronic exercise, such as endurance, high-intensity interval and resistance training, will also be examined.

Prereq: BIOL 273

KIN 202L LAB 0.25

Course ID: 015479

Physiological and Metabolic Responses and Adaptations to Exercise Lab

This laboratory course provides students with some of the practical tools used to assess the integrated physiological and metabolic response of the body to exercise. The labs have been designed to assist with your knowledge and understanding of material discussed in the KIN 202 lectures. Note: Labs are offered alternate weeks.

Prereq: Kinesiology students

KIN 204 LEC 1.00

Course ID: 015107

Movement Assessment and Exercise Prescription

This course is designed to provide students with an understanding of movement competency and performance enhancement of apparently healthy individuals. The breadth of tests and assessment tools to determine capabilities with respect to mobility, movement patterns, physical activity, fitness and lifestyle will be covered in detail and practiced and applied in a weekly laboratory.

Prereq: Level at least 2B Kinesiology or Rehabilitation Sciences Minor students

KIN 204L LAB 0.50

Course ID: 015480

Movement and Exercise Prescription Lab

This laboratory course provides student with some of the practical tools used in movement and exercise prescription assessment. The labs have been designed to assist with your knowledge and understanding of material discussed in the KIN 204 lectures.

Prereq: Kinesiology students

KIN 217 LEC 0.50

Course ID: 006555

Human Biochemistry

An elementary course in human biochemistry including the metabolism and function of proteins, carbohydrates, lipids, enzymatic function, energy metabolism, and introductory genetics. Emphasis is placed on clinical and medical applications.

Prereq: CHEM 120 or 121; Kinesiology, Health Studies or Honours Science students only

KIN 221 LEC 0.50

Course ID: 009502

Advanced Biomechanics of Human Movement

The course is structured to introduce measurement, analytical and computation techniques involving multisegmental, dynamic analysis of human activity. Examples of human activity in occupational, clinical and leisure settings from the perspectives of anthropometry, kinematics, kinetics, energetics, muscle mechanics and electromyography are given. The utility of biomechanical variables in the solution of questions involving human activity is emphasized using lectures and laboratories. Note: Labs offered alternate weeks.

Prereq: KIN 121, MATH 124 or 127

KIN 221L LAB 0.25

Course ID: 015481

Advanced Biomechanics of Human Movement Lab

This laboratory course provides students with some of the practical tools used to assess human activity from a biomechanics perspective. The labs have been designed to assist with your knowledge and understanding of material discussed in the KIN 221 lectures. Note: Labs are offered alternate weeks.

Prereq: Kinesiology students

KIN 222 LAB,LEC 0.50

Course ID: 006556

Statistical Techniques Applied to Kinesiology

An introduction to descriptive and inferential statistics and the interpretation of data. A major consideration of the course is the use of statistics in the solution of problems in Kinesiology and Health Studies.

Prereq: Kinesiology or Health Studies students only

KIN 232 LEC,TUT 0.50

Course ID: 015108

Research Design and Statistics in Kinesiology

An introduction to research design and statistics and its application to Kinesiology and clinical health practice. A major focus is identifying appropriate research methods (including study design, sampling, measurement, and statistical analysis) for a given research question.

Prereq: Kinesiology students only

KIN 242 LAB,LEC 0.50

Course ID: 006557

Introduction to Movement Disorders

An introduction to selected movement disorders and their implications for physical activity. The movement disorders examined include those which accompany neuromuscular and perceptual-motor impairment, mental retardation, cardio-vascular and respiratory disease.

Prereq: Level at least 2A

KIN 250 LEC 0.50

Course ID: 006558

Sociology of Physical Activity

An introduction to the sociology of physical activity. The course examines physical activity with respect to settings such as the workplace, educational and health systems, exercise, and sport. Particular attention is directed to a consideration of the social significance of physical activity and the social influences and constraints upon access and participation.

Prereq: SOC 101/101R or 120R

KIN 255 LEC 0.50

Course ID: 006560

Fundamentals of Neuroscience

An introduction to the principles of the nervous system control of movement, cognition and learning. The course will introduce the basic structure and function of the nervous system as it relates to understanding the control of movement and behaviour. The course will provide a foundation for understanding the neural mechanisms of learning, recovery from injury to the nervous system and the factors that determine skilled performance.

Prereq: BIOL 273, PSYCH 101

KIN 255L LAB 0.25

Course ID: 015482

Fundamentals of Neuroscience Lab

This laboratory course provides students with some of the practical tools to assess the nervous system control of movement, cognition and learning. The labs have been designed to assist with your knowledge and understanding of material discussed in the KIN 255 lectures. Note: Labs are offered alternate weeks.

Prereq: Kinesiology students

KIN 300s**KIN 301 LAB,LEC 0.50**

Course ID: 006552

Human Anatomy of the Central Nervous System

Functionally-oriented anatomy of the brain, spinal cord, cranial nerves and the tissues they innervate using predissected cadavers. This course complements other behavioural neuroscience courses including KIN 242, 357, 415, 416, 456 and PSYCH 261, 307, 396.

Prereq: KIN 100

KIN 307 LAB,LEC 0.50

Course ID: 010094

Methods in Physiological Research

An introduction to biochemical and physiological methods used by physiologists in clinical and physiological assessment including, but not restricted to: spectrophotometric and fluorometric techniques, tissue and blood sampling, cell culture techniques, DNA separation and staining. Western blotting, chromatography, cardiovascular imaging and body composition imaging and analysis. Course consists of lecture and laboratory to deliver both the theoretical and practical aspects of these analytical techniques.

Prereq: KIN 202, 217; Honours Kinesiology students.

KIN 310 LEC,TUT 0.50

Course ID: 006426

Development, Aging and Health

The physiology of human growth, development and aging is examined, with special reference to the influence of diet, environment, exercise and disease on the normal processes.

[Note: Formerly HLTH 210/KIN 210/GERON 210]

Prereq: BIOL 130.

Coreq: BIOL 273

Antireq: HLTH 210, KIN 210, GERON 210 (Cross-listed with GERON 310, KIN 310)

(Cross-listed with GERON 310, HLTH 310)

Task Analysis

Task analysis is used to describe and analyze the activities of people in settings such as work, leisure and activities of daily living. There is a range of techniques developed in engineering, ergonomics and psychology to suit the investigator's purpose and setting. This course allows students to become familiar with a wide range of techniques and use them in a variety of settings. Approximately one technique will be addressed each week in a combined lecture/tutorial setting. Presentations by students are an integral part of the courses.

Prereq: Kinesiology students or Ergonomics and Injury Prevention students

KIN 330 LEC 0.50

Course ID: 006566

Research Design

An introduction to the basic principles of scientific inquiry in Kinesiology. A systematic treatment of the logic and practice of methods and techniques employed in research related to physical activity with an examination of design, sampling, data gathering and analysis.

Prereq: KIN 222; Not open to students in the Faculty of Mathematics.

KIN 340 LEC 0.50

Course ID: 006568

Musculoskeletal Injuries in Work and Sport

A course in the area of sports medicine in which injuries encountered in sport and in the workplace are examined. Materials covered include the mechanisms of injury, tissue biomechanics, pathology, assessment, treatment and prevention of acute and chronic trauma.

Prereq: KIN 100 or BIOL 301; Level at least 3A Applied Health Sciences students or Level at least 3A Rehabilitation Sciences Minor

KIN 341 LAB,LEC 0.50

Course ID: 006569

Selected Topics in Sport and Work Injuries

This course covers the mechanisms, pathology, management and prevention of catastrophic injuries encountered in sport and work. Topics include trauma to the head, face, vertebral column, and knee, thermal injury, legal liability and others as requested by the students.

KIN 342 LEC 0.50

Course ID: 014695

Nutrition and Aging

This course provides an overview of the nutrition and food-related issues, recommendations and best practices for older adults throughout the continuum of care (community to long term care). Determinants of food intake are a focus with specific consideration given to eating environment, psychosocial and physiological changes that influence access, preparation, and consumption of food. An emphasis will be placed on chronic disease prevention and management of nutrition issues and challenges throughout the continuum of care.

Prereq: KIN 146

KIN 343 LEC 0.50

Course ID: 014696

Micronutrient Metabolism

This course examines the metabolism of vitamins and minerals in the context of normal human development and aging with an emphasis on disease prevention and understanding the pathogenesis of deficiencies and toxicities. The function and role of vitamins and minerals will be discussed in specific groupings.

Prereq: KIN 217 or CHEM 233 or 237; BIOL 273

KIN 346 LEC 0.50

Course ID: 006434

Human Nutrition and Metabolism

An overview of nutrient metabolism will be presented with emphasis on diet for the prevention of disease, and maintaining health. An examination of the impact of nutrition on exercise and body composition will also be included.

Prereq: KIN 217 or CHEM 233 or 237; BIOL 273; Level at least 3A

KIN 352 LEC 0.50

Course ID: 006438

Sociology of Aging

An introduction to individual and population aging. Topics discussed include: aging from a historical and comparative perspective; aging in subcultures; aging and the social structure; aging and social processes; aging and the environment; work and retirement; and aging and leisure patterns.

Prereq: SOC 101/101R or AHS 107

(Cross-listed with GERON 352, HLTH 352, REC 362, SOC 352)

KIN 354 LEC 0.50

Course ID: 006574

Psychology of Physical Activity

A comprehensive survey of psychological factors implicated in physical activity performance. Topics include social cognitive theories of physical activity behaviour, perception and sport performance, exercise training and brain function, exercise as a treatment modality for psychiatric conditions, and urban design as a means of physical activity promotion.

Prereq: PSYCH 101/101R or 121R

KIN 356 LEC 0.50

Course ID: 006575

Information Processing in Human Perceptual Motor Performance

An information processing model of perceptual-motor behaviour is presented. Human performance theory is used to study processes mediating input and output information. Specifically, the subprocesses of storage of information in memory, perception, retrieval of information from memory and execution of movement are examined.

Prereq: KIN 155 or KIN 255

KIN 357 LEC 0.50

Course ID: 006576

Motor Learning

A course focused on the bases and applications of theories of motor learning. Included are selected psychological and neurophysiological processes as they relate to these theories.

Prereq: KIN 155 or KIN 255

KIN 372 LEC 2.50

Course ID: 012118

International Exchange

Study abroad on an Exchange Agreement approved by the Faculty of Applied Health Sciences.

Department Consent Required

KIN 391 PRJ 0.50

Course ID: 009507

Research Apprenticeship

This course provides an opportunity to learn how research is done by working in the research program of a faculty member. The apprenticeship involves unpaid participation for no more than 6-8 hours per week for at least 12 weeks of the term. Detailed requirements and application forms for this course are available at the Kinesiology Undergraduate Office. A student

may enrol only once in KIN 391. This course is graded as credit/no credit.

Department Consent Required

Prereq: Level at least 3A Kinesiology students only

KIN 400s

KIN 402 LEC 0.50

Course ID: 006578

Microgravity, Hypo- and Hyperbaric Physiology

An examination of human cardiorespiratory and metabolic responses at rest and during work in altered gravitational and barometric environments.

Prereq: BIOL 273

KIN 403 LEC 0.50

Course ID: 011125

Occupational and Environmental Physiology

An analysis of the physiological demands of work place and recreational tasks under various environmental conditions. The course will examine how an individual's physiological potential might be influenced by the environment and specific task demands with implications for fatigue and/or injury.

Prereq: KIN 202

KIN 404 LEC 0.50

Course ID: 012966

Physiological Basis of Obesity and Type 2 Diabetes

This course will examine the environmental and physiological aspects of obesity and Type 2 Diabetes with emphasis on the molecular pathways involved in energy balance regulation. Topics to be covered include epidemiology of obesity and Type 2 Diabetes, regulation of energy intake (appetite), energy storage and energy expenditure, and the role of physical inactivity and activity in the causes and prevention of obesity and Type 2 Diabetes.

Prereq: BIOL 273; Level at least 3A

KIN 405 LAB,LEC 0.50

Course ID: 006579

Exercise Management

An examination of the rationale and procedures used in the development of exercise programs for normally healthy individuals.

Prereq: Level at least 3A Kinesiology or Rehabilitation Sciences Minor students

KIN 406 LEC 0.50

Course ID: 012967

Physiology of Muscle Aging and Disease

This course will examine the cellular and molecular adaptations that occur in skeletal muscle during aging and disease. Topics to be covered include skeletal muscle satellite cells/stem cells, apoptosis and necrosis, mitochondrial dysfunction, oxidative stress, and inflammation. The influence of physical activity on these biological processes and in the prevention and treatment of skeletal disorders will also be discussed.

Prereq: BIOL 130; Level at least 3A

KIN 407 LEC 0.50

Course ID: 006441

Coronary Artery Disease - Prevention and Rehabilitation

This course explores the pathophysiology, electrophysiology, risk factors, and assessment and rehabilitation options related to cardiovascular disease. Major emphasis is placed on the utility of exercise in the assessment and rehabilitation of primary and secondary cardiovascular disease.

Prereq: BIOL 273; Level at least 3A

(Cross-listed with HLTH 407)

KIN 408 LEC 0.50

Course ID: 013375

Cardiovascular Physiology and Pathophysiology

This course will provide an advanced understanding of heart and blood vessel physiology in normal health, and in cardiovascular disease conditions including hypertension, heart failure, atherosclerosis, and diabetes. This will include examination of mechanisms underlying lifestyle and medical/ pharmacological management of these conditions from both prevention and treatment perspectives. The influence of physical activity on heart and blood vessel physiology and pathophysiology will be emphasized. Contemporary research elucidating cellular and molecular mechanisms controlling heart and blood vessel function in health and disease will be discussed.

Prereq: BIOL 273; Level at least 3A

KIN 414 LEC 0.50

Course ID: 015483

Cases in Clinical Exercise Physiology

Using cases, assignments, guest lecturers and reading to guide discussion and learning, students will learn how impairments or secondary complications associated with chronic conditions influence decision-making in clinical exercise physiology.

Prereq: KIN 204 or KIN 405

KIN 415 LAB,LEC 0.50

Course ID: 012554

Clinical Neurophysiology: Fundamentals for Rehabilitation of Human Movement

This course explores current clinical neurophysiological concepts important for the control of human movement as well as current techniques used in clinical neurophysiology. Emphasis is placed on the neurophysiology underlying human movement pathologies and the application of this understanding to rehabilitation following injury to the central nervous system.

Prereq: KIN 255 or BIOL 273 or PSYCH 261

KIN 416 LEC 0.50

Course ID: 006581

Neuromuscular Integration

An examination of the neural processes involved in the maintenance of posture and the control of movement.

Prereq: KIN 255 or KIN 201/301 or PSYCH 261

KIN 418 LEC,TUT 0.50

Course ID: 013376

Age-Related Physical and Mental Changes and Effect of Exercise on Improving Health in the Aged

This course is designed to provide the students with the knowledge that enables them to distinguish between normal and abnormal aging; to understand the implications of exercise in health and disease; to help the students understand the different physical and mental conditions they may experience while working with an older person; and to be prepared to meet the challenges associated with an increasing older population by developing knowledgeable professionals in the field of aging.

Prereq: Level at least 3A

KIN 420 LAB,LEC 0.50

Course ID: 006582

Occupational Biomechanics

A course designed to provide the student with knowledge to reduce the risk of injury and increase worker productivity. Issues include identification of injury risk factors, understanding injury mechanism, quantitative assessment of injury risk and intervention strategies to reduce the risk of injury. Specific examples include the use of computerized models and EMG methods to analyze low back loading, optimizing tool design and workspace layout and the examination of related issues such as office seating and vibration.

Prereq: Level at least 3A Kinesiology or Ergonomics and Injury Prevention Minor students

KIN 422 LAB,LEC 0.50

Course ID: 006583

Human Gait, Posture, and Balance: Pathological and Aging Considerations

This course will provide a detailed understanding of the kinematics, kinetics, and neural control of standing posture, stepping, walking, and running under normal and perturbed conditions. Measurement techniques, processing data, and the interpretation of total body and limb synergies will be emphasized from a biomechanical and neural control perspective. The problems of the elderly and the assessment of those with pathologies will be emphasized.

Prereq: KIN 221

KIN 425 LAB,LEC 0.50

Course ID: 006584

Biomechanical Modelling of Human Movement

The quantitative measurement and analysis of the movement of the human musculo skeletal system. Multisegment dynamic movements will be studied using computer programs, with emphasis on kinematics, kinetics and energetics, as well as the use of EMG in the assessment of the control of the movement. Examples are presented from pathological, normal and athletic movement.

Prereq: KIN 121, 221

KIN 427 LEC 0.50

Course ID: 011844

Low Back Disorders

An advanced elective undergraduate course that introduces the multidisciplinary issues (psychosocial, behavioural, physiological, motor control, biomechanical and legislative) related to low back disorders. A solid scientific foundation is developed from the study of anatomy, normal function and injury mechanics. This foundation is used to substantiate the best strategies for injury prevention and optimal rehabilitation for those with back troubles.

Prereq: Level at least 3A

KIN 428 LEC 0.50

Course ID: 012555

Upper Extremity Musculoskeletal Disorders: Prevention, Assessment, and Rehabilitation

This course introduces the multiple factors that mediate the initiation, diagnosis, treatment and rehabilitation of disorders in the upper extremities. Beginning with a systematic review of hand, wrist, elbow, and shoulder region functional anatomy, a knowledge base is developed to provide a means for the analysis of injury mechanisms. With this base developed, current prevention, clinical diagnosis and rehabilitation techniques for specific disorders will be examined, including carpal tunnel syndrome, rotator cuff tears, and lateral epicondylitis. Pathologies arising from occupational, sport, and daily living activities will be addressed.

Prereq: Level at least 3A Kinesiology or Ergonomics and Injury Prevention Minor students

KIN 429 LEC 0.50

Course ID: 012556

Bone and Joint Health

The overall aim is to provide a comprehensive understanding of human bone and cartilage in health and disease. Specific topics covered include: skeletal physiology, bone and cartilage growth and development, prevalence and etiology of several bone and joint conditions (e.g., osteoporosis, arthritis), clinical evaluation, diagnosis and treatment of bone and joint conditions, and the roles of nutrition and exercise in the prevention and treatment of bone and joint disease. The course will

incorporate current issues, problem-based learning, research skills and student-led seminars in addition to the lecture-based framework.

Prereq: Level at least 3A

KIN 431 PRJ 0.50

Course ID: 006586

Research Proposal

An independent paper in the form of a research proposal on an approved topic. The topic may include survey, field, laboratory, theoretical, or applied research, program evaluation, mathematical modelling, fitness appraisal, etc. The format is to be determined with the supervisor and may be in chapters or in journal style.

Department Consent Required

Prereq: Level at least 4A Honours Kinesiology

KIN 432 PRJ 0.50

Course ID: 006601

Research Project

An independent research project on an approved topic, supervised by a faculty member. This is the completion of the research proposed in KIN 431. The format is to be determined with the supervisor and may be in chapters or in journal style.

Prereq: KIN 431

KIN 433 ESS 0.50

Course ID: 006616

Senior Essay

An extensive critical review of the literature on an approved topic. The topics will be broader in scope than those associated with specific research proposals.

Department Consent Required

Prereq: Level at least 4A Honours Kinesiology

KIN 440 SEM 0.25

Course ID: 011559

Sport Injury Management Seminar

This seminar reviews cases of injury management in an athletic population. Students each present a minimum of two cases, using appropriate research literature support and comparison of alternative management approaches and conclusions. Students applying for this seminar must provide an information sheet listing experiences in injury settings, related qualifications such as CPR and first aid, and marks in KIN 100, 100L, 340. Instructor consent required.

Instructor Consent Required

Prereq: KIN 140L, 340; Level at least 3A Kinesiology students

KIN 446 LEC 0.50

Course ID: 012557

Physiological and Biochemical Aspects of Nutrition and Health

Selected examples of nutrient metabolism will be examined in detail in regards to dietary intake, metabolism and mechanistic effects on human health. Comprehensive coverage of all nutrients is not intended, but rather the examples will be examined in detail with a focus on research techniques and approaches, and various factors that interact with and influence nutrition.

Prereq: KIN 346

KIN 451 LEC 0.50

Course ID: 012119

Social Aspects of Injury in Work and Sport

This course will examine social aspects of injuries in the context of the workplace, sport and exercise settings. Topics to be

covered include risk factors, health and safety climates, cultures of risk, injury prevention strategies, rehabilitation and return to work, and the role of the state in regard to health and safety legislation and insurance programs.

Prereq: KIN 250, SOC 101/101R

KIN 453 LEC 0.50

Course ID: 006631

Applied Sport Psychology

An examination of the psychology of sport with an applied focus. Topics include the psychology of peak performance, coaching, and team building, among others.

Prereq: KIN 354

KIN 456 LEC 0.50

Course ID: 006632

Cognitive Dysfunction and Motor Skill

An examination of issues related to understanding the cerebral organization of motor skill. Discussion of how certain movement disorders are a reflection of disturbances at different stages in the sequence of information processing.

Prereq: One of PSYCH 207, 306, KIN 356 and Kinesiology students only

KIN 457 LAB,LEC 0.50

Course ID: 006633

Cognitive, Perceptual and Motor Assessment

This course is designed to provide the student with an introduction to the principles underlying the assessment of cognitive, perceptual and motor functions. Measurement issues associated with test development and use, factors involved in the administration and interpretation of test results, and methods of report writing will be examined. Under the supervision of a Registered Psychologist, the student will learn to administer a number of test instruments used in the assessment of cognitive, perceptual and motor functions. Assessments will be done on normal, healthy volunteers recruited from the university community.

Instructor Consent Required

Prereq: KIN 356, 456

KIN 458 LEC 0.50

Course ID: 014378

Social Neuroscience and Health

This is an in-depth course intended for the intensive study of psychological, neuroscientific and social processes that together set the stage for the development of chronic illnesses in the modern world. Topics include exercise neuroscience, health-related decision processes, and neural responses to health risk communications in the media.

Prereq: KIN 232 or (HLTH 333 or PSYCH 291); KIN 354 (or HLTH 348 or HLTH 360 or PSYCH 253/PSYCH 253R)

(Cross-listed with HLTH 458)

KIN 470 SEM 0.50

Course ID: 006634

Seminar in Kinesiology

An examination of current major issues and trends in Kinesiology. Students select areas of major interest from a series of faculty introduced topics.

Prereq: Level at least 4A Kinesiology

KIN 470E SEM 0.50

Course ID: 006635

Seminar in Integrative Ergonomics

An examination of current major issues and trends in Ergonomics.

Prereq: Fourth year Ergonomics Option students only

KIN 471 LEC 0.50

Course ID: 012777

Contemporary Issues in Kinesiology

One or more term courses will be offered from time to time as announced by the Kinesiology Department. Subjects will be dependent upon special research and/or instructional interests of faculty.

Department Consent Required

Prereq: Level at least 3A

KIN 472 RDG 0.50

Course ID: 006640

Directed Study in Special Topics

For the student who desires to pursue a particular topic in depth through guided independent research and/or reading. A faculty member must approve a student's project prior to registration. May be repeated in subsequent terms.

Department Consent Required

KIN 491 CLN,LAB 0.50

Course ID: 006661

Clinical Kinesiology -- Sports Injuries Assessment

Practical experience in the examination, diagnosis, and treatment of sports injuries under the supervision of a Certified Athletic Therapist. Case presentations and musculoskeletal assessments are discussed in a group setting. Preference will be given to those who have taken KIN 140L.

Prereq: KIN 100, 340; Kinesiology students only

KIN 492A PRA,TUT 0.50

Course ID: 006662

Clinical Kinesiology -- Cardiac Rehabilitation Practicum

Practical experience with cardiac patients in a rehabilitation setting; major emphasis is placed on the cardiorespiratory implications of exercise assessment, prescription and management. Experience obtained in a laboratory setting and through placement at a hospital. Instructor consent required.

Instructor Consent Required

Prereq: KIN 105, 205, 407

KIN 492B PRA,TUT 0.50

Course ID: 006663

Clinical Kinesiology -- Cardiac Rehabilitation Practicum

Continuation of KIN 492A. Practical experience with cardiac patients in a rehabilitation setting; major emphasis is placed on the cardiorespiratory implications of exercise assessment, prescription and management. Experience obtained in a laboratory setting and through placement at a hospital. Instructor consent required.

Instructor Consent Required

Prereq: KIN 492A

KIN 493 PRA,TUT 0.50

Course ID: 006664

Clinical Kinesiology: Movement Assessment Practicum

Practical experience in movement assessment of persons from various special populations such as the normal elderly and those with neurological, degenerative or developmental disorders. Motor functions involving gait, posture and balance or upper limb movements will typically be examined in these assessments.

Instructor Consent Required

Prereq: KIN 242, 416, 422, 456; Grade Point Average at least 75%

KIN 494 PRA 0.50

Course ID: 006665

Integrative Ergonomics Practicum

A presentation must be made by each 4B student explaining quantitative and qualitative methods used, interpretation of data where applicable, explanation of interventions employed, together with an overview of components of interest to those in ergonomics. Credit requires both the off-campus practicum experiences and attendance at the seminar component over six academic terms where all students are expected to participate in debate of ergonomic issues. Occasional guest ergonomists address the group. Graded credit/non credit.

Prereq: 4B Ergonomics Option

K O R E A N

Notes

1. *Students who are interested in the Korean language courses should be aware that the completion of at least three courses in a subject is recommended for a minimum working knowledge of the language. The Korean and East Asian culture courses may provide useful background for students intending to spend time in the Far East.*
2. *Students who have previous experience with or who have studied the Korean language at the elementary or secondary school level should not enrol in first-year level courses of the same language. Such students should consult the Renison Registrar's Office regarding the appropriate level to enter.*
3. *Students are not permitted to enrol in more than one Korean language course in a term.*
4. *Renison University College reserves the right to refuse admission to, and/or credit for, any of its language courses to a student who has, in Renison's view, a level of competence unsuited to the course(s).*

KOREA 100s

KOREA 101R LAB,LEC,TUT 0.50

Course ID: 006666

First-Year Korean 1

An introductory course for students who have no or little knowledge of Korean to develop listening, speaking, reading, and writing skills along with a sound basis of grammar. The distinctive features of the Korean language and writing system introduced. Practical oral, reading, and writing exercises develop the students' grammatical skills. Particular emphasis is placed on the acquisition of a basic working vocabulary.

[Note: KOREA 101R is not open to students with native, near-native or similar advanced ability.]

KOREA 102R LAB,LEC,TUT 0.50

Course ID: 006667

First-Year Korean 2

Students deepen their understanding of basic grammatical (particularly verb, noun, and adverb) forms and sentence construction and enlarge their general vocabulary. Reading ability is expanded, and more attention is given to idiomatic expressions and the use of the language in actual contexts.

Prereq: KOREA 101R

KOREA 200s

KOREA 201R LAB,LEC 0.50

Course ID: 006668

Second-Year Korean 1

Designed for students who have completed KOREA 102R or the equivalent. To achieve a balanced Korean language proficiency in listening, speaking, reading, and writing, a variety of teaching materials and methods is used. The text includes adapted versions of short stories, essays, and poems.

Prereq: KOREA 102R

KOREA 202R LAB,LEC 0.50

Course ID: 009930

Second-Year Korean 2

A continuation of KOREA 201R. Emphasis is placed on reading and composition. Students learn complex sentence structure and widely-used idiomatic phrases for advanced reading.

Prereq: KOREA 201R

KOREA 300s

KOREA 301R LAB,LEC 0.50

Course ID: 015355

Third-Year Korean 1

This course provides opportunities to strengthen students' reading skills through engagement with articles, short stories, and folk tales. Emphasis is on grammatical analysis and contextual interpretation. Written compositions and oral presentations provide opportunities for personal response and reflection.

Prereq: KOREA 202R

KOREA 302R LAB,LEC 0.50

Course ID: 015356

Third-Year Korean 2

This course provides additional opportunities for engagement with texts at an advanced level. Students develop specialized vocabulary by studying and practicing complex sentences and idioms.

Prereq: KOREA 301R

KOREA 391R LEC,RDG,SEM 0.50

Course ID: 015128

Special Topics

This course deals with advanced topics in Korean language and literature. Students are expected to have at least an intermediate level of language proficiency.

[Note: This is a repeatable course, subject to different content; it may be completed a total of five times.]

Prereq: KOREA 202R

K O R E A N

Notes

1. Students who are interested in the Korean language courses should be aware that the completion of at least three courses in a subject is recommended for a minimum working knowledge of the language. The Korean and East Asian culture courses may provide useful background for students intending to spend time in the Far East.
2. Students who have previous experience with or who have studied the Korean language at the elementary or secondary school level should not enrol in first-year level courses of the same language. Such students should consult the Renison Registrar's Office regarding the appropriate level to enter.
3. Students are not permitted to enrol in more than one Korean language course in a term.
4. Renison University College reserves the right to refuse admission to, and/or credit for, any of its language courses to a student who has, in Renison's view, a level of competence unsuited to the course(s).

KPE 400s

KPE 472W LEC 0.50

Course ID: 015709

Athletic Injuries (WLU)

Department Consent Required

L A T I N

Courses in Latin are offered through the Department of Classical Studies.

Notes

1. *Students should consult with the departmental Undergraduate Advisor for the latest information on course offerings. Some courses are offered in rotation.*
2. *Senior standing in Latin is normally defined as successful completion of LAT 201 and 202; exceptional students may also be admitted to 300- or 400-level courses with instructor's permission. For 400-level courses a 300-level course is strongly recommended as a preliminary.*

LAT 100s

LAT 101 LEC,TUT 0.50

Course ID: 006670

Introductory Latin 1

A course designed for students beginning the study of Latin or who have not yet reached the level expected in LAT 201/202. Although the teaching approach emphasizes exposure to simple texts as soon as possible, students desiring minimal competence in reading should go on to do LAT 102.

LAT 102 LEC,TUT 0.50

Course ID: 006671

Introductory Latin 2

Continuation of LAT 101. Most of the rules of Latin grammar will be covered by the end of the year, and students should have a minimal competence in reading prose texts; but for the remaining grammar and further practice students should go on to do LAT 201.

Prereq: LAT 101

LAT 200s

LAT 201 LEC 0.50

Course ID: 006673

Intermediate Latin

The course will complete the study of Latin grammar and move on to unadapted readings in Latin authors, particularly Caesar.

Prereq: LAT 102

LAT 202 LEC 0.50

Course ID: 006674

Selections from Latin Authors

A course designed to follow LAT 201, including both literature and grammar review. Authors normally read are Vergil and Ovid.

Prereq: LAT 201

LAT 300s

LAT 331 LEC 0.50

Course ID: 012923

Advanced Readings in Latin: Prose

A selection of material from one author or several authors within the field of Latin prose. Topics and selections may include oratory and rhetoric, history, philosophy, Cicero, Quintilian, Caesar, Livy, and Apuleius.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: LAT 202

LAT 332 LEC 0.50

Course ID: 012924

Advanced Readings in Latin: Poetry

A selection of material from one author or several authors within the field of Latin poetry. Topics and selections may include comedy, lyric poetry, elegy, epic, Plautus, Terence, Catullus, Ovid and Vergil.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: LAT 202

LAT 341 LEC 0.50

Course ID: 012925

Advanced Studies in Latin: Selected Topics

An investigation of selected themes, topics, time periods or genres in Latin.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: LAT 202

LAT 351 LEC 0.50

Course ID: 006678

Latin Composition, Grammar and Reading

Composition, translation and grammar with intensive analysis of selected passages.

Prereq: LAT 202

LAT 381 LEC 0.50

Course ID: 006689

Medieval Latin

Survey of Medieval Latin poetry and prose.

Prereq: LAT 202

LAT 400s

LAT 421 LEC 0.50

Course ID: 006692

Latin Epigraphy

The course introduces and investigates Latin inscriptions as evidence for the Latin language and Roman political, religious, legal, social and economic history.

Prereq: LAT 202

LAT 422 LEC 0.50

Course ID: 011788

Latin Palaeography

A practical overview of the various styles of Latin handwriting from the late Roman Empire to the writing styles of the Renaissance humanists which introduces students to the study of original documents and manuscripts.

Prereq: LAT 202

LAT 451 SEM 0.50

Course ID: 012186

Senior Latin Composition, Grammar and Reading

Advanced composition, translation, and grammar with intensive analysis of selected passages.

Prereq: LAT 351

LAT 490 RDG 0.50

Course ID: 009936

Senior Studies in Latin: Selected Topics

A selection of material from one author or several authors or an investigation of selected themes, topics or genres at the senior level. Topics and authors may include philosophy, letter writing, history, elegy, satire, Seneca, Pliny the Younger, Tacitus, Propertius, Petronius and Juvenal.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: A 300-level LAT course

LAT 491 RDG 0.50

Course ID: 009945

Senior Studies in Latin: Independent Study

Under special circumstances and with the approval of the Department, a student or small group of students may arrange to pursue individualized readings under the supervision of a faculty member.

Prereq: A 300-level LAT course

LEGAL STUDIES

LS 100s

LS 101 LEC 0.50

Course ID: 011710

Introduction to Legal Studies

An introduction to the study of law, its structure, and legal institutions from a cross-cultural and historical perspective. This interdisciplinary course examines the origins of legal systems and their impact on society. Included is an analysis of the diverse historical, political, economic, and cultural conditions under which law arises and functions within society.

Also offered Online

LS 201 LEC 0.50

Course ID: 012768

Women and the Law

This course provides an introduction to feminist legal thought with a particular focus on Canadian cases, legislation, law reform, and legal literature. Included is an analysis of the ways in which law contributes to women's legal, social, political, and economic status as well as the manner in which the law is used as a mechanism of social change for women. The intersection of gender with age, race, ethnicity, religion, and class will be addressed.

(Cross-listed with WS 206)

Also offered at St. Jerome's University

LS 202 LEC 0.50

Course ID: 011711

Criminal Law

A case-study approach to the study of criminal law in Canada with a focus on basic concepts and core principles relating to legal judgements along with comparative examination between civil and criminal law and attention to legal theory.

[Note: Formerly LS 102.]

Prereq: LS 101.

Antireq: LS 102

LS 203 LEC 0.50

Course ID: 015560

Special Topics in Legal Studies

An in-depth analysis of research in selected topics in Legal Studies.

[Note: This is a repeatable course, subject to different content; it may be completed a total of two times.]

Prereq: LS 101

LS 206 DIS,LEC 0.50

Course ID: 007749

Canadian Government & Politics

An examination of Canada's federal system, parliamentary government, and national political processes, such as the party system, interest groups, the electoral system and voting behaviour.

Prereq: One of PSCI 100, 101, 110

(Cross-listed with PSCI 260)

LS 221 LEC 0.50

Course ID: 008661

Research Methods

An introductory survey of the research techniques commonly employed by sociologists, criminologists, and legal studies researchers. The formulation of research designs appropriate to various kinds of intellectual problems in social science is stressed.

Prereq: SOC 101/101R or 120R; Not open to students in the Faculty of Mathematics.

Antireq: ISS/SDS 251R, KIN 330, SOC 321/LS 321, PSYCH 291, REC 270, SMF 220, SWREN 251R

(Cross-listed with SOC 221)

LS 222 LEC 0.50

Course ID: 008602

Juvenile Delinquency

A systematic analysis and criticism is presented of biological, psychological, psychoanalytical, and sociological theories of juvenile delinquency. Attention is given to statistics and contemporary research with special emphasis on the distribution and types of delinquent subcultures.

Prereq: SOC 101/101R or 120R

(Cross-listed with SOC 222)

Also offered Online

LS 223 LEC 0.50

Course ID: 008603

Deviance: Perspectives and Processes

The deviance-making process is examined in a variety of social contexts. This course examines the emergence of rules and control agencies, the processes by which people become involved in deviant activities, and the contingencies affecting their careers as deviants.

Prereq: SOC 101/101R or 120R

(Cross-listed with SOC 223, SOC 223R)

LS 224 LEC 0.50

Course ID: 008584

Victims and Society

This course will examine the substance of victimization: the scientific study of victims, the process, etiology, and consequences of victimization. Topics will include victims and politics, the victims' movement, "victim-precipitation", the victimization of women, and family violence.

Prereq: SOC 101/101R or 120R

(Cross-listed with SOC 201)

LS 226 LEC 0.50

Course ID: 008631

Sociology of Mental Disorder

An examination of sociological research and theory in the field of mental disorder particularly as they apply to issues of law and social control. Topics include mental health legislation, the medical model of mental "illness," the epidemiology of mental disorder, family processes and psychiatric hospitalization, public attitudes and social stigma, and specific forms of mental disorder.

Prereq: SOC 101/101R or 120R

(Cross-listed with SOC 249)

LS 227 LEC 0.50

Course ID: 008609

Criminology

An examination of the major theories of crime causation and their implications for the development of social policy. Both historical and contemporary theories will be discussed.

Prereq: SOC 101/101R or 120R

(Cross-listed with SOC 227)

LS 228 LEC 0.50

Course ID: 008610

Sociology of Criminal Justice

Decisions to process offenders and the role of social factors in the Canadian criminal justice system are critically examined. Focal issues include police discretion, the legal profession, and prison systems.

Prereq: SOC 101/101R or 120R

(Cross-listed with SOC 228)

LS 229 LEC 0.50

Course ID: 010101

Selected Topics in Criminology

Sociological analysis of research and theory on selected criminal activities. Motivation, modus operandi, and the social characteristics of offenders will be examined in relation to such specific crimes as drug and sexual offenses, theft, robbery, murder, organized crime, and/or other criminal activities.

Prereq: SOC 101/101R or 120R

(Cross-listed with SOC 229)

Also offered Online

LS 235 DIS,LEC 0.50

Course ID: 006241

History of Ancient Law

A historical introduction to law in the ancient world. Babylonian, Assyrian, Hittite, and Roman law, legal practices, and concepts will be examined.

(Cross-listed with CLAS 210, HIST 210)

LS 236 DIS,LEC 0.50

Course ID: 006194

Law and Society in the Middle Ages

A study of the laws and legal procedures of the Middle Ages. This course examines the relationship between legal procedures and institutions and the medieval societies that produced them.

Prereq: Level at least 2A.

Antireq: HIST 101

(Cross-listed with HIST 236)

LS 237 DIS,LEC 0.50

Course ID: 011574

Canadian Legal History

This course examines the Canadian legal system from colonial times to the present with particular emphasis on such themes as law and the economy, courts and judiciary, the legal profession, family and criminal law, women and the law, and civil liberties.

(Cross-listed with HIST 277)

LS 240 LEC 0.50

Course ID: 014846

Terrorism

This course offers an introduction to the study of terrorism, with a primary focus on sociological approaches. The course examines the history, causes, and diversity of forms of terrorist groups and the process of radicalization, suicide terrorism, and some aspects of the counter-terrorism response of states.

Prereq: SOC 101/101R or 120R

(Cross-listed with SOC 240)

LS 249 LEC 0.50

Course ID: 015068

Mental Disorder and the Law

An examination of laws, law enforcement, and social policies in relation to mental disorder. Included is an analysis of mental health legislation; involuntary commitment; mental health courts; and various issues related to the police and the correctional system's handling of mentally disordered offenders.

Prereq: LS 101
Offered at St. Jerome's University

LS 263 LEC 0.50

Course ID: 015069

Organized Crime

An examination of select criminal organizations in North America. Particular attention will be given to the social history of 'the mafia' and the development of legal tools for policing criminal organizations. Additional themes for discussion include enterprise and economic crimes, corruption, and the role of women in organized crime.

Prereq: SOC 101/101R or 120R
(Cross-listed with SOC 263)

LS 271 LEC 0.50

Course ID: 007192

Conflict Resolution

An examination of the resolution of conflicts, ranging from interpersonal to broader social and international conflicts. Students are introduced to negotiation, mediation, and nonviolent resistance, and are encouraged to develop their own theoretical understandings that aid in addressing conflict.

(Cross-listed with PACS 202)

Also offered Online

LS 272 LEC 0.50

Course ID: 010100

Psychology and Law

Psychological principles drawn from a variety of subdisciplines (e.g., social, clinical, cognitive) will be surveyed in terms of their relevance and application to the legal system. Topics may include jury selection and decision-making, eyewitness testimony, insanity defense, competency assessment, risk assessment, and attitudes toward law and the legal process.

Prereq: PSYCH 101/101R or 121R
(Cross-listed with PSYCH 230)
Offered at St. Jerome's University

LS 273 LEC 0.50

Course ID: 014137

Children's Rights in Canada

This course examines children's rights from a moral and comparative legal perspective. Students explore the welfare and developmental interests of children, the corresponding duties of parents, custodians, educators, and social workers, and the nature and scope of public educational authority in the common law jurisdictions of Canada.

(Cross-listed with SDS 210R)

Also offered Online

LS 280 LEC 0.50

Course ID: 008645

Social Statistics

A basic course in statistics used in social science research including sampling, central tendency, probability, covariance, as illustrated in specifically sociological and criminological data.

Prereq: One of LS 101, SOC 101/101R or 120R; Not open to Math students.

Antireq: ARTS 280, ECON 221, ENVS 278, ISS/ 250A/B, ISS/SDS 250R, KIN 222, PSCI 214/314, PSYCH 292, REC 371, SMF 230, STAT 202, 206, 211, 221, 231, 241, SWREN 250A/B, 250R

(Cross-listed with SOC 280)

LS 283 LEC,TST 0.50

Course ID: 003247

Business Law

Particular attention is given to the law relating to contracts and business organizations. Other areas of study include sources of law, the judicial process, real and personal property, torts, agency, credit, and negotiable instruments.

*Antireq: MTHEL 100/COMM 231, BUS 231W, CIVE 491, GENE 411, ME 401; (Faculty of Mathematics) ENVS 201
(Cross-listed with AFM 231)*

LS 286 LEC 0.50

Course ID: 015067

Law in Popular Culture

Much is at stake in how law is portrayed in paintings, literature, music, television, and movies. In this course we draw on a range of disciplines in the social sciences and humanities to study how law is represented in popular culture, and how these representations, in turn, impact how we view law.

Prereq: LS 101

Offered at St. Jerome's University

LS 291 LEC 0.50

Course ID: 010336

Legal Writing

A study of the principles, processes, and various forms of writing used in the practice of law and drafting of legislation. The history and structure of legal writing, including current debates about plain language, will be examined.

(Cross-listed with ENGL 210I)

LS 292 LEC 0.50

Course ID: 011771

Literature and the Law

A study of literary works that involve legal matters and/or have led to litigation on such grounds as obscenity, treason, heresy, libel, and plagiarism.

(Cross-listed with ENGL 213)

LS 300s**LS 300 LEC 0.50**

Course ID: 008694

Sociology of Law

Examines the social construction of law and its administration as a social process. Topics will include law as an instrument of social control and social change; legal culture; the identification and evaluation of criminal suspects; the trial process and the rights of special groups. The specific laws highlighted will vary.

Prereq: SOC 101/101R or SOC 120R; Level at least 3A

(Cross-listed with SOC 370)

Also offered Online

LS 306 LEC 0.50

Course ID: 008608

Juvenile Justice

An examination of theories of juvenile justice, juvenile law, and the structure and operations of juvenile systems, especially in Canada.

Prereq: LS/SOC 222.

Antireq: SOC 226

(Cross-listed with SOC 306)

LS 319 LEC 0.50

Course ID: 007201

Negotiation: Theories and Strategies

This course explores different ways of negotiating between people and groups with conflicting interests. You will learn the theory behind the strategies and develop practical negotiation skills you can put to use in your daily life at home, at work, and in the community.

Antireq: PSYCH 439

(Cross-listed with PACS 323)

LS 322 LEC 0.50

Course ID: 008664

Field Research Methods

This course provides a critical evaluation of research techniques in sociology, criminology, and legal studies with an emphasis on learning and applying qualitative fieldwork approaches.

Prereq: SOC/LS 221 or SOC/LS 321; Not open to Mathematics students

(Cross-listed with SOC 322)

LS 325 LEC 0.50

Course ID: 008667

Sexuality and the Law

Despite the commonly held belief that sexuality is nothing more than "doing what comes naturally," cultural definitions, including prohibitions against specific forms of conduct, impinge upon the most private or intimate of acts. This course examines the social construction and control of sexuality through law.

Prereq: SOC 101/101R or 120R

(Cross-listed with SOC 325)

LS 326 LEC 0.50

Course ID: 014130

Punishment and Society

A critical criminological and sociological examination of theories and practices of punishment. This course will examine transformations in penal theory, penal management, and penal institutions and their social and policy implications.

Prereq: SOC 101/101R or 120R

(Cross-listed with SOC 326)

LS 327 LEC 0.50

Course ID: 009873

Policing in a Democratic Society

A critical examination of the police as social control agents in contemporary democratic societies. Topics include the historical evolution of policing; police recruitment, training, and education; police/community relations; the occupational subculture of the police; police authority and discretion; private policing; and police deviance and criminality.

Prereq: One of SOC/LS 227, SOC/LS 228, or SOC/LS 229

(Cross-listed with SOC 327)

Also offered Online

LS 328 LEC 0.50

Course ID: 015551

Trafficking and Financial Crime

An examination of the causes and impact of the illegal traffic in goods and services in Canada and internationally. Topics may include human trafficking, trade in illicit drugs and weapons, money laundering and financing of terror, and the relationship between trafficking and state political violence.

Prereq: SOC 101/101R; Level at least 3A

(Cross-listed with SOC 328)

Also offered Online

LS 330 LEC 0.50

Course ID: 015561

Special Topics in Legal Studies

An in-depth analysis of research in selected topics in Legal Studies.

[Note: This is a repeatable course, subject to different content; it may be completed a total of two times.]

Prereq: LS 101; Level at least 3A

LS 331 DIS,LEC 0.50

Course ID: 006346

Human Rights in Historical Perspective

A detailed analysis of selected topics in the history of human rights. Special attention will be paid to revolutionary developments since World War II, and to the emergence of modern human rights policies. Topics will be examined through assigned readings, lectures, and films.

Prereq: Level at least 2A

(Cross-listed with HIST 321)

LS 342 LEC 0.50

Course ID: 014132

Migration and Legality

This course introduces students to key concepts and case study research on the regulation of human migration and its exclusionary practices. It examines how state policies, laws, and international organizations control the mobility of migrants and refugees across regions and borders.

(Cross-listed with SOC 342)

LS 344 LEC 0.50

Course ID: 013487

Restorative Justice

This course investigates the history, theory, principles, practices, and people of restorative justice. Content will centre particularly on restorative justice as a way of dealing with crime and interpersonal violence in the Canadian context.

Prereq: Level at least 2A or Peace and Conflict Studies Diploma students

(Cross-listed with PACS 329)

LS 351 LEC 0.50

Course ID: 007311

Philosophy of Law

Basic themes in the philosophy of law. Issues include the nature of law and its relation to morality and politics, legal reasoning, the justification of punishment, and theories of rights, responsibility and liability.

Prereq: Level at least 2A

(Cross-listed with PHIL 327)

LS 352 LEC 0.50

Course ID: 011185

Human Rights

What are human rights? Which do we have, and why? What are the practical implications of human rights, for both individuals and institutions? A comprehensive discussion of theory and history, of law and morality, and of national and international applications.

Prereq: Level at least 2A

(Cross-listed with PHIL 328)

LS 363 LEC 0.50

Course ID: 007797

Canadian Constitutional Law

An introduction to the nature and basic principles of constitutional law. Explores constitutional conventions, the distribution of powers in the Canadian federalism, Aboriginal and treaty rights, and the Charter of Rights and Freedoms.

Prereq: LS 101 or LS 206/ PSCI 260

(Cross-listed with PSCI 363)

LS 365 LEC 0.50

Course ID: 014268

Transnational Migration

This survey of transnational migration in the contemporary moment examines the reasons people have migrated voluntarily (e.g., as migrant workers) and involuntarily (e.g., as refugees); and how international and domestic law and policies affect, enable, and/or criminalize the movements of people across state borders.

Prereq: One of PSCI 250, 252, 255, 259, 264, 281, LS 206/PSCI 260; Level at least 3A

(Cross-listed with PSCI 375)

LS 366 LEC 0.50

Course ID: 012593

Global Governance

Global governance is governing beyond the state. An examination of diverse problems - global warming, international human rights, terrorism, property rights disputes, and health crises - which transcend borders and demand cooperative global solutions.

Prereq: Level at least 3A.

Antireq: PSCI 357 taken before winter 2010

(Cross-listed with PSCI 389)

LS 372 LEC 0.50

Course ID: 010042

Criminal Profiling

Foundational assumptions for, and basic approaches to, criminal profiling will be considered, along with a survey of relevant techniques in the context of numerous case studies. Limitations and alternatives to profiling will also be addressed.

Prereq: PSYCH 230/LS 272

(Cross-listed with PSYCH 330)

Offered at St. Jerome's University

LS 373 LEC 0.50

Course ID: 011378

Public Policy and Native Peoples in Canada

This course examines the evolution, logic, processes, and impacts of government policies developed specifically for Native peoples, with particular attention to government policy as both a cause of and a response to social problems within Native communities.

[Note: SWREN 311R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

(Cross-listed with SDS 311R, SWREN 311R)

LS 374 LEC 0.50

Course ID: 011390

The Evolution of Family Law in Canadian Society

This course examines the evolution of family law in indigenous, francophone, anglophone, and other communities in Canada. Taking an interdisciplinary approach, the course not only explores the demographic, economic, social, and political contexts in which family law developed but also assesses its significance for Canadian society.

Antireq: ISS 350G

(Cross-listed with SDS 353R)

LS 386 LEC 0.50

Course ID: 015066

Law and Violence

Discussions about law's coercive power raise important questions about the legitimacy of state-sanctioned violence. This course uncovers the roots and limits of law's power as it relates to questions of violence, obedience, and dissent.

Prereq: LS 101

Offered at St. Jerome's University

LS 387 LEC 0.50

Course ID: 015373

Criminal Justice Institutions

The societal context of policing, courts, and corrections is examined to understand how social control and the law are used in the criminal justice system. Special emphasis is placed on the socio-economic, legal, political, and situational environment that shapes responses to different categories of offenders and offences.

Prereq: SOC 101/101R or SOC 120R; Level at least 3A

(Cross-listed with SOC 387)

LS 400s

LS 401 SEM 0.50

Course ID: 011899

Law, Culture, and Rights

This seminar explores the intersection of culture and rights from a legal studies perspective in order to better understand the diversity of ways that law shapes our society, and vice versa. Students will debate and assess selected topics from the perspective of various disciplines spanning the social sciences and humanities.

Prereq: Level at least 4A

LS 402 SEM 0.50

Course ID: 011900

Perspectives on Legal Authority and Subjectivity

This seminar explores the relation between those who make or administer law and select legal subjects whose lives and identities are shaped by law. Students will debate and assess selected perspectives while touching on various disciplines spanning the social sciences and humanities.

Prereq: Level at least 4A

LS 403 LEC 0.50

Course ID: 013627

Socio-Legal Responses to Crime

This course examines responses to crime from historical, philosophical, legal, psychological, sociological, and other related perspectives. The primary focus is on the relationship between the law, motivations of offenders, and responses by individuals and the criminal justice system to chronic, sex, and violent offenders.

Prereq: Level at least 4A Legal Studies

LS 413 SEM 0.50

Course ID: 015013

Surveillance and Society

An examination of the way monitoring technologies alter and shape social life in terms of security, fear, control, and vulnerability.

Prereq: Level at least 4A Legal Studies majors

(Cross-listed with SOC 413)

LS 419 SEM 0.50

Course ID: 015549

Police Systems and Practices

This course examines contemporary issues in policing. Topics may include police response strategies in different models of policing, economics of policing, use of discretion, police accountability, and the changing functions and activities of the police.

Prereq: Level at least 4A Legal Studies majors

(Cross-listed with SOC 419)

LS 422 SEM 0.50

Course ID: 015550

Violent Extremism and Terrorism

This course examines contemporary issues in terrorism studies. Topics may include the history and comparative analysis of political and religious forms of violent extremism, the process of radicalization and recruitment, the analysis of different forms of terrorist activity, and the counter-terrorism policies and practices.

Prereq: Level at least 4A Legal Studies majors

(Cross-listed with SOC 422)

LS 423 SEM 0.50

Course ID: 015548

Peers and Crime

This seminar examines the peer influence perspective in criminology. Key theoretical, methodological, and substantive issues and challenges are addressed.

Prereq: Level at least 4A Legal Studies majors

(Cross-listed with SOC 423)

LS 425 SEM 0.50

Course ID: 014849

Crossing Borders: Law & Global Deviance

This seminar-style course, positioned at the intersection of sociology and law, examines illicit cross border activity such as terrorism, piracy, drugs, trafficking, and illegal immigration. Each cross-border activity will be examined, along with the way states respond to it politically and legally at a national and international level. Ethnographic research on the activity will provide for rich descriptions of how and why people participate in such activities.

Prereq: Level at least 4A Legal Studies majors

(Cross-listed with SOC 425)

LS 428 SEM 0.50

Course ID: 010152

Sentencing as a Social Process

Examines in depth the process and results of criminal sentencing. Topics include types of sentences for criminal and quasi-criminal offences; objectives of sentences; factors affecting sentences; the process of sentencing; the administration and effectiveness of sentences; and unresolved debates in sentencing.

Prereq: SOC/LS 228; Level at least 4A Legal Studies majors

(Cross-listed with SOC 428)

LS 434 SEM 0.50

Course ID: 014842

Sociology of At-Risk Youth

This course examines the social attributes and surrounding conditions associated with at-risk youth. It will focus on the development of youth in three major institutions - education, criminal justice, and mental healthcare. This course will focus on the attributes of youth themselves, but also to changing institutional definitions and practices. This course will include an experiential learning component outside regular classroom hours.

Prereq: Level at least 4A Legal Studies majors

(Cross-listed with SOC 434)

LS 461 SEM 0.50

Course ID: 015070

Transnational Organized Crime

This seminar course examines contemporary legal regimes surrounding transnational organized crime, terrorism and organized crime, and international money laundering.

Prereq: Level at least 4A Legal Studies majors

(Cross-listed with SOC 461)

LS 462 SEM 0.50

Course ID: 013476

Government and Politics of Indigenous Peoples

An introduction to the history and development of government policy and regulations that have altered the political and social structures of aboriginal societies. We explore contemporary challenges to government policy and regulations, as reflected in the struggles for land, aboriginal rights, and self-government, as well as the development of a global identity.

Prereq: Level at least 4A

(Cross-listed with PSCI 462)

LS 463 SEM 0.50

Course ID: 014530

Rights and Public Policy

An examination of the role that rights and rights discourse plays in public policy development and policy change. Examines Canadian public policy in relation to the Charter of Rights and Freedoms and human rights legislation, as well as cases in comparative context.

Prereq: LS 101 or LS 206/ PSCI 260

(Cross-listed with PSCI 463)

LS 464 SEM 0.50

Course ID: 007813

Justice and Gender

Theories of justice are concerned with the distribution of the basic goods of society - money, power, status, leisure, and so on. The course considers how the gender system fares from the standpoint of liberal justice, and to what extent the promises of liberal justice can be used to overturn the unequal treatment of women.

Prereq: One of LS 201, PSCI 225, 226, 291, 292, 370; Level at least 4A
(Cross-listed with PSCI 421)

LS 492 SEM 0.50

Course ID: 013570

Communication and Social Justice

An examination of the ways in which communication on the part of individuals, groups, and institutions contributes to fostering justice in social contexts. Areas of focus include communication and justice in interpersonal, workplace, community, and national/international contexts.

Prereq: Level at least 3A
(Cross-listed with SPCOM 430)

LS 496 LEC 0.50

Course ID: 013626

Special Topics in Legal Studies

This course will deal with selected topics in Legal Studies. Subjects will be dependent upon the research and/or instructional interests of faculty.

LS 498 LEC 0.50

Course ID: 012278

Directed Readings in Legal Studies

Selected study and assignments under the direction of a faculty member who teaches courses in legal studies and criminology.

Instructor Consent Required
Prereq: Level at least 3A

MATHEMATICAL BUSINESS

MATBUS 400s

MATBUS 470 LAB,LEC 0.50

Course ID: 013755

Derivatives

Overview of the derivatives markets. Pricing of derivatives, including futures, forwards, swaps, and options. Hedging vs. speculating. Option Greeks. Trading strategies. Case studies.

Prereq: (One of AFM 372/ACTSC 391, ACTSC 371, BUS 393W), (STAT 334 or (STAT 330 and 333)).
Antireq: AFM 322/474, ACTSC/STAT 446, BUS 423W, ECON 372

MATBUS 471 LAB,LEC 0.50

Course ID: 013865

Fixed Income Securities

Analysis of fixed income securities. Duration, convexity. Structured products. Market characteristics. Valuation of bonds with embedded options. Accounting and taxation issues.

Prereq: ACTSC 231 and (ACTSC 372 or BUS 393W) or AFM 372/ACTSC 391; Business/Math double degree, Math/Accounting, or Math/Financial Analysis and Risk Management students only.
Antireq: AFM 425/475, BUS 449W

Also offered Online

MATBUS 472 LAB,LEC 0.50

Course ID: 013866

Risk Management

Principles of Risk Management. Market, credit and operational risk management. Risk measures. Hedging strategies and risks in hedging. Credit migration. Global financial market regulation. Case studies.

Prereq: One of ACTSC 372, AFM 372/ACTSC 391, BUS 393W; Business/Math double degree, Math/CPA, or Math/Financial Analysis and Risk Management students only.

Antireq: ACTSC 445, AFM 422, BUS 433W

MATHEMATICS

Notes

See also Actuarial Science, Applied Mathematics, Combinatorics and Optimization, Computer Science, Mathematics Electives, Pure Mathematics, Statistics.

MATH 00s

MATH 52 LEC 0.00

Course ID: 010375

Pre-University Calculus

The concepts included are limits, derivatives, antiderivatives and definite integrals. These concepts will be applied to solve problems of rates of change, maximum and minimum, curve sketching and areas. The classes of functions used to develop these concepts and applications are: polynomial, rational, trigonometric, exponential and logarithmic.

Only offered Online

MATH 97 LEC 2.50

Course ID: 010113

Study Abroad

For studies at other universities under approved exchange agreements.

Department Consent Required

MATH 100s

MATH 103 LEC,TUT 0.50

Course ID: 006847

Introductory Algebra for Arts and Social Science

An introduction to applications of algebra to business, the behavioural sciences, and the social sciences. Topics will be chosen from linear equations, systems of linear equations, linear inequalities, functions, set theory, permutations and combinations, binomial theorem, probability theory. [Offered: F,W]

Prereq: Open only to students in the following faculties: ARTS, AHS or ENV. Not open to Acc'ting & Fin Mgt students.

Antireq: MATH 106, 114, 115, 136, 146, NE 112

Also offered Online

MATH 104 LEC,TUT 0.50

Course ID: 006848

Introductory Calculus for Arts and Social Science

An introduction to applications of calculus in business, the behavioural sciences, and the social sciences. The models studied will involve polynomial, rational, exponential and logarithmic functions. The major concepts introduced to solve problems are rate of change, optimization, growth and decay, and integration. [Offered: F,W]

Prereq: Open only to students in the following Faculties: ARTS, AHS, ENV, SCI.

Antireq: MATH 127, 137, 147

Also offered Online

MATH 106 LEC,TUT 0.50

Course ID: 006869

Applied Linear Algebra 1

Systems of linear equations. Matrix algebra. Determinants. Introduction to vector spaces. Applications. [Offered: F,W,S]

Prereq: MATH 103 or 4U Calculus and Vectors.

Antireq: MATH 114, 115, 136, 146, NE 112

Also offered Online

MATH 109 LEC,TUT 0.50

Course ID: 006853

Mathematics for Accounting

Review and extension of differential calculus for functions of one variable. Multivariable differential calculus. Partial derivatives, the Chain Rule, maxima and minima and Lagrange multipliers. Introduction to matrix algebra.

Prereq: MATH 104 or 4U Calculus and Vectors; Accounting and Financial Management or Science Biotechnology/CA students only.

Antireq: ECON 211, MATH 116, 117, 124, 127, 137, 147

MATH 114 LEC,TUT 0.50

Course ID: 011645

Linear Algebra for Science

Vectors in 2- and 3-space and their geometry. Linear equations, matrices and determinants. Introduction to vector spaces. Eigenvalues and diagonalization. Applications. Complex numbers. [Offered: F]

Prereq: 4U Calculus and Vectors; Science or Geomatics students only.

Antireq: MATH 106, 115, 136, 146, NE 112

MATH 115 LEC,TST,TUT 0.50

Course ID: 006862

Linear Algebra for Engineering

Linear equations, matrices and determinants. Introduction to vector spaces. Eigenvalues and diagonalization. Applications. Complex numbers. [Offered: F]

Prereq: 4U Calculus and Vectors or 4U Mathematics of Data Management; Engineering students only.

Antireq: MATH 106, 114, 136, 146, NE 112

MATH 116 LEC,TST,TUT 0.50

Course ID: 006865

Calculus 1 for Engineering

Functions: review of polynomials, exponential, logarithmic, trigonometric. Operations on functions, curve sketching. Trigonometric identities, inverse functions. Derivatives, rules of differentiation. Mean Value Theorem, Newton's Method. Indeterminate forms and L'Hopital's rule, applications. Integrals, approximations, Riemann definite integral, Fundamental Theorems. Applications of the integral. [Offered: F]

Prereq: 4U Calculus and Vectors; Open to students in Engineering excluding Electrical and Computer Eng, Nanotechnology Eng, Software Eng and Systems Design Eng.

Antireq: MATH 117, 124, 127, 137, 147

MATH 117 LEC,TST,TUT 0.50

Course ID: 006866

Calculus 1 for Engineering

Functions of engineering importance; review of polynomial, exponential, and logarithmic functions; trigonometric functions and identities. Inverse functions (logarithmic and trigonometric). Limits and continuity. Derivatives, rules of differentiation; derivatives of elementary functions. Applications of the derivative, max-min problems, Mean Value Theorem. Antiderivatives, the Riemann definite integral, Fundamental Theorems. Methods of integration, approximation, applications, improper integrals. [Offered: F]

Prereq: 4U Calculus and Vectors; Open only to students in Electrical and Computer Engineering or Software Engineering or Nanotechnology Engineering.

Antireq: MATH 116, 124, 127, 137, 147

MATH 118 LEC,TST,TUT 0.50

Course ID: 006867

Calculus 2 for Engineering

Methods of integration: by parts, trigonometric substitutions, partial fractions; engineering applications, approximation of integrals, improper integrals. Linear and separable first order differential equations, applications. Parametric curves and polar coordinates, arc length and area. Infinite sequences and series, convergence tests, power series and applications. Taylor polynomials and series, Taylor's Remainder Theorem, applications. [Offered: W,S]

Prereq: One of MATH 116, 117, 127, 137, 147; Open only to students in Engineering excluding students in Electrical and Computer Eng, Nanotechnology Eng, Software Eng and Systems Design Eng.

Antireq: MATH 119, 128, 138, 148

MATH 119 LEC,TST,TUT 0.50

Course ID: 006868

Calculus 2 for Engineering

Elementary approximation methods: interpolation; Taylor polynomials and remainder; Newton's method, Landau order symbol, applications. Infinite series: Taylor series and Taylor's Remainder Theorem, geometric series, convergence test, power series, applications. Functions of several variables: partial derivatives, linear approximation and differential, gradient and directional derivative, optimization and Lagrange multipliers. Vector-valued functions: parametric representation of curves, tangent and normal vectors, line integrals and applications. [Offered: W,S]

Prereq: One of MATH 116, 117, 127, 137, 147; Open only to students in Electrical and Computer Engineering or Software Engineering or Nanotechnology Engineering.

Antireq: MATH 118, 128, 138, 148

MATH 124 LEC,TUT 0.50

Course ID: 012879

Calculus and Vector Algebra for Kinesiology

Review of trigonometry and basic algebra. Introduction to vectors in 2- and 3-space: sums, addition, dot products, cross products and angles between vectors. Solving linear systems in two and three variables. Functions of a real variable: powers, rational functions, trigonometric, exponential and logarithmic functions, their properties. Intuitive discussion of limits and continuity. Derivatives of elementary functions, derivative rules; applications to curve sketching, optimization. Relationships between distance, velocity and acceleration. The definite integral, antiderivatives, the Fundamental Theorem of Calculus; change of variable and integration by parts; applications to area, centre of mass. [Offered: F]

Prereq: 4U Advanced Functions; Kinesiology students only.

Antireq: MATH 109, 116, 117, 127, 137, 147

MATH 127 LEC,TUT 0.50

Course ID: 006871

Calculus 1 for the Sciences

Functions of a real variable: powers, rational functions, trigonometric, exponential and logarithmic functions, their properties and inverses. Intuitive discussion of limits and continuity. Definition and interpretation of the derivative, derivatives of elementary functions, derivative rules and applications. Riemann sums and other approximations to the definite integral. Fundamental Theorems and antiderivatives; change of variable. Applications to area, rates, average value. [Offered: F,W,S]

Prereq: MATH 104 or 4U Calculus and Vectors.

Antireq: MATH 109, 116, 117, 124, 137, 147

Also offered Online

MATH 128 LEC,TUT 0.50

Course ID: 006872

Calculus 2 for the Sciences

Transforming and evaluating integrals; application to volumes and arc length; improper integrals. Separable and linear first order differential equations and applications. Introduction to sequences. Convergence of series; Taylor polynomials, Taylor's Remainder Theorem, Taylor series and applications. Parametric/vector representation of curves; particle motion and arc length. Polar coordinates in the plane. [Offered: F,W,S]

Prereq: One of MATH 117, 127, 137, 147.

Antireq: MATH 118, 119, 138, 148

Also offered Online

MATH 135 LEC,TST,TUT 0.50

Course ID: 006878

Algebra for Honours Mathematics

An introduction to the language of mathematics and proof techniques through a study of the basic algebraic systems of mathematics: the integers, the integers modulo n , the rational numbers, the real numbers, the complex numbers and polynomials. [Offered: F,W,S]

Prereq: 4U Calculus and Vectors or 4U Mathematics of Data Management; Honours Mathematics or Mathematics/ELAS or Software Engineering students only.

Antireq: MATH 145

Also offered Online

MATH 136 LAB,LEC,TST,TUT 0.50

Course ID: 006879

Linear Algebra 1 for Honours Mathematics

Systems of linear equations, matrix algebra, elementary matrices, computational issues. Real n -space, vector spaces and subspaces, basis and dimension, rank of a matrix, linear transformations and matrix representations. Determinants, eigenvalues and diagonalization, applications. [Offered: F,W,S]

Prereq: (MATH 135 with a grade of at least 60% or MATH 145; Honours Mathematics or Mathematics/ELAS students) or Science Mathematical Physics students.

Antireq: MATH 106, 114, 115, 146, NE 112

Also offered Online

MATH 137 LAB,LEC,TST,TUT 0.50

Course ID: 006880

Calculus 1 for Honours Mathematics

Absolute values and inequalities. Sequences and their limits. Introduction to series. Limits of functions and continuity. The Intermediate Value Theorem and approximate solutions to equations. Derivatives, linear approximation and Newton's method. The Mean Value Theorem and error bounds. Applications of the Mean Value Theorem, Taylor polynomials and Taylor's Theorem, Big-O Notation, Suitable topics are illustrated using computer software. [Offered: F,W,S]

Prereq: 4U Calculus and Vectors; Honours Mathematics or Mathematics/ELAS or Mathematical Physics students only.

Antireq: MATH 116, 117, 124, 127, 147

Also offered Online

MATH 138 LEC,TST,TUT 0.50

Course ID: 006881

Calculus 2 For Honours Mathematics

Introduction to the Riemann Integral and approximations. Antiderivatives and the Fundamental Theorem of Calculus. Change of variables, Methods of integration. Applications of the integral. Improper integrals. Linear and separable differential equations and applications. Tests for convergence for series. Binomial Series, Functions defined as power series and Taylor series. Vector (parametric) curves in \mathbb{R}^2 . Suitable topics are illustrated using computer software. [Offered: F,W,S]

Prereq: MATH 127 with a grade of at least 70% or MATH 137 with a grade of at least 60% or MATH 147; Honours Mathematics or Mathematics/ELAS or Mathematical Physics students only.

Antireq: MATH 118, 119, 128, 148

Also offered Online

MATH 145 LEC,TST,TUT 0.50

Course ID: 006886

Algebra (Advanced Level)

MATH 145 is an advanced-level version of MATH 135. [Offered: F]

Department Consent Required

Prereq: 4U Calculus and Vectors or 4U Mathematics of Data Management; Honours Mathematics students only.

Antireq: MATH 135

MATH 146 LAB,LEC,TST,TUT 0.50

Course ID: 006887

Linear Algebra 1 (Advanced level)

MATH 146 is an advanced-level version of MATH 136. [Offered: W]

Prereq: MATH 145 or instructor consent; Honours Mathematics students only.

Antireq: MATH 106, 114, 115, 136, NE 112

MATH 147 LAB,LEC,TST,TUT 0.50

Course ID: 006888

Calculus 1 (Advanced Level)

MATH 147 is an advanced-level version of MATH 137. [Offered: F]

Department Consent Required

Prereq: 4U Calculus and Vectors; Honours Mathematics students only.

Antireq: MATH 116, 117, 124, 127, 137

MATH 148 LEC,TST,TUT 0.50

Course ID: 006889

Calculus 2 (Advanced Level)

MATH 148 is an advanced-level version of MATH 138. [Offered: W]

Prereq: MATH 147 or instructor consent; Honours Mathematics students only.

Antireq: MATH 118, 119, 128, 138

MATH 199 LEC 0.50

Course ID: 015595

Mathematical Discovery and Invention

A course in problem solving in which intriguing and difficult problems are solved. Problems are taken mainly from the elementary parts of applied mathematics, computer science, statistics and actuarial science, pure mathematics, and combinatorics and optimization. Material relevant to the problems is taught in depth.

Instructor Consent Required

Only offered Online

MATH 200s

MATH 207 LEC,TST,TUT 0.50

Course ID: 013105

Calculus 3 (Non-Specialist Level)

Multivariable functions and partial derivatives. Gradients. Optimization including Lagrange multipliers. Polar coordinates. Multiple integrals. Surface integrals on spheres and cylinders. Introduction to Fourier Series. [Offered: F,W,S]

Prereq: MATH 128 or 138 or 148.

Antireq: AMATH 231, MATH 212, 212N/NE 217, MATH 217, 227, 237, 247

MATH 211 LEC,TST,TUT 0.50

Course ID: 006891

Advanced Calculus 1 for Electrical and Computer Engineers

Fourier series. Ordinary differential equations. Laplace transform. Applications to linear electrical systems. [Offered: F,W]

Prereq: MATH 119; Not open to Mathematics students.

Antireq: AMATH 350, MATH 218, 228

(Cross-listed with ECE 205)

MATH 212 LEC,TST,TUT 0.50

Course ID: 006892

Advanced Calculus 2 for Electrical Engineers

Triple integrals, cylindrical and spherical polar coordinates. Divergence and curl, applications. Surface integrals, Green's, Gauss' and Stokes' theorems, applications. Complex functions, analytic functions, contour integrals, Cauchy's integral formula, Laurent series, residues. [Offered: F,S]

Prereq: MATH 211/ECE 205; Not open to Mathematics students.

Antireq: AMATH 231, MATH 207, 217, 227, 237, 247

(Cross-listed with ECE 206)

MATH 213 LEC,TUT 0.50

Course ID: 011849

Advanced Mathematics for Software Engineers

Fourier series. Differential equations. Laplace transforms. Applications to circuit analysis. [Offered: S]

Prereq: MATH 119; Software Engineering students only.

Antireq: AMATH 250, MATH 211/ECE 205, 218, 228, MATH 212N/NE 217

MATH 215 LEC,TUT 0.50

Course ID: 013464

Linear Algebra for Engineering

Systems of linear equations; their representation with matrices and vectors; their generalization to linear transformations on abstract vector spaces; and the description of these linear transformations through quantitative characteristics such as the determinant, the characteristic polynomial, eigenvalues and eigenvectors, the rank, and singular values. [Offered F,W]

Prereq: Level at least 2A Computer Engineering or Electrical Engineering students only.

Antireq: MATH 106, 114, 115, 136, 146, NE 112

MATH 217 LEC,TUT 0.50

Course ID: 006897

Calculus 3 for Chemical Engineering

Curves and surfaces in \mathbb{R}^3 . Multivariable functions, partial derivatives, the chain rule, gradients. Optimization, Lagrange Multipliers. Double and triple integrals, change of variable. Vector fields, divergence and curl. Vector integral calculus: Green's theorem, the Divergence theorem and Stokes' theorem. Applications in engineering are emphasized. [Offered: F,W]

Prereq: MATH 118; Not open to Mathematics students.

Antireq: AMATH 231, CIVE 221, ENVE 221, MATH 207, 212/ECE 206, 227, 237, 247, MATH 212N/NE 217, ME 201

MATH 218 LEC,TUT 0.50

Course ID: 006898

Differential Equations for Engineers

First order equations, second order linear equations with constant coefficients, series solutions, the Laplace transform method, systems of linear differential equations. Applications in engineering are emphasized. [Offered: F,S]

Prereq: One of MATH 118, 119, 128, 138, 148, SYDE 112; Engineering or Earth Science students only.

Antireq: AMATH 250, 251, 350, 351, CIVE 222, ENVE 223, MATH 211/ECE 205, 228, MATH 212N/NE 217, ME 203, SYDE 211

MATH 225 LEC,TUT 0.50

Course ID: 006870

Applied Linear Algebra 2

Vector spaces. Linear transformations and matrices. Inner products. Eigenvalues and eigenvectors. Diagonalization. Applications. [Offered: F,S]

Prereq: MATH 106 or 136 or 146.

Antireq: MATH 235, 245

Also offered Online

MATH 227 LEC,TUT 0.50

Course ID: 006907

Calculus 3 for Honours Physics

Directional derivative and the chain rule for multivariable functions. Optimization, Lagrange multipliers. Double and triple integrals on simple domains; transformations and Jacobians; change of variable in multiple integrals. Vector fields, divergence and curl. Vector integral calculus: Line and surface integrals, Green's Theorem, Stokes' Theorem, Gauss' Theorem, conservative vector fields. [Offered: F]

Prereq: MATH 128 or 138; Only open to Science students in honours plans.

Antireq: AMATH 231, MATH 207, 212/ECE 206, 217, 237, 247, MATH 212N/NE 217

MATH 228 LEC,TUT 0.50

Course ID: 006908

Differential Equations for Physics and Chemistry

First-order equations, second-order linear equations with constant coefficients, series solutions and special functions, the Laplace transform method. Applications in physics and chemistry are emphasized. [Offered: F,W]

Prereq: MATH 128 or 138; Not open to Mathematics students.

Antireq: AMATH 250, 251, 350

Also offered Online

MATH 229 LEC,TUT 0.50

Course ID: 013104

Introduction to Combinatorics (Non-Specialist Level)

Introduction to graph theory: colourings, connectivity, Eulerian tours, planarity. Introduction to combinatorial analysis: elementary counting, generating series, binary strings. [Offered: F]

Prereq: (MATH 106 or 136 or 146) and (MATH 135 or 145).

Antireq: CO 220, MATH 239, 249

MATH 235 LEC,TST,TUT 0.50

Course ID: 006913

Linear Algebra 2 for Honours Mathematics

Orthogonal and unitary matrices and transformations. Orthogonal projections, Gram-Schmidt procedure, best approximations, least-squares. Inner products, angles and orthogonality, orthogonal diagonalization, singular value decomposition, applications.

[Note: Offered: F,W,S]

Prereq: MATH 106 with a grade of at least 70% or MATH 136 with a grade of at least 60% or MATH 146; Honours Mathematics or Mathematical Physics students.

Coreq: MATH 128 or 138 or 148.

Antireq: MATH 225, 245

Also offered Online

MATH 237 LEC,TST,TUT 0.50

Course ID: 006914

Calculus 3 for Honours Mathematics

Calculus of functions of several variables. Limits, continuity, differentiability, the chain rule. The gradient vector and the directional derivative. Taylor's formula. Optimization problems. Mappings and the Jacobian. Multiple integrals in various co-ordinate systems.

[Note: MATH 247 may be substituted for MATH 237 whenever the latter is a plan requirement. Offered: F,W,S]

Prereq: (MATH 106 with at least 70% or MATH 136 with at least 60% or MATH 146) and (MATH 128 with at least 70% or MATH 138 with at least 60% or MATH 148); Honours Math or Math/Physics students.

Antireq: MATH 207, 212/ECE 206, 217, 227, MATH 212N/NE 217

MATH 239 LEC,TST,TUT 0.50

Course ID: 006915

Introduction to Combinatorics

Introduction to graph theory: colourings, matchings, connectivity, planarity. Introduction to combinatorial analysis: generating series, recurrence relations, binary strings, plane trees.

[Note: Offered: F,W,S]

Prereq: ((MATH 106 with a grade of at least 70% or MATH 136 or 146) and (MATH 135 with a grade of at least 60% or MATH 145)) or level at least 2A Software Engineering; Honours Mathematics students only.

Antireq: CO 220, MATH 229, 249

MATH 245 LEC,TST 0.50

Course ID: 006920

Linear Algebra 2 (Advanced Level)

MATH 245 is an advanced-level version of MATH 235. [Offered: F,S]

Prereq: MATH 146 or instructor consent; Honours Mathematics students only.

Antireq: MATH 225, 235

MATH 247 LEC,TST 0.50

Course ID: 006921

Calculus 3 (Advanced Level)

Topology of real n-dimensional space: completeness, closed and open sets, connectivity, compact sets, continuity, uniform continuity. Differential calculus on multivariable functions: partial differentiability, differentiability, chain rule, Taylor polynomials, extreme value problems. Riemann integration: Jordan content, integrability criteria, Fubini's theorem, change of

variables. Local properties of continuously differentiable functions: open mapping theorem, inverse function theorem, implicit function theorem. [Offered: F,W,S]

Prereq: MATH 146, 148 or instructor consent; Honours Mathematics students only

MATH 249 LEC,TST 0.50

Course ID: 006922

Introduction to Combinatorics (Advanced Level)

MATH 249 is an advanced-level version of MATH 239. [Offered: F,W]

Prereq: (MATH 135 with minimum grade of 80% or MATH 145) and (MATH 136 or 146) or instructor consent; Honours Mathematics students only.

Antireq: CO 220, MATH 229, 239

MATH 400s

MATH 455W LEC 0.50

Course ID: 015801

Partial Differential Equations (WLU)

Department Consent Required

MEDIEVAL STUDIES

MEDVL 100s

MEDVL 105 LEC 0.50

Course ID: 011784

Introduction to Medieval Studies

An introduction to Medieval European civilization focusing on essential aspects of the discipline: history, literature, philosophy, religion, art, architecture and archaeology, law, and science and technology.

(Cross-listed with CLAS 105)

MEDVL 115 DIS,LEC 0.50

Course ID: 012629

Crusading in the Middle Ages

This course examines the historical events and cultural assumptions that led to the European phenomenon of crusading, or holy war, between 1095 and 1453.

(Cross-listed with HIST 115)

MEDVL 200s

MEDVL 205 LEC 0.50

Course ID: 004280

Medieval Society

A survey of medieval civilization featuring such topics as the individual (male and female), political institutions, art, architecture, religion, philosophy, literature, social life and leisure activities.

(Cross-listed with CLAS 205)

MEDVL 250R LEC 0.50

Course ID: 015147

The History of Islamic Civilization from Late Antiquity to 1300

This course surveys the diverse history of Islamic societies from the seventh to the thirteenth century. The primary focus is on the central Islamic lands from Egypt to Iran. In addition to the standard narrative, the course also examines salient aspects of Islamic civilization on a thematic basis.

[Note: SI 121R recommended.]

(Cross-listed with SI 250R)

MEDVL 251R LEC 0.50

Course ID: 015148

The History of Islamic Civilization from 1300-1800: The Islamic Gunpowder Empires

This course studies in comparative fashion the rise, consolidation, and decline of the three major Islamic empires of the early modern period (c. 1300-1800): the Ottomans in Anatolia, the Balkans, and the Middle East, the Safavids in Iran, and the Mughals in India.

[Note: SI 121R recommended.]

(Cross-listed with SI 251R)

MEDVL 260 DIS,LEC 0.50

Course ID: 006314

Europe: 410-1303

The political, cultural, economic, and ecclesiastical development of Europe from the fall of the Roman Empire to the end of the High Middle Ages.

Prereq: Level at least 2A

(Cross-listed with HIST 260)

Offered at St. Jerome's University

MEDVL 300s

MEDVL 304 DIS,LEC 0.50

Course ID: 008378

Heresy and Religious Crises in Late Medieval Europe

An exploration of the impact of social crises on late medieval religious modes of expression. Topics will include the Great Famine, the Black Death, the Avignon Papacy and Western Schism, the development of heretical movements, and the eventual disintegration of European religious unity.

[Note: This course fulfils the Area 2B requirement for Religious Studies majors.]

Prereq: Level at least 2A

(Cross-listed with HIST 304, RS 342)

MECHANICAL ENGINEERING

Notes

1. General prerequisite: Registration in the Mechanical Engineering Department or permission of course instructor is required.
2. The Department reserves the right to cancel any 400-500 level elective courses if teaching resources become unavailable.

ME 100s

ME 100 LAB,LEC,TUT 0.75

Course ID: 006703

Introduction to Mechanical Engineering Practice 1

This course is focused on fundamental knowledge and skills essential for academic and professional development in mechanical engineering. It covers basic methods and principles used by mechanical engineers, e.g., fundamentals of technical communication, the design process and problem solving, measurements and data analysis, engineering professionalism, safety, and intellectual property. The fundamentals of engineering graphical communication using computer-aided design (CAD) and freehand sketching will be a significant component of this course. Written, graphical and oral communications are emphasized. Examples are drawn from Mechanical Engineering. [Offered: F]

Prereq: 1A Mechanical Engineering

ME 100B SEM 0.00

Course ID: 013359

Seminar

Discussion of the structure of and options within the Mechanical Engineering curriculum; of the operation of Department, Faculty, University, technical societies; of student team and graduate school opportunities; of safety training; and of subject material in support of core courses. [Offered: W,S]

Prereq: Level at least 1B Mechanical Engineering

ME 101 LAB,LEC,TUT 0.75

Course ID: 014560

Introduction to Mechanical Engineering Practice 2

This course is a continuation of ME 100 and is aimed at reinforcing the concepts related to technical communications, professionalism, and professional development, with emphasis on mechanical engineering concepts and practical examples. The fundamentals of programming are a significant component of this course, focusing on digital computing, and basic programming and algorithm writing. Programming examples are drawn from Mechanical Engineering. [Offered: W,S]

Prereq: ME 100; Level at least 1B Mechanical Engineering

ME 115 LAB,LEC,PRJ,TST,TUT 0.50

Course ID: 006710

Structure and Properties of Materials

The relevance of materials to engineering practice. The microstructure of materials, crystallinity and crystal imperfections, glasses and amorphous solids. Elastic and plastic deformation in metals, viscoelasticity of plastics. Strengthening mechanisms in metals, polymers and ceramics. Fracture of brittle and ductile solids. Electrical and magnetic properties of materials. [Offered: W, S]

Prereq: CHE 102; Level at least 1B Mechanical Engineering.

Antireq: ME 135/235, MTE 111

ME 200s

ME 200A LEC 0.00

Course ID: 009306

Seminar

Discussion of the structure of and options within the Mechanical Engineering curriculum; of the operation of Department, Faculty, University, technical societies; of student team and graduate school opportunities; of safety training; and of subject material in support of core courses. [Offered: F,W]

Prereq: 2A Mechanical Engineering

ME 200B LEC 0.00

Course ID: 009305

Seminar

Discussion of the structure of and options within the Mechanical Engineering curriculum; of the operation of Department, Faculty, University, technical societies; of student team and graduate school opportunities; of safety training; and of subject material in support of core courses. [Offered: F,S]

Prereq: 2B Mechanical Engineering

ME 201 LAB,LEC,TUT 0.50

Course ID: 006706

Advanced Calculus

A continuation of First Year calculus, focusing on calculus of scalar and vector functions of several variables. Both classical calculus techniques and the computer implementation of numerical methods are discussed. Partial differentiation, total derivatives, chain rule, transformation of variables, Taylor series. Applications include geometrical problems, error estimation, maxima and minima, least squares curve fits. Multiple integration in standard coordinate systems, Jacobians. Vector calculus, divergence, curl, Laplacian, and Stokes', Green's and Divergence theorems. Scalar flux transport, work and energy, conservative force fields. [Offered: F, W]

Prereq: MATH 118; Level at least 2A Mechanical Engineering

ME 202 LEC,TUT 0.50

Course ID: 006707

Statistics for Engineers

Frequency distributions; measures of central tendency; standard deviation and other measures of dispersion. Probability. Binomial, Poisson, normal distributions. Techniques of sampling and statistical estimation. Tests of hypotheses; significance. The t-test and chi-squared test. Curve fitting by least squares. Statistical process control. Correlation and regression. Experimental design. [Offered: F, W]

Prereq: MATH 116; Level at least 2A Mechanical Engineering

ME 203 LEC,TUT 0.50

Course ID: 006708

Ordinary Differential Equations

Solution of ordinary differential equations. First and higher order differential equations. Nonlinear equations. Linear equations with constant and variable coefficients. Systems of linear equations. Applications involving simple dynamical systems and principles of mass, momentum and heat conservation will emphasize the role of ordinary differential equations in understanding the behaviour of physical systems. Introduction to the Laplace transform method for solving ordinary differential equations. [Offered: F, S]

Prereq: ME 201, Level at least 2B Mechanical Engineering

ME 212 LEC,TUT 0.50

Course ID: 006709

Dynamics

An introduction to the kinematics of particle and rigid body motion. Impulse-momentum equations. Work-energy methods and Euler's equations. Simple gyroscopes. Vibrations. [Offered: F, S]

Prereq: PHYS 115, MATH 118; Level at least 2B Mechanical Engineering

ME 219 LEC,TUT 0.50

Course ID: 006711

Mechanics of Deformable Solids 1

Concept of equilibrium, force analysis of structures and structural components, equilibrium of deformable bodies, stress and strain concepts, stress-strain relationships, stress analysis of prismatic members in axial, shearing, torsional and flexural deformations, shear force and bending moment diagrams. [Offered: F, W, S]

Prereq: PHYS 115; Level at least 2A Mechanical Engineering or 2B Management Engineering

ME 220 LEC,TUT 0.50

Course ID: 006712

Mechanics of Deformable Solids 2

A general treatment of the behaviour of structural components from the study of stress and strain in solids. Topics include superposition, energy theorems, theories of failure, elastic and inelastic analysis of symmetrical bending, torsion of circular members, columns and stability, and virtual work. [Offered: F, S]

Prereq: ME 219; Level at least 2B Mechanical Engineering

ME 230 LAB,LEC,TUT 0.50

Course ID: 006713

Control of Properties of Materials

Phase equilibria, non-equilibrium behaviour, heat treatment of metals, diffusion, strengthening processes. Alloying, composite materials, cold and hot working. Failure of engineering materials; creep, fatigue, corrosion and other environmental degradation processes. Prevention of service failures. [Offered: F, W]

Prereq: ME 115; Level at least 2A Mechanical Engineering

ME 235 LAB,LEC,PRJ,TST,TUT 0.50

Course ID: 012406

Materials Science and Engineering

The microstructure of crystalline and amorphous materials including metals, polymers and ceramics. Elastic and plastic deformation in metals, viscoelastic deformation of polymers and viscous deformation of ceramic glasses. Fracture of brittle and ductile solids. Phase equilibria, non-equilibrium behaviour, heat treatment of metals, diffusion, strengthening processes. [Offered: F]

Prereq: CHE 102; Level at least 2A Management Engineering students.

Antireq: ME 115/215, 230, MTE 111

ME 250 LEC,TUT 0.50

Course ID: 006714

Thermodynamics 1

The engineering science of energy. The scope and limitations of thermodynamics. Macroscopic approach to heat, work, energy and the First Law. Properties and state of simple substances. Control-mass and control-volume energy analysis. The Second Law of Thermodynamics, principle of increase of entropy, limiting cycle efficiencies, criteria for equilibrium. [Offered: F, S]

Prereq: MATH 118; Level at least 2B Mechanical Engineering or 2A Management Engineering.

Antireq: ECE/MTE 309, SYDE 381

ME 262 LAB,LEC,TUT 0.50

Course ID: 006715

Introduction to Microprocessors and Digital Logic

Number systems, logic gates, Boolean algebra. Karnaugh maps and combinational logic design. Sequential logic and state machines. Programmable Logic Controllers (PLCs) and PLC programming using ladder logic and statement list. Microcomputer structure and operation, I/O and interfacing. Assembly language programming. Laboratory work includes microcomputer and PLC programming. [Offered: F, S]

Prereq: GENE 123; Level at least 2B Mechanical Engineering.

ME 269 LAB,LEC,TUT 0.50

Course ID: 006716

Electromechanical Devices and Power Processing

Review of circuit analysis. Basic electromagnetic theory. DC machines, synchronous generators, transformers, and induction motors. Introduction to typical speed and torque control techniques of machines using power electronic based devices.

[Note: Labs: Alternate Weeks. Offered: F, W]

Prereq: GENE 123; Level at least 2A Mechanical Engineering or Mechatronics Option

ME 300s

ME 300A LEC 0.00

Course ID: 009307

Seminar

Discussion of the structure of and options within the Mechanical Engineering curriculum; of the operation of Department, Faculty, University, technical societies; of student team and graduate school opportunities; of safety training; and of subject material in support of core courses. [Offered: W,S]

Prereq: 3A Mechanical Engineering

ME 300B LEC 0.00

Course ID: 009308

Seminar

Discussion of the structure of and options within the Mechanical Engineering curriculum; of the operation of Department, Faculty, University, technical societies; of student team and graduate school opportunities; of safety training; and of subject material in support of core courses. [Offered: F,W]

Prereq: 3B Mechanical Engineering

ME 303 LEC,TUT 0.50

Course ID: 006718

Advanced Engineering Mathematics

A continuation of ME 201 and ME 203 in which both classical calculus techniques and the computer implementation of numerical methods are discussed. Partial differential equations of mathematical physics: wave, diffusion, Laplace, Poisson equations. Boundary and initial conditions. Separation of variables. Numerical methods for ordinary and partial differential equations. Applications will emphasize the role of ordinary and partial differential equations in understanding the behaviour of physical systems. [Offered: W, S]

Prereq: ME 201, 203; Level at least 3A Mechanical Engineering

ME 321 LEC,TUT 0.50

Course ID: 006721

Kinematics and Dynamics of Machines

Principles of the geometry of motion, Uniform and non-uniform motion, linkage, gears, cams. Synthesis and analysis of mechanisms. Consideration of the static and dynamic forces in machines. Vibration analysis, response to shock, motion and force transmissibility, vibration isolation. [Offered: W, S]

Prereq: (ME 201 or MTE 202) and (ME 212 or SYDE 182); Level at least 3A Mechanical Engineering or Mechatronics Engineering

ME 322 LAB,LEC,TUT 0.50

Course ID: 006722

Mechanical Design 1

Adequacy assessment and synthesis of machine elements with a focus on the design process. Static failure of ductile and brittle materials, fatigue analysis of structures. Topics include the design of welds, bolted connections, springs and shafts. [Offered: F, W]

Prereq: ME 220, 321; Level at least 3B Mechanical Engineering

ME 340 LAB,LEC,TUT 0.50

Course ID: 006724

Manufacturing Processes

The principles of manufacturing unit processes including casting, forming, machining and joining. Interactions between design, materials (metals, polymers, ceramics) and processes. Advantages and limitations, relative cost, and production rates of competitive processes. [Offered: W, S]

Prereq: ME 219, 230; Level at least 3A Mechanical Engineering

ME 351 LAB,LEC,TUT 0.50

Course ID: 006725

Fluid Mechanics 1

Physical properties of fluids and fundamental concepts in fluid mechanics. Hydrostatics. Conservation laws for mass, momentum and energy. Flow similarity and dimensional analysis as applied to engineering problems in fluid mechanics. Laminar and turbulent flow. Engineering applications such as flow measurement, flow in pipes and fluid forces on moving bodies. [Offered: F, W, S]

Prereq: (ME 250 or

Coreq: ECE/MTE 309); Level at least 3A Mechanical or Mechatronics Engineering students only

ME 353 LAB,LEC,TUT 0.50

Course ID: 006726

Heat Transfer 1

Introduction to heat transfer mechanisms. The formulation and solution of steady and transient heat conduction. Radiant heat transfer including exchange laws and view factors. Introductory convective heat transfer. [Offered: F, W]

Prereq: ME 250, 351; Level at least 3B Mechanical Engineering

ME 354 LAB,LEC,TUT 0.50

Course ID: 006727

Thermodynamics 2

Emphasis on applications of thermodynamics to flow processes. Real fluids, evaluation of state functions of real fluids. Non-reacting mixtures, reacting mixtures, equilibrium considerations. [Offered: W, S]

Prereq: ME 250; Level at least 3A Mechanical Engineering

ME 360 LAB,LEC,TUT 0.50

Course ID: 006728

Introduction to Control Systems

Open loop and feedback control. Laws governing mechanical, electrical, fluid and thermal control components. Analogies. Analysis of some engineering control systems using block diagram algebra, transient and steady-state operation. Different modes of control. Review of Laplace Transform methods. Concepts of stability. Principles of analog computer simulation. Brief treatment of linear flow graphs and bondgraphs. [Offered: F, W]

Prereq: ME 203, 321; Level at least 3B Mechanical Engineering

ME 362 LAB,LEC,TUT 0.50

Course ID: 006729

Fluid Mechanics 2

Basic equations of two-dimensional flow, potential flow, exact viscous solutions. Introduction to lubrication, boundary layers, turbulence, and compressible flow. Turbomachinery fundamentals and applications. Selected advanced topics. [Offered: F, W]

Prereq: ME 351; Level at least 3B Mechanical Engineering or 4A Mechatronics Engineering

ME 380 LEC,PRJ 0.50

Course ID: 006731

Mechanical Engineering Design Workshop

In this course, students study the design process, including needs analysis, problem definition; design criteria and critical parameter identification, generation of alternative solutions; conceptual design, detailed design, optimization; and implementation. Most of the term is devoted to a significant design project in which student groups work independently and competitively, applying the design process to a project goal set by the faculty coordinator. The design project typically includes construction of a prototype, and part of the course grade may depend on the performance of the prototype in a competitive test. In exceptional circumstances, the requirement for a prototype may be replaced by a computer simulation, or may be waived. Other Mechanical Engineering faculty members, particularly those teaching 3B courses, are available to provide advice and supervision to ME 380 students. [Offered: F, W]

Prereq: Level at least 3B Mechanical Engineering.

Antireq: MTE 380

ME 400s

ME 400A LEC 0.00

Course ID: 009310

Seminar

Research frontiers in Mechanical Engineering, specific discussion of research done at Waterloo, seminars by members of research groups. [Offered: S, F]

Prereq: 4A Mechanical Engineering

ME 400B LEC 0.00

Course ID: 009311

Seminar

Research frontiers in Mechanical Engineering, specific discussion of research done at Waterloo, seminars by members of research groups. [Offered: W]

Prereq: 4B Mechanical Engineering

ME 401 LEC 0.50

Course ID: 006732

Law for the Professional Engineer

The Canadian Legal System, Forms of Business Organizations, Tort Law, the role of the professional; Contract Law, the Elements of a Contract, Statute of Frauds, Misrepresentation, Duress and Undue Influence, Mistake, Contract Interpretation, Discharge of Contract; Breach of Contract and fundamental breach; Agreements between the client and Engineer; General Law, the Mechanics' Lien Act, comparative discussion of the Professional Engineers Act as it relates to the earlier statute, Intellectual Property and Industrial Property. It is intended to prepare the student for the examination in law which must be written for licensing by Professional Engineers Ontario (PEO).

[Note: Course will be graded on a CR/NCR basis. Offered: S, F]

Prereq: Level at least 4A Mechanical or Mechatronics Engineering.

Antireq: (For Mathematics students only) AFM 231/LS 283, BUS 231W, CIVE 491, COMM 231, ECE 290, ENVS 201, GENE 411

Mechanical Design 2

A continuation of the ME 322 course in analysis and synthesis of machinery, including advanced analysis of machine elements such as clutches, brakes, couplings, journal bearings and gears. Advanced machine design concepts such as reliability, optimization and techniques for stimulating innovative design. A synthesis project involving the machine elements studied is usually included. [Offered: F, S]

Prereq: ME 322; Level at least 4A Mechanical Engineering

ME 435 LEC,PRJ 0.50

Course ID: 006736

Industrial Metallurgy

This course is intended for those students interested in acquiring a working knowledge of metallurgy. It covers: metals and alloy systems, iron-carbon alloys, heat treatment and the function of alloying elements in steel, corrosion and scale resistant alloys, copper and nickel base alloys, light metals and their alloys; casting, hot and cold working of metals; soldering, brazing and welding; corrosion and oxidation; metal failure analysis. [Offered: F, S]

Prereq: ME 230; Level at least 4A Mechanical Engineering

ME 436 LAB,LEC 0.50

Course ID: 006755

Welding and Joining Processes

Introduction to modern welding and joining processes for metals, polymers and ceramics. Fundamentals of the joining process and the influence of the process parameters on weld dimensions, strength and quality. Fusion welding processes such as shielded metal arc, gas tungsten arc, gas metal arc, submerged arc welding and others including electron beam and laser beam welding. Resistance welding processes, solid-state welding processes, soldering and brazing. Laboratory exercises will provide hands-on experience with a number of industrially significant welding processes. [Offered: F,S]

Prereq: ME 230 or MTE 111; Level at least 4A Mechanical Engineering or Mechatronics Engineering students

ME 452 LAB,LEC,PRJ 0.50

Course ID: 006739

Energy Transfer in Buildings

Thermodynamic properties of moist air; psychrometric charts; humidity measurements; direct water contact processes; heating and cooling of moist air by extended surface coils; solar radiation; heating and cooling loads on buildings; effects of the thermal environment; air conditioning calculations. [Offered: W]

Prereq: (ME 353, 354 and level at least 4A Mechanical Engineering) or (ECE/MTE 309 and level at least 4A Mechatronics Engineering)

ME 456 LEC 0.50

Course ID: 006740

Heat Transfer 2

Selected topics in heat transfer fundamentals and applications. Topics to be covered include the fundamentals of convection with analytical solutions to simple laminar flow problems and approximate solutions to turbulent flow problems based on analogies between momentum and heat transfer. Also covered is radiant exchange in grey enclosures and in black enclosures containing emitting-absorbing gases. The remaining topics will be chosen from design of heat exchangers; condensation heat transfer; boiling heat transfer; and the treatment of problems in heat conduction. [Offered: F, S]

Prereq: ME 353, 362; Level at least 4A Mechanical Engineering

ME 459 LEC 0.50

Course ID: 006741

Energy Conversion

Review of reserves and consumption trends of Canada's and the world's energy resources. Design of fossil-fuel central power plants, including boiler efficiency calculations and advanced steam and binary cycles. Review of atomic physics including fission and fusion energy. Design of nuclear fission power plants including design of reactor core for critical conditions, fuel

cycles and radiation hazards. Design considerations for solar energy conversion devices including: availability of solar energy, solar-thermal converters, thermal storage and photovoltaics. Principles of fuel cells and some aspects of their design. Other topics as appropriate. [Offered: F, S]

Prereq: (ME 353, 354 and level at least 4A Mechanical Engineering) or (ECE/MTE 309 and level at least 4A Mechatronics Engineering)

ME 481 PRJ 0.50

Course ID: 006745

Mechanical Engineering Design Project 1

The first of two required courses for the Mechanical Engineering capstone design project. This course is intended to enable students to engage in in-depth engineering design and decision-making using engineering science while encouraging creativity and resourcefulness and addressing the criteria listed in the faculty of engineering design rubrics. Students will work in small groups on a design project of their own choosing or as part of a major student team project. The goal is to develop a design proposal, consisting of the needs analysis, design specifications and project plan, followed by the initial and detailed design work. [Offered: F, S]

Prereq: ME 380; Level at least 4A Mechanical Engineering students only.

Antireq: MTE 481

ME 482 PRJ 0.50

Course ID: 006746

Mechanical Engineering Design Project 2

A continuation of ME 481. The final design of the major Mechanical Engineering project proposed in ME 481 will be undertaken. The purpose of this phase of the project is to carry out a detailed technical design and proof of feasibility of the solution proposed in ME 481 [Offered: W]

Prereq: ME 380, 481; Level at least 4B Mechanical Engineering students only.

Antireq: MTE 482

ME 500s

ME 524 LEC,TUT 0.50

Course ID: 006748

Advanced Dynamics and Vibrations

This course is a continuation of ME 212 and ME 321. It includes study of planar and three-dimensional motion of rigid bodies and systems, including gyroscopic effects. Vector (Newton's Method) and analytical (Lagrange's Equation) methods are used to derive equations of motion. Linear vibrational analyses are performed to examine natural frequencies, stability, and mode shapes. Computer simulation of non-linear systems is discussed. [Offered: W]

Prereq: ME 212 and 321; Level at least 4A Mechanical or Mechatronics Engineering students only

ME 526 LEC 0.50

Course ID: 010165

Fatigue and Fracture Analysis

Fatigue and Fracture Analysis of metallic components including welded joints. Review of test and design procedures. Sources of cyclic loading. Cyclic counting procedures and cumulative damage. S-N curves and effects of mean, residual and multiaxial stressing. Stress Concentrations; scatter and fatigue life distributions. Transition temperature concepts. Linear elastic fracture mechanics analysis of fatigue crack propagation and fracture initiation. Crack arrest. [Offered: W]

Prereq: ME 322; Level at least 4A Mechanical Engineering

ME 531 LEC,PRJ 0.50

Course ID: 006751

Physical Metallurgy Applied to Manufacturing

This course will allow the student to develop a more in depth knowledge of physical metallurgy and its application in understanding and solving relevant manufacturing problems. It will begin with a treatment of solid-state diffusion, mass transport and the principles of solidification including constitutional supercooling. This knowledge will then be applied to understand the microstructural development (and resultant properties) which occur in materials during manufacturing processes including casting, solid-state heat treatments, laser processing and various joining operations. The course will include case studies aimed at providing the students with an opportunity to apply their knowledge in a practical way. [Offered: W]

Prereq: ME 230; Level at least 4A Mechanical Engineering

ME 533 LAB,LEC 0.50

Course ID: 006752

Non-metallic and Composite Materials

This course is intended to provide an advanced treatment of the structure, properties and processing of non-metallic and composite materials based on polymers, metals and ceramics. The structure and properties of polymers and ceramics in bulk form and as matrices and reinforcements in composites will be covered. Processing methods for non-metallics and composites (example extrusion, injection molding etc.) will be considered. The geometrical arrangement of fibres within laminae and their influences on elastic and strength properties of composites will be described based on suitable micromechanical models. The role of the matrix and fibre/matrix interface in determining composite properties will be described. [Offered: W]

Prereq: ME 230; Level at least 4A Mechanical Engineering

ME 535 LAB,LEC 0.50

Course ID: 006754

Welding Metallurgy

Metallurgy of welding of steels (carbon, microalloy, low alloy and stainless steels), cast irons, aluminum-based, copper-based, nickel-based, cobalt-based, titanium-based and other alloys, (including dissimilar combinations) to explain the effects of welding processes and conditions (including post-weld heat treating) on microstructure and properties; causes and prevention of defects and deficiencies which can occur in different alloys, including porosity, cracking, embrittlement (hydrogen, temper, strain aging, ductile-brittle transition temperatures), overaging; metallurgy of soldered and brazed joints. Laboratory experiments will demonstrate microstructural effects and defects in a range of alloys for different welding processes and conditions. [Offered: W]

Prereq: ME 230, 435, 436; Level at least 4A Mechanical Engineering

ME 538 LAB,LEC,PRJ 0.50

Course ID: 011726

Welding Design, Fabrication and Quality Control

Manufacturing principles of welded mechanical components, machinery, pressure vessels and structures subject to static or dynamic loading. Design of weld joints for structures made from ferrous alloys such as plain carbon and low alloy steels and non-ferrous alloys such as aluminum alloys. Residual stresses in weldments and distortion of weldments. Quality and quality control in welding fabrication; welding standards; welding procedure qualification; nondestructive examination methods for welds and brazed joints such as radiography, dye penetrant, magnetic particle, ultrasonic, and eddy current techniques.[Offered: W]

Prereq: ME 322, 436; Level at least 4A Mechanical Engineering

ME 547 LAB,LEC 0.50

Course ID: 006762

Robot Manipulators: Kinematics, Dynamics, Control

Homogeneous transformations, D-H convention, forward and inverse kinematics. Differential transformations and Jacobians. Robot dynamics. Programming, trajectory generation and joint control. End-of-arm sensing and outer loop control. Industrial applications. [Offered: W]

Prereq: (ME 212 or SYDE 182) and (ME 360 or MTE 360); Level at least 4A Mechanical Engineering or Mechatronics Engineering.

Antireq: ECE 486

ME 548 LAB,LEC 0.50

Course ID: 006763

Numerical Control of Machine Tools 1

Operation fundamentals of NC machine tools. NC part programming: manual, and CAD/CAM methods. Mechanics of metal cutting: examples of turning, milling, and drilling. Tool wear and breakage. Optimum cutting conditions. Dimensional and form errors due to static deformations. Dynamics of machining. Laboratory work provides hands-on experience in tool path generation, machining, and measurements of cutting forces and vibration. [Offered: F, S]

Prereq: (ME 262 or MTE 262) and (ME 360 or MTE 360); Level at least 4A Mechanical Engineering or Mechatronics Engineering

ME 555 LAB,LEC 0.50

Course ID: 006764

Computer-Aided Design

Need for geometric modelling, historic developments; wire frame models; hidden line removed models; polyhedral models; surface models and solid models. Constructive solid geometry; boundary representation and decomposition modelling. Hybrid models. Data structures and their role in modelling. Curves and surfaces in modelling (Bezier, B-splines and NURBS). Geometric models and the role of engineers. Parametric and feature-based design. The course has a heavy lab component which provides exposure to solid modelling on SDRC IDEAS and PC-based CAD packages. [Offered: W]

Prereq: ME 321 and (ME 322 or MTE 322); Level at least 4A Mechanical Engineering or Mechatronics Engineering

ME 557 LEC 0.50

Course ID: 006765

Combustion 1

Combustion thermodynamics, introduction to chemical kinetics of combustion, combustion properties of fuels, flammability of combustible mixtures. Flame propagation mechanisms, pre-mixed and diffusional; stability of flames; introduction to combustion aerodynamics, jet flames; atomization; droplet and spray combustion. Elementary ignition concepts and theory. Basic detonation theory. [Offered: W]

Prereq: ME 353, 362; Level at least 4A Mechanical Engineering

ME 559 LEC 0.50

Course ID: 006766

Finite Element Methods

A course presenting the fundamental ideas involved in conventional finite element analysis in Mechanical Engineering. Domain discretization, interpolation and shape functions, element derivation and types, element stiffness or property equations, assembly procedure, boundary conditions, solution methods for the algebraic equation system, applications in heat transfer, fluid flow, and stress analysis. Students will, throughout the course, write and test their own finite element code through individual subroutine construction as the course progresses. [Offered: F, S]

Prereq: (ME 220 or MTE 219) and (ME 303 or MTE 204); Level at least 4A Mechanical Engineering or Mechatronics Engineering.

Antireq: CIVE 422.

ME 561 LEC 0.50

Course ID: 006767

Fluid Power Control Systems

Properties of hydraulic fluids. Design and function of conventional hydraulic and pneumatic circuits. Characteristics of flow and pressure control valves. Speed control in fluid power circuits. Performance of pumps and fluid motors. Hydrostatic and hydrokinetic transmission systems. Principles of sealing, filtration and heat control in hydraulic circuits. Industrial applications of fluid power systems. [Offered: F, S]

Prereq: ME 351 and (ME 360 or MTE 360); Level at least 4A Mechanical Engineering or Mechatronics Engineering

ME 562 LAB,LEC 0.50

Course ID: 015555

Experimental Methods in Fluids

This course is focused on theory and practice of experimental analysis of fluid mechanics problems. It covers the following topics: experimental facilities and techniques for measurements in fluid flows, flow visualization, identification of appropriate tools for experimental assessment, planning of experiments, laboratory experiments, data acquisition, analysis of experimental results and uncertainty estimation. [Offered: W]

Prereq: ME 362; Level at least 4A Mechanical Engineering

ME 563 LEC 0.50

Course ID: 006768

Turbomachines

Classification of turbomachines, performance parameters and laws of modelling. Basic equation of flow in turbomachines, compressible flow. Energy transfer in radial and axial turbomachines, performance characteristics, losses and efficiencies. Blade and cascade design, 3 dimensional effects. [Offered: W]

Prereq: ME 362; Level at least 4A Mechanical Engineering or 4B Mechatronics Engineering

ME 564 LEC 0.50

Course ID: 006770

Aerodynamics

An introductory course in aerodynamics for engineers. Kinematics and dynamics of inviscid flow; airfoil dynamics including thin airfoil theory, finite wings, panel methods and airfoil parameters. Boundary layer theory and boundary layer control as applied in aerodynamics. Introduction to high speed aerodynamics. Introduction to dynamics of flight including stability and control. [Offered: W]

Prereq: ME 362; Level at least 4A Mechanical Engineering or 4B Mechatronics Engineering

ME 566 LEC 0.50

Course ID: 006772

Computational Fluid Dynamics for Engineering Design

A course to develop the understanding required to simulate complex fluid flows, such as those found in turbo-machines, duct systems, and other engineering hardware. Course topics include: the physics of complex viscous fluid flows, first- and second-order finite control volume discretization methods, iterative algorithms for the solution of sparse matrix equation sets, including multi-grid acceleration, boundary condition modelling, two-equation and Reynolds stress turbulence models, and grid generation techniques. Computational fluid dynamics software is used throughout the course to simulate and analyse complex fluid flows relevant to engineering applications. [Offered: F, S]

Prereq: ME 362; Level at least 4A Mechanical Engineering

ME 567 LAB,LEC,PRJ 0.50

Course ID: 012564

Fire Safety Engineering

The art and science of fire safety engineering. Fundamentals of fire behaviour, fuels and flammability, heat transfer and fluid dynamics of fires and fire modeling. Practical issues and applications of fire safety, fire control and hazard assessment in the design of buildings, industrial environments and transportation systems. [Offered: W]

Prereq: ME 351, 353; Level at least 4A Mechanical Engineering

ME 571 LEC 0.50

Course ID: 006775

Air Pollution

Nature and sources of air pollution, chemical and biological aspects, effects on health and environment. Physical aspects of the atmosphere, thermodynamics, vertical variation of wind and temperature, stability, convection, atmospheric turbulence, diffusion equations, plumes, thermals, jets in stratified flow, radioactive plumes, micrometeorological instrumentation, air pollution control techniques and equipment monitoring instrumentation. [Offered: W]

Prereq: ME 362; Level at least 4A Mechanical Engineering

ME 595 LEC 0.50

Course ID: 006777

Special Topics in Mechanical Engineering

Various courses dealing with selected topics at the undergraduate level in automation and control, solid mechanics and machine design, materials engineering and processing, fluid mechanics, and thermal engineering. Courses offered when resources permit.

ME 596 LEC 0.50

Course ID: 006779

Special Topics in Mechanical Engineering

Various courses dealing with selected topics at the undergraduate level in automation and control, solid mechanics and machine design, materials engineering and processing, fluid mechanics, and thermal engineering. Courses offered when resources permit.

ME 597 LEC 0.50

Course ID: 010183

Special Topics in Mechanical Engineering

Various courses dealing with selected topics at the undergraduate level in automation and control, solid mechanics and machine design, materials engineering and processing, fluid mechanics, and thermal engineering. Courses offered when resources permit.

ME 598 LEC 0.50

Course ID: 006780

Special Topics in Mechanical Engineering

Various courses dealing with selected topics at the undergraduate level in automation and control, solid mechanics and machine design, materials engineering and processing, fluid mechanics, and thermal engineering. Courses offered when resources permit.

ME 599 LEC 0.50

Course ID: 006781

Special Topics in Mechanical Engineering

Various courses dealing with selected topics at the undergraduate level in automation and control, solid mechanics and machine design, materials engineering and processing, fluid mechanics, and thermal engineering. Courses offered when resources permit.

MANAGEMENT**MGMT 100s****MGMT 171 LEC 0.50**

Course ID: 015596

Fundamentals of Personal and Business Finance

Review of the concept and applications of the time value of money. Overview of common consumer and small business oriented financial products with a focus on the Canadian economy. Introduction to the use of spreadsheets and apps that aid in understanding and comparing financial scenarios.

MATERIALS AND NANO-SCIENCES

MNS 00s

MNS 10 SEM 0.00

Course ID: 015204

Materials and Nanosciences Seminar

Lectures, workshops, or seminars focusing on academic and professional development [Offered: F, W]

Prereq: Materials and Nanosciences Plan

MNS 100s

MNS 101 LEC 0.50

Course ID: 013979

Materials and Nanosciences in the Modern World

Overview of materials, including physical and chemical classification of materials, and structure-property relationships; survey of emerging fields in materials and nanoscience research such as: nanotechnology, quantum materials and devices, bionic research; societal impacts of materials and nanoscience research. [Offered: F]

MNS 102 LEC 0.50

Course ID: 013980

Techniques for Materials and Nanosciences

Overview of materials synthesis, including both wet chemical and dry physical based methodologies; basic metrology and materials characterization of surface and bulk properties; introduction to the design, fabrication, and evaluation of simple devices; survey of emerging new techniques in materials and nanosciences. [Offered: W]

MNS 200s

MNS 201L LAB 0.50

Course ID: 014028

Materials and Nanosciences Laboratory

The laboratory course is aimed at students enrolled in the MNS program and is composed of experiments involving the syntheses of materials and nano-particles; in addition to their characterization and application using modern instrumentation techniques. [Offered: W, S]

Prereq: Materials and Nanosciences students only;

Coreq: MNS 211 or 221

MNS 211 LEC 0.50

Course ID: 013981

Chemistry and the Solid State

Crystal structures and bonding in solids; introduction to diffraction, solid state synthesis, and thermal analysis techniques employed in the study of materials; defects, non-stoichiometry, and solid solutions; phase diagrams for solid systems. [Offered: F]

Prereq: CHEM 123, PHYS 122, MNS 102

MNS 221 LEC 0.50

Course ID: 013984

Physics and the Solid State

Physical properties of crystalline and amorphous solids; introduction to electric, magnetic and optical properties of solids.
[Offered: W, S]

Prereq: MNS 211

MNS 300s**MNS 321 LEC 0.50**

Course ID: 013988

Electrical and Optical Properties of Materials

Optical properties of and electrical transport in materials; topics may include insulators, semiconductors, metals, superconductors and their applications in photovoltaics, thermoelectrics, and nanocomposites. [Offered: F]

Prereq: MNS 221; Level at least 3A

MNS 322 LEC 0.50

Course ID: 014029

Polymer Materials

Basic definitions and polymer nomenclature, chain conformations, phase behaviour of polymer systems, mechanical properties, polymerization, self-assembly, morphologies. [Offered: W]

Prereq: CHEM 254 or PHYS 358/ECE 403.

Antireq: CHEM 370, NE 333

MNS 331 LEC 0.50

Course ID: 013987

Biomaterials

Mechanical, chemical and biological properties of biomaterials; relationships between biomaterials and their properties, functions, manufacture, and applications; applications of biomaterials in technologies, such as tissue engineering, prosthesis manufacture, drug delivery systems, bioreactors. [Offered: W]

Prereq: Level at least 3A; One of PHYS 280, 380, NE 224, CHEM 233, 237

MNS 400s**MNS 410 LEC 0.50**

Course ID: 013990

Special Topics in Solid-State Materials

Topics in this theme area may include: transistors and semiconducting materials and devices, superconducting materials and superconductivity-based devices (such as Josephson junctions, SQUIDS), effects of low dimensionality and interfaces, quantum dots, magnetoresistance, spintronics, design and synthesis of new materials. (Note: At least one elective course is offered annually in the solid-state materials theme area. For a current list of offerings, see the academic plan advisor).
[Offered: W]

Prereq: Level at least 4A; Materials & Nanosciences students only

MNS 431 LEC 0.50

Course ID: 013989

Special Topics in Nano-Biomaterials

Topics in this theme area may include: biomaterials on atomic and nanometre scales in which DNA, RNA, and/or polypeptides are incorporated as components; physical, chemical and biological processes; nanoscale forces, adhesion, indentation; applications, such as nanomotors, nano-biomimetic materials, nanocomposite materials, nano-biosensors. (Note: At least one elective course is offered annually in the Nano-Biomaterials theme area. For a current list of offerings, see the academic plan advisor). [Offered: W]

Prereq: Level at least 4A Materials and Nanosciences Plan

MANAGEMENT SCIENCES

MSCI 100s

MSCI 100 LAB,LEC,TUT 0.75

Course ID: 012366

Management Engineering Concepts

An introduction to the methods and principles of management engineering. Written, graphical, and oral forms of technical communication. Engineering graphics fundamentals of projection, computer-aided design, freehand sketching, and the interpretation of technical drawings. Introduction to quantitative methods of data analysis, planning, forecasting, decision modeling, and work flow analysis. Engineering design, including a management process design project with small groups. Aspects of the engineering profession including ethics, safety, and intellectual property. Professional development including résumé skills, interview skills, and preparation for co-op terms. [Offered: F]

Prereq: Level at least 1A Management Engineering

MSCI 100B SEM 0.00

Course ID: 013370

Seminar

General Seminar. [Offered: W]

Prereq: Level at least 1B Management Engineering

MSCI 121 LEC,TUT 0.50

Course ID: 014426

Introduction to Computer Programming

An introduction to computer programming using a high level programming language. Concepts and topics covered include the basic components of algorithms (primitive operations, variables, sequencing operations, conditionals/branching, repetition/loops, and subroutines/functions), problem decomposition, abstraction, testing and debugging, pseudo-code, file based input and output, use of a modern development environment including a symbolic debugger, good coding style, pointers/references, and basic data structures (arrays, records, objects). [Offered: W]

Prereq: Level at least 1B Management Engineering.

Antireq: CHE 121, CIVE 121, ECE 150, GENE 121, SYDE 121

MSCI 131 LAB,LEC,TUT 0.50

Course ID: 013371

Work Design and Facilities Planning

The course introduces fundamental concepts in two main areas: The first is work analysis and design where work methods design, motion and time study, and work sampling are covered. The second covers basic concepts in facilities planning such as process analysis, flow design, facility location and layout, and material handling systems. Students will apply these concepts in design activities in labs and projects. [Offered: W]

Prereq: Level at least 1B Management Engineering

MSCI 200s

MSCI 200A LEC 0.00

Course ID: 012368

Seminar

General seminar. [Offered: F]

Prereq: Level at least 2A Management Engineering

MSCI 200B LEC 0.00

Course ID: 012369

Seminar

General seminar. [Offered: S]

Prereq: Level at least 2B Management Engineering

MSCI 211 LEC,TUT 0.50

Course ID: 006818

Organizational Behaviour

Introduction to the concepts of learning, person perception, attitudes and motivation in an organization. Consideration of communication, roles, norms and decision making within a group. Discussion of power, control, leadership and management in light of the above concepts. [Offered: F, W, S]

Antireq: AFM 280, BUS 288W, PSYCH 238/338

Also offered Online

MSCI 240 LEC,TUT 0.50

Course ID: 012370

Algorithms and Data Structures

Design and analysis of data structures and algorithms with an emphasis on further development of computer programming skills. Topics include algorithms for searching, sorting, stacks, queues, trees, and graphs. Comparison of algorithms on different data structures. Solutions to common engineering problems in computer science using algorithms and data structures. Introduction to mathematical analysis of space and time complexity with a focus on designing solutions that can scale to large input sizes. [Offered: F]

Prereq: MSCI 121; Level at least 2A Management Engineering.

Antireq: CS 240, ECE 250, MTE 140 and SYDE 223

MSCI 245 LAB,LEC,TUT 0.50

Course ID: 015568

Databases and Software Design

This course introduces students to software systems that use a relational database management system (RDBMS) for data storage. One focus of this course is multi-tier software architectures, such as websites and other software as a service (SaaS) systems. Students will learn common software concepts such as design patterns, and modelling processes, objects, logic, and data. Students will learn how to organize data in a RDBMS and how to interact with the database using the structured query language (SQL). [Offered: S, first offered Spring 2020]

Prereq: MSCI 240; Level at least 2B Management Engineering.

Antireq: CS 338, 348

MSCI 251 LAB,LEC,TUT 0.50

Course ID: 006819

Probability and Statistics 1

A first of a two course sequence that introduces fundamental concepts in probability and statistics. It covers probability concepts, random variables, graphical display of distributions and data, discrete and continuous probability distributions,

sampling, estimation, confidence intervals, experimental design, hypothesis testing, and simple linear regression and correlation. Students learn how to graphically explore data, conduct and analyze a two treatment experiment, and model data with linear regression and interpret its fit. Students learn to use statistical computing software (e.g., R) to perform data analyses. Emphasis is placed on gaining experience with data collected from student conducted experiments. [Offered: F, first offered Fall 2019]

Prereq: Level at least 2A Management Engineering.

Antireq: CHE 220, CIVE 224, ECE 316, ECON 221, ENVE 224, ME 202, NE 115/215, STAT 231, SYDE 212

MSCI 252 LEC,TUT 0.50

Course ID: 012367

Probability and Statistics for Engineers

This course introduces fundamental concepts in probability and statistics. It covers topics in probability, random variables, discrete and continuous probability distributions, confidence intervals, hypothesis testing, sampling, and introductory linear regression. Students are exposed to software packages that enable statistical analysis. [Offered: S, last offered Spring 2019]

Prereq: Level at least 2B Management Engineering.

Antireq: CHE 220, CIVE 224, ECE 316, ECON 221, ENVE 224, ME 202, NE 115/215, STAT 231, SYDE 212

MSCI 253 LAB,LEC,TUT 0.50

Course ID: 015569

Probability and Statistics 2

The second of a two-course sequence that introduces probability and statistics. It covers quantitative information displays, conditional probability and Bayes' rule, transforms, joint distributions, special discrete and continuous distributions (t, F, chi-square, Poisson), fitting distributions to data, maximum likelihood estimation, multiple regression, experimental design (blocking, factorial), paired hypothesis tests, analysis of variance, non-parametric statistics, and computer intensive statistics (bootstrap). In addition, students learn how to clean data, handle missing values, smooth data, and perform the statistical techniques covered in the course using a statistical computing package, (e.g., R). Emphasis is placed on working with actual data collected from student experiments and other sources such as industrial partners. [Offered: S, first offered Spring 2020]

Prereq: MSCI 251; Level at least 2B Management Engineering

MSCI 261 LEC,TST,TUT 0.50

Course ID: 006820

Engineering Economics: Financial Management for Engineers

Introductory Finance: time value of money, cash flow analysis. Investment evaluation methods: present worth, annual worth and internal rate of return. Depreciation models and asset replacement analysis. The impact of inflation, taxation, uncertainty and risk on investment decisions. [Offered: F,W,S]

Prereq: Engineering students only.

Antireq: CIVE 292/392, ECE 390, ENVE 292, SYDE 262

MSCI 262 LEC,TUT 0.50

Course ID: 012371

Managerial and Cost Accounting

This course provides students with an understanding of how costs are calculated and allocated within an organization. The focus is on developing an understanding of how all aspects of engineering impact the cost structure of an organization, and how these costs are analyzed and used in corporate planning and decision making processes. [Offered: F, last offered Fall 2018]

Prereq: One of CIVE 292/392, ECE 390, ENVE 292, MSCI 261 or SYDE 262.

Antireq: AFM 101, 102, 123/ARBUS 102, BUS 127W/227W

MSCI 263 LEC,TUT 0.50

Course ID: 012372

Managerial Economics

This course introduces students to key concepts in microeconomics, with an emphasis on applications to managerial decision-making. Topics include: basic analysis of supply and demand, demand functions and the theory of consumer behaviour, production and costs, market equilibrium, competition between industry participants, and pricing strategies of firms under different market structures. [Offered: S]

Prereq: Level at least 2A Management Engineering or MSCI Option.

Antireq: ECON 101, 201

MSCI 271 LEC,TUT 0.50

Course ID: 012373

Advanced Calculus and Numerical Methods

This course introduces students to first and second order ordinary differential equations, vector calculus, and numerical methods for solution of systems of equations and ordinary differential equations. Applications in Management Engineering are emphasized. [Offered: F]

Prereq: MATH 118; Level at least 2A Management Engineering

MSCI 300s

MSCI 300A SEM 0.00

Course ID: 012374

Seminar

General Seminar. [Offered: W]

Prereq: Level at least 3A Management Engineering

MSCI 300B SEM 0.00

Course ID: 012375

Seminar

General Seminar. [Offered: F]

Prereq: Level at least 3B Management Engineering

MSCI 311 LEC,TUT 0.50

Course ID: 006821

Organizational Design and Technology

The focus of this course is on the procedures and variables involved in the design and redesign of organizations. Issues such as departmentation, differentiation, integration, internal politics, innovation, authority and control are discussed in the context of the underlying technology of the organization. Emphasis will be placed on how one designs both the technical and the organizational systems to ensure their compatibility, noting the effects that one has on the other. [Offered: F, W]

MSCI 331 LEC,TUT 0.50

Course ID: 006822

Introduction to Optimization

This first course in optimization uses a quantitative approach to problem solving involving, mathematical modelling and formulations, solution methods, and output analysis. Students are introduced to a variety of practical problem formulations in Management and Engineering, a number of solution methods, including, but not limited to linear optimization, network models, project management, and decision analysis. Students are also involved in a group project, where they go through conceptual and operational model design, analytical solution, output analysis, and recommendation. [Offered: F, W, S]

Prereq: Not open to students in the Faculty of Mathematics except for Software Engineering.

Antireq: BME 411, CIVE 332, CO 250, ENVE 320/335, SYDE 411

MSCI 332 LEC,TUT 0.50

Course ID: 012376

Deterministic Optimization Models and Methods

This course builds on the material presented in MSCI 331, and explores more advanced optimization techniques and applications. Methods, such as integer optimization, dynamic programming, and heuristics are introduced and used to design solution alternatives for applications from Management Engineering. This may include network and process design in logistics, transportation, telecommunications, and healthcare. [Offered: F]

Prereq: One of BME 411, CIVE 332, CO 250, ENVE 320/335, MSCI 331, or SYDE 411; Level at least 3B Management Engineering or MSCI Option.

MSCI 333 LAB,LEC,TUT 0.50

Course ID: 012377

Simulation Analysis and Design

This course introduces the use of discrete event simulation as an approach for understanding and analyzing complex management systems. Topics include an introduction to simulation modeling, general purpose and special purpose simulation languages, designing valid and credible simulation models, input data analysis, output analysis and experimental design. [Offered: F]

Prereq: Level at least 3B Management Engineering.

Antireq: STAT 340

MSCI 334 LAB,LEC,TUT 0.50

Course ID: 013762

Operations Planning and Inventory Control

This course exposes students to production planning and inventory control approaches in industrial and service systems. Production planning topics cover capacity and resources planning, production scheduling, manufacturing resource planning, Just-In-Time and lean manufacturing. Inventory control topics cover lot sizing policies, deterministic and stochastic inventory policies. The course involves a design project of a production and/or inventory system. [Offered: W]

Prereq: MSCI 131; One of CHE 220, CIVE 224, ECE 316, ENVE 224, ME 202, MSCI 252 or 253, MTE 201, STAT 206, 231, 241, or SYDE 212.

Antireq: MSCI 432

MSCI 342 LAB,LEC,TUT 0.50

Course ID: 012378

Principles of Software Engineering

The purpose of this course is to study methods necessary to cost-effectively address difficult problems arising in the development, management and evolution of software systems. Topics include requirements engineering and analysis; different methods for software design; techniques for building dependable software systems; verification and validation of systems cost estimation, resource estimation and project management; and maintenance issues. [Offered: F]

Prereq: MSCI 240

MSCI 343 LAB,LEC,TUT 0.50

Course ID: 012379

Human-Computer Interaction

This course is designed to provide in-depth exposure to the concepts of human-computer interaction and methods of interactive information system design. The course will focus on techniques for building information systems that meet human needs and capabilities by following a system development lifecycle: user requirements analysis, information and interaction design, prototyping and evaluation. [Offered: F]

Prereq: One of (CHE 121, CIVE 121, CS 115, 116, 135, 136, 137, 138, 145, 146, ECE 150, GENE 121, MSCI 121, NE 113, PHYS 236, SYDE 121); Level at least 2A.

Antireq: CS 449, SYDE 348

MSCI 346 LAB,LEC,TUT 0.50

Course ID: 012380

Database Systems

Design and implementation of database solutions to common engineering and management problems. Multiple analytical methods for choosing optimal database designs. Topics include relational database design, data definition, entity modeling, structured query language and emerging types of database systems. [Offered: S, last offered Spring 2019]

Prereq: MSCI 240; Level at least 2B Management Engineering.

Antireq: CS 338, 348

MSCI 391 PRJ 0.13

Course ID: 015094

Work-term Report

A work-term report presents in detail a technical project, activity, or analysis engaged by the student normally during the preceding work term, related to Management Engineering. The report is evaluated on the basis of written communication skills and technical proficiency in the subject matter as demonstrated by the report. Reports are due on the 10th day of lectures for the academic term in which the report is required. Any resubmissions granted are due by the "Lectures End" date. [Offered: W, first offered Winter 2019]

Prereq: Level at least 3A Management Engineering.

Antireq: WKRPT 200, 201

MSCI 392 PRJ 0.13

Course ID: 015095

Work-term Report

A work-term report presents in detail a technical project, activity, or analysis engaged by the student normally during the preceding work term, related to Management Engineering. The report is evaluated on the basis of written communication skills and technical proficiency in the subject matter as demonstrated by the report. Reports are due on the 10th day of lectures for the academic term in which the report is required. Any resubmissions granted are due by the "Lectures End" date. [Offered: F, first offered Fall 2019]

Prereq: Level at least 3B Management Engineering.

Antireq: WKRPT 300, 301

MSCI 400s

MSCI 400A SEM 0.00

Course ID: 012381

Seminar

General Seminar. [Offered: S]

Prereq: Level at least 4A Management Engineering

MSCI 400B SEM 0.00

Course ID: 012382

Seminar

General Seminar. [Offered: W]

Prereq: Level at least 4B Management Engineering

MSCI 401 LEC,PRJ 0.50

Course ID: 012383

Management Engineering Design Project 1

This is the first course of a two course sequence to provide students with an opportunity to engage in a significant design experience based on the engineering knowledge and skills gained in previous courses and on cooperative work terms. The instructor will review and extend concepts of project management studied in earlier courses, and students will apply these

project management skills. Teams of students will formulate a design problem and submit a preliminary project proposal, make oral presentations for preliminary and interim design reviews, and submit a written interim report describing the proposed design solution. [Offered: S]

Prereq: Level at least 4A Management Engineering

MSCI 402 LEC,PRJ 0.50

Course ID: 012384

Management Engineering Design Project 2

This is the second course of a two course sequence to provide students with an opportunity to engage in a significant design experience based on the engineering knowledge and skills gained in previous courses and on cooperative work terms. Each student team is required to complete the detailed design for the project defined in MSCI 401, submit a final written report, and make an oral presentation describing their design solution. [Offered: W]

Prereq: MSCI 401; Level at least 4B Management Engineering

MSCI 411 LEC,TUT 0.50

Course ID: 014556

Leadership and Influence

This course will provide students with an overview of how management, psychology, marketing, and related fields have approached the topics of leadership, influence, and power. The first section of the course will address the antecedents of leadership (e.g., How do specific leaders emerge? What are the qualities of good leaders?). The second section of the course will address the act of leadership (e.g., How do leaders influence their followers? What limitations are inherent to leadership positions?) Specific topics covered include leadership styles, persuasion, social influence, evolutionary perspectives, motivating others, and managing conflict. [Offered: S]

Antireq: BET 450

MSCI 421 LEC,TUT 0.50

Course ID: 011498

Strategic Management of Technology

This course covers (a) the competitive strategy that a firm uses in its product markets, and (b) the firm's organizational strategy, i.e., how the firm organizes to meet its objectives. The course will be taught from an economic perspective, but findings from other social sciences will also be presented along with their impact on the strategy-making and implementation process. A special focus will be placed on technology firms. [Offered: S]

Prereq: MSCI 311; Level at least 3A

MSCI 422 LEC 0.50

Course ID: 011499

Economic Impact of Technological Change and Entrepreneurship

This course is designed to analyze the impact of technological change and entrepreneurship at a firm and societal level, primarily in terms of the economic antecedents and consequences of new technology. The scope of the course ranges from the study of the determination of productivity and its effect on economic growth to the determination of innovative activity and performance. Prereq: (One of CIVE 292/392, ECON 101, ENVE 292/392, MSCI 261, SYDE 262) and (One of CHE 220, CIVE 224, ECE 316, ECON 221, ENVE 224, ENVS 278, KIN 222, MSCI 252 or 253, ME 202, MTE 201, NE 115/215, PSCI 314, PSYCH 292, REC 371, SDS 250R, SOC 280, STAT 202, 206, 211, 221, 231, 241, SYDE 212) and level at least 3A. [Offered: F]

See course description for prerequisite details.

MSCI 423 LEC,TUT 0.50

Course ID: 012385

Managing New Product and Process Innovation

This course examines technical and organizational aspects of managing new product and process innovation. Topics include human creativity and problem solving, product design and development, product feasibility assessment, requirements engineering, managing research and development, project management, team communication, technology implementation, and innovation strategy. [Offered: W]

Prereq: MSCI 311

MSCI 431 LEC,TUT 0.50

Course ID: 006823

Stochastic Models and Methods

Introduction to Operations Research models and methods for problems with random, stochastic and probabilistic components. Topics include birth and death processes, branching processes, waiting line models, and Markov decision processes. Applications include, the design, modelling, and analysis of service and manufacturing systems, with emphasis on important functions such as queueing, inventory, reliability, equipment replacement, and maintenance. [Offered: W]

Prereq: (MSCI 331 or SYDE 411) and (One of CHE 220, CIVE 224, ECE 316, ENVE 224, MSCI 252 or 253, ME 202, MTE 201, NE 115/215, STAT 206, 211, 231, 241, SYDE 212); Not open to students in the Faculty of Mathematics except Software Engineering

MSCI 432 LEC,TUT 0.50

Course ID: 006824

Production and Service Operations Management

Introduction to management, planning, and control decisions in manufacturing and service settings using quantitative approaches. Topic areas include production, inventory, distribution, quality control, facilities layout, and process design. Students are exposed to a number of examples and case studies, and work on a project that involves analysis and discussion of improved designs. [Offered: F, W]

Prereq: (One of CHE 220, CIVE 224, ECE 316, ENVE 224, MSCI 252, ME 202, MTE 201, NE 115/215, STAT 206, 211, 231, 241, SYDE 212).

Antireq: MSCI 334

MSCI 433 LEC,TUT 0.50

Course ID: 012387

Applications of Management Engineering

This course exposes students to a variety of application areas in management engineering and introduces to them the challenges inherent in implementing new management engineering systems. Topics will be chosen from areas such as: manufacturing, services, logistics, finance, healthcare and engineering. [Offered: W]

Prereq: MSCI 332, 333, 431; 334 or 432

MSCI 434 LAB,LEC,TUT 0.50

Course ID: 012388

Supply Chain Management

This course focuses on the efficient use of material, information, physical and human capital resources in supply-demand networks consisting of suppliers, manufacturers, distributors, retailers and customers. It emphasizes analytic tools used to design, implement and sustain competitive supply chain systems. The material will highlight application of supply chain practices in industry and supply chain implementation challenges. Issues associated with international or global supply chains will be discussed. [Offered: S]

Prereq: MSCI 334 or 432; Level at least 4A Management Engineering

MSCI 435 LEC,TUT 0.50

Course ID: 012389

Advanced Optimization Techniques

This course covers more advanced topics in optimization that go beyond the contents of MSCI 331 and MSCI 332. The course will cover topics such as constraint programming, stochastic programming, large scale optimization, or complementarity problems. [Offered: W]

Prereq: MSCI 331, 332

MSCI 436 LEC,TUT 0.50

Course ID: 012390

Decision Support Systems

This course provides an introduction to analysis, design and implementation of decision support systems for engineering and business applications. Operations research modeling techniques and software are integrated with database systems and computer interfaces to create systems that aid managerial decision-making. This course also will discuss challenges in designing and implementing decision support systems based on models drawn from Operations Research. [Offered: W]

Prereq: MSCI 331

MSCI 442 LEC,TUT 0.50

Course ID: 006826

Impact of Information Systems on Organizations and Society

This course is designed to familiarize the student with issues related to the impact of computer-based technologies on individual jobs, organizations, and broader societal level. Particular emphasis will be placed on critical examination of various issues including privacy, security, ethical concern and professional responsibilities. [Offered: W]

Prereq: Level at least 3A Engineering

MSCI 444 LEC,TUT 0.50

Course ID: 012042

Information Systems Analysis and Design

The course is intended to provide students with the knowledge of the theory and practice of information systems development stages, techniques and methodologies. Course topics may include: requirements analysis, structured and object-oriented design techniques and system implementation strategies. [Offered: W]

Prereq: At least 3A Engineering; Not open to Software Engineering students or Engineering students in the Software Engineering option.

Antireq: CS 432, 490

MSCI 445 LAB,LEC,TUT 0.50

Course ID: 013763

Telecommunication Systems: from protocols to applications

An introduction to design, use and analysis of computer networks and telecommunication systems with a focus on technological issues arising in the rapidly developing field of telecommunications and information technology. The emphasis is on what engineers need to know about telecommunication to make sound business decisions, and utilize networks in software applications. The material will be taught using a top-down approach. Topics include: systems, security, applications, evolution of the field, performance, and technology. [Offered: S]

Prereq: Level at least 4A Management Engineering

MSCI 446 LEC,TUT 0.50

Course ID: 012391

Data Warehousing and Mining

This course will present state-of-the-art practice and research in the storage, extraction, manipulation and analysis of data, with a view to using these processes for making better management decisions. Topics include: extracting, cleaning, and organizing data from transactional databases, discovering and validating patterns and relationships using statistical techniques, and using the extracted patterns for making improved management decisions. [Offered: F]

Prereq: One of BME 411, CIVE 332, CO 250, ENVE 320/335, MSCI 331, or SYDE 411; Level at least 3A; (One of CS 348, ECE 356, MSCI 346) and (One of CHE 220, CIVE 224, ECE 316, ENVE 224, MSCI 252, ME 202, MTE 201, NE 115/215, STAT 206, 231, 241, SYDE 212)

MSCI 452 LEC,TUT 0.50

Course ID: 006827

Decision Making Under Uncertainty

This course deals with normative, descriptive, and prescriptive theories of decision making under uncertainty. It begins with analytical models such as decision trees, Bayes Theorem and Bayesian revision, value of information, basic utility theory and

multi-attribute decision making. The course continues with an examination of how these theories can fail to predict actual decision making behavior. This course applies the concepts of decision-making to managerial and consumer behavior as well as behavior in negotiations. [Offered: S]

Prereq: One of CHE 220, CIVE 224, ECE 316, ENVE 224, MSCI 252 or 253, ME 202, MTE 201, NE 115/215, STAT 206, 211, 231, 241, SYDE 212

MSCI 454 LEC 0.50

Course ID: 005813

Technical Entrepreneurship

Technical entrepreneurship is examined considering the role of independent business, entrepreneurial behaviour, types of business and enterprises, business structure, sources of venture concepts and capital, company operation and control, and business start-up. [Offered: W]

Prereq: One of CIVE 292/392, ECE 390, ENVE 292, MSCI 261, SYDE 262; Level at least 3A Engineering.

Antireq: BET 300

MSCI 491 PRJ 0.13

Course ID: 015096

Work-term Report

A work-term report presents in detail a technical project, activity, or analysis engaged by the student normally during the preceding work term, related to Management Engineering. The report is evaluated on the basis of written communication skills and technical proficiency in the subject matter as demonstrated by the report. Reports are due on the 10th day of lectures for the academic term in which the report is required. Any resubmissions granted are due by the "Lectures End" date. [Offered: S, first offered Spring 2020]

Prereq: Level at least 4A Management Engineering.

Antireq: WKRPT 400, 401

MSCI 500s

MSCI 531 LEC,TUT 0.50

Course ID: 013764

Stochastic Processes and Decision Making

This course builds on the material covered in MSCI 431. Students will learn how to construct and analyze a range of stochastic decision models that are useful in the design and control of a wide variety of systems. Applications areas include the design of inventory control systems, telecommunication networks, healthcare policies, manufacturing control and reliability analysis. Topics include Renewal-Reward Processes, Markov Decision Processes, Matrix Analytic Methods with application areas noted above. [Offered: S]

Prereq: MSCI 431

MSCI 541 LEC,TUT 0.50

Course ID: 013765

Search Engines

This course provides an opportunity for students to learn the engineering behind search engines and how to optimize search engines to provide higher quality user experiences. This course focuses on text retrieval and web search. Topics include design and construction of retrieval systems, retrieval models, and evaluation of search engines. [Offered: F, W, first offered Fall 2021, offered Winter until 2022]

Prereq: (One of CS 240, ECE 250, MSCI 240, MTE 140, SYDE 223) and (One of CHE 220, CIVE 224, ECE 316, ENVE 224, MSCI 252 or 253, ME 202, MTE 201, NE 115/215, STAT 206, 231, 241, SYDE 212)

MSCI 543 LEC,TUT 0.50

Course ID: 015570

Analytics and User Experience

This course provides students with an in-depth understanding of methods for evaluating the user experience on a large scale. Students will learn how to design user experiments that involve the collection and analysis of large quantities of data online, apply useful metrics for evaluating the user experience, and use this analysis to inform their designs of software and technology. [Offered: S, first offered Spring 2022]

Prereq: MSCI 253, 343

MSCI 551 LEC,TUT 0.50

Course ID: 013766

Quality Management and Control

The course focuses on the analysis, evaluation, and improvement of quality based on statistical tools. Topics include process capability analysis, statistical process control, experimental design and the Taguchi method, and acceptance sampling. The emphasis is on the assessment of quality and the design of alternate processes and/or quality assessment schemes to improve quality. [Offered: S]

Prereq: (One of CHE 220, CIVE 224, ECE 316, ENVE 224, MSCI 252, ME 202, MTE 201, NE 115/215, STAT 206, 231, 241, SYDE 212); Level at least 3A Management Engineering or MSCI Option.

MSCI 555 LEC,TUT 0.50

Course ID: 013767

Scheduling: Theory and Practice

Scheduling is the sequencing of tasks to scarce resources. By exploring scheduling problems found in industry, this course will discuss scheduling framework and notation as well as algorithmic, heuristic, and mathematical programming solution approaches. Students will be introduced to the theoretical background in these areas, but the emphasis will be placed on modeling and solving scheduling problems in practice. Students will apply these concepts in design activities in assignments and a course project. [Offered: W]

Prereq: One of BME 411, CIVE 332, CO 250, ENVE 320/335, MSCI 331, or SYDE 411.

Antireq: CO 454

MSCI 597 LEC,TUT 0.50

Course ID: 013768

Complementary Studies Topics in Management Sciences

A complementary studies course on advanced topics in Management Sciences will be offered when resources are available. For current offerings, see the Future Term Course Offerings list or the Schedule of Classes. [Offered: F, W, S]

Department Consent Required

MSCI 598 LEC,TUT 0.50

Course ID: 013769

Special Topics in Management Engineering

A course on advanced topics in Management Engineering will be offered when resources are available. For current offerings, see the Future Term Course Offerings list or the Schedule of Classes. [Offered: F, W, S]

Department Consent Required

MSCI 599 LEC,TUT 0.50

Course ID: 013770

Special Topics in Management Engineering Design

A course on advanced topics in Management Engineering with emphasis on design will be offered when resources are available. For current topic offerings, see the Future Term Course Offerings list or the Schedule of Classes. [Offered: F, W, S]

Department Consent Required

Notes

1. General prerequisite: Registration in Mechatronics Engineering or permission of course instructor is required.
2. The Department reserves the right to cancel any 400-500 level elective courses if teaching resources become unavailable.

MTE 100s

MTE 100 LAB,LEC,TUT 0.75

Course ID: 011424

Mechatronics Engineering

An introduction to mechatronics engineering and the engineering profession. Topics include the design process, project planning, data presentation, measurements and error, control logic, sensors and actuators, and intellectual property. Engineering graphics fundamentals of multi-view, isometric, oblique, and perspective projections are also covered while developing skills in computer-aided drawing (CAD), freehand sketching, and the interpretation of technical drawings. Professional development including résumé skills, interview skills, and preparation for co-op terms. A mechatronic design project/competition with small groups supplements the lecture material. [Offered: F]

Prereq: 1A Mechatronics Engineering

MTE 100B SEM 0.00

Course ID: 011455

Seminar

Discussion of structure of Mechatronics Engineering curriculum, operation of department, faculty, university, technical societies. [Offered: W,S]

Prereq: Level at least 1B Mechatronics Engineering

MTE 111 LAB,LEC,PRJ,TST,TUT 0.50

Course ID: 011425

Structure and Properties of Materials

The relevance of materials to engineering practice; the relationships between macroscopic physical properties (including mechanical, photonic, thermal, electrical, and magnetic properties) and microscopic causes based on fundamental principles (including electronic and atomic structures, atomic bonding, crystal structure, and microstructure); description of the differences in macroscopic physical properties of metals, polymers, ceramics, semiconductors, and composite materials in terms of microscopic causes. [Offered: W,S]

Prereq: Level at least 1B Mechatronics Engineering, CHE 102.

Antireq: ME 115

MTE 119 LEC,TST,TUT 0.50

Course ID: 011426

Statics

Basic concepts of mechanics, vectors. Statics of particles. Rigid bodies and force systems, equilibrium of rigid bodies. Analysis of trusses and frames. Distributed forces, centroids and moments of inertia. Friction. Internal shear and bending moments in beams.[Offered: W,S]

Prereq: Level at least 1B Mechatronics Engineering.

Antireq: CIVE 105, SYDE 181

MTE 120 LAB,LEC,TST,TUT 0.75

Course ID: 011452

Circuits

Basic electromagnetic theory; magnetic circuits; electric circuit elements; DC circuit analysis; first-order transient response; AC circuit analysis; Diodes; Transistors: regions of operation, single-transistor amplifiers [Offered: W,S]

Prereq: Level at least 1B Mechatronics Engineering.

Antireq: ECE 140, GENE 123

MTE 140 LAB,LEC,TST,TUT 0.50

Course ID: 010083

Algorithms and Data Structures

Algorithms and Data Structures emphasizes the following topics: structured software design data structures, abstract data types, recursive algorithms, algorithm analysis and design, sorting and searching, hashing, and problem-solving strategies. [Offered: W,S]

Prereq: ECE 150 or GENE 121; Level at least 1B Mechatronics Engineering.

Antireq: CS 240, ECE 250 and SYDE 223

MTE 200s

MTE 200A SEM 0.00

Course ID: 011456

Seminar

Discussion of the structure of and options within the Mechatronics Engineering curriculum; of the operation of Department, Faculty, University, technical societies; of student team and graduate school opportunities; of safety training; and of subject material in support of core courses. [Offered: F,W]

Prereq: 2A Mechatronics Engineering

MTE 200B SEM 0.00

Course ID: 011457

Seminar

Discussion of the structure of and options within the Mechatronics Engineering curriculum; of the operation of Department, Faculty, University, technical societies; of student team and graduate school opportunities; of safety training; and of subject material in support of core courses. [Offered: F,S]

Prereq: 2B Mechatronics Engineering

MTE 201 LAB,LEC,TUT 0.50

Course ID: 011427

Experimental Measurement & Statistical Analysis

Measurement errors, calculations with unknown quantities, and error propagation. Sensitivity analysis. Techniques of sampling and statistical estimation. Introduction to sensors and data acquisition tools. Frequency distributions. Probability. Binomial, Poisson, normal distributions. Tests of hypotheses. Significance. The t-test and chi-squared test. Curve fitting by least squares. Correlation and regression. Design of experiments. [Offered: F,W]

Prereq: MATH 118; Level at least 2A Mechatronics Engineering.

Antireq: CIVE 224, ECON 221, KIN 222, MSCI 252, ME 202, PSCI 314, PSYCH 291, PSYCH 292, REC 371, SOC/LS 280, STAT 202, 206, 211, 220, 221, 231, 241, SYDE 212

MTE 202 LEC,TUT 0.50

Course ID: 011421

Ordinary Differential Equations

First Order Differential Equations; Direction Field; Separable Equations, Integrating Factors and Simple Transformations; Applications; Second and Higher Order ODE's with Constant Coefficients - Transient and Steady State Solutions; The Laplace Transform; Systems of Equations - reduction to single equation; Matrix Differential Equations; Introduction to Partial Differential Equations. [Offered: F,W]

Prereq: MATH 118; Level at least 2A Mechatronics Engineering.

Antireq: ME 203

MTE 203 LAB,LEC,TUT 0.50

Course ID: 011422

Advanced Calculus

Review of Vectors and Vector Operations; 3-D Analytic Geometry and Space Curves; Multivariable Calculus, including Partial Differentiation, Total Differential, Chain Rule, Directional Derivative, Gradient Operator, Maxima and Minima; Multiple Integrals - Surface Area, Volume and Moments of Inertia; Line and Surface Integrals; Vector Theorems; Complex Analysis including Limits, Analytic Functions, Complex Line Integral, Cauchy's Integral Formula; Fourier Series (real and complex) and Fourier Integrals. [Offered: F,S]

Prereq: MATH 118; Level at least 2B Mechatronics Engineering.

Antireq: ME 201

MTE 204 LEC,TUT 0.50

Course ID: 011423

Numerical Methods

Number Systems and Machine Errors; Roots of Non-Linear Equations; Matrix Calculations; Eigenvalue and Eigenvector Calculations; Interpolation and Approximation; Numerical Integration and Solution of ODE's (linear and non-linear) and systems of ODEs; Calculation of Series; Solution Methods for PDE's; Use of numeric and symbolic computing tools. [Offered: F,S]

Prereq: MTE 202; Level at least 2B Mechatronics Engineering.

MTE 219 LEC,TUT 0.50

Course ID: 011428

Mechanics of Deformable Solids

Introduction to mechanical response of materials and stress-strain relationships. Behaviour of prismatic members in tension, compression, shear, bending and torsion. Stress and strain transformations. Virtual work and energy methods. [Offered F,W]

Prereq: MTE 111, 119; Level at least 2A Mechatronics Engineering.

Antireq: CIVE 204, ME 219, SYDE 281/286

MTE 220 LAB,LEC,TUT 0.50

Course ID: 011453

Sensors and Instrumentation

Review of circuit theory; input-output relationships, transfer functions and frequency response of linear systems; operational amplifiers, operational amplifier circuits using negative or positive feedback; diodes, operational amplifier circuits using diodes; analog signal detection, conditioning and conversion systems; transducers and sensors, difference and instrumentation amplifiers, active filters. [Offered: F,S]

Prereq: MTE 120, 201; Level at least 2B Mechatronics Engineering.

Coreq: SYDE 252.

Antireq: SYDE 292

MTE 241 LAB,LEC,TUT 0.50

Course ID: 010084

Introduction to Computer Structures & Real-Time Systems

Introduction to computer organization, basic real-time concepts, process management, interprocess communication and synchronization, memory management, resource management, interrupt handling, concurrent programming, file systems. [Offered: F,S]

Prereq: GENE 121 and MTE 140; Level at least 2B Mechatronics Engineering students.

Antireq: ECE 254

MTE 262 LAB,LEC,TUT 0.50

Course ID: 013777

Introduction to Microprocessors and Digital Logic

Number systems, logic gates, Boolean algebra. Karnaugh maps and combinational logic design. Implementation of combinational logic circuits on Field Programmable Gate Arrays (FPGA) boards. Sequential logic and state machines. Programmable Logic Controllers (PLCs) and PLC programming using ladder logic and statement list. Microcomputer structure and operation, I/O, and interfacing and interrupts. Assembly language programming. Laboratory work includes microcomputer and PLC programming. [Offered: F,W]

Prereq: GENE 123 or MTE 120; Level at least 2B Mechanical or 2A Mechatronics Engineering.

Antireq: ECE 222, ME 262

MTE 300s

MTE 300A SEM 0.00

Course ID: 011458

Seminar

Discussion of the structure of and options within the Mechatronics Engineering curriculum; of the operation of Department, Faculty, University, technical societies; of student team and graduate school opportunities; of safety training; and of subject material in support of core courses. [Offered: W,S]

Prereq: 3A Mechatronics Engineering

MTE 300B SEM 0.00

Course ID: 011459

Seminar

Discussion of the structure of and options within the Mechatronics Engineering curriculum; of the operation of Department, Faculty, University, technical societies; of student team and graduate school opportunities; of safety training; and of subject material in support of core courses. [Offered: F,W]

Prereq: 3B Mechatronics Engineering

MTE 309 LEC,TST,TUT 0.50

Course ID: 004767

Introduction to Thermodynamics and Heat Transfer

Macroscopic approach to energy analysis. Energy transfer as work and heat, and the First Law of thermodynamics. Properties and states of simple substances. Control-mass and control-volume analysis. The essence of entropy, and the Second Law of thermodynamics. The Carnot cycle and its implications for practical cyclic devices. Introduction to heat transfer by conduction, convection, and radiation. Basic formulation and solution of steady and transient problems. Issues relevant to the cooling of electrical devices. [Offered: W,S]

(Cross-listed with ECE 309)

MTE 320 LAB,LEC,TUT 0.50

Course ID: 011454

Actuators & Power Electronics

Review of circuit analysis & basic electromagnetic theory. Power electronics: power electronics circuits, H bridges, PWM control, interfacing, power amplifiers. DC servo & stepper motors, AC synchronous & induction motors. Transformers. Introduction to typical speed and torque control techniques of motors. [Offered: W,S]

Prereq: MTE 120; Level at least 3A Mechatronics Engineering.

Antireq: ME 269

MTE 322 LAB,LEC,TUT 0.50

Course ID: 011429

Electromechanical Machine Design

Design of mechanical motion transmission systems: gearing, couplings, belts and lead-screws; Sensing and measurement of mechanical motion, sensor selection; Electromechanical actuator selection and specification; PLCs and sequential controller design, digital I/O; Case studies. [Offered: F,W]

Prereq: ME 321, MTE 220, 262, 320; Level at least 3B Mechatronics Engineering

MTE 325 LAB,LEC,TUT 0.50

Course ID: 011044

Microprocessor Systems and Interfacing for Mechatronics Engineering

Synchronization and data flow; interfacing to sensors and actuators; microprocessor system architecture, parallel, serial, and analog interfacing; buses; direct memory access (DMA); interfacing considerations.

[Note: Not open to students in Computer Engineering or Electrical Engineering. Offered: W, S]

MTE 360 LAB,LEC,TUT 0.50

Course ID: 011430

Automatic Control Systems

Feedback control design and analysis for linear dynamic systems with emphasis on mechanical engineering applications; transient and frequency response; stability; system performance; control modes; state space techniques; Introduction to digital control systems. [Offered: F,W]

Prereq: MTE 320, SYDE 252, 351; Level at least 3B Mechatronics Engineering.

Antireq: ECE 380, ME 360, SYDE 352

MTE 380 LEC,PRJ 0.50

Course ID: 013778

Mechatronics Engineering Design Workshop

In this course, students study the design process, including needs analysis, problem definition; design criteria and critical parameter identification, generation of alternative solutions; conceptual design, detailed design, optimization; and implementation. Most of the term is devoted to a significant design project in which student groups work independently and competitively, applying the design process to a project goal set by the faculty coordinator. The design project typically includes construction of an electro-mechanical prototype, and part of the course grade may depend on the performance of the prototype in a competitive test. In exceptional circumstances, the requirement for a prototype may be replaced by a computer simulation, or may be waived. [Offered: F,W]

Prereq: Level at least 3B Mechatronics Engineering.

Antireq: ME 380

MTE 400s

MTE 400A SEM 0.00

Course ID: 011460

Seminar

Discussion of structure of Mechatronics Engineering curriculum, operation of department, faculty, university, technical societies. [Offered: F]

Prereq: 4A Mechatronics Engineering

MTE 400B SEM 0.00

Course ID: 011461

Seminar

Discussion of structure of Mechatronics Engineering curriculum, operation of department, faculty, university, technical societies. [Offered: W]

Prereq: 4B Mechatronics Engineering

MTE 420 LAB,LEC,TUT 0.50

Course ID: 014026

Power Electronics and Motor Drives

Analysis, design and control of power electronic converters, principles of operation and control of DC and special-purpose motors, power electronics-based control of DC and special-purpose motors. [Offered: F]

Prereq: MTE 320.

Antireq: ECE 463

MTE 460 LAB,LEC,TUT 0.50

Course ID: 013905

Mechatronic System Integration

Mechatronic system interfaces and architecture design. Sensing and actuation in industrial mechatronics systems. Motion control. Industrial computer vision. Networks and communication. PLC based and distributed control. Discrete and hybrid control systems. Fault finding. [Offered: F,W]

Prereq: (ME 360 or MTE 360 or ECE 380) and (ME 262 or MTE 262) and (ECE 325/MTE 325 or ECE 362 or MTE 320); Level at least 4A Computer or Electrical or Mechanical or Mechatronics of Systems Design Engineering.

MTE 481 PRJ 0.50

Course ID: 013779

Mechatronics Engineering Design Project

This course is intended to reinforce the concepts learned in MTE 380 and to extend the significant design experience obtained. Students work individually or in small groups applying the principles of engineering design and problem-solving to a design project of their own choosing. The project must incorporate all elements of Mechatronics, namely, mechanical design, electronics, computers and software. In exceptional circumstances, one or more elements may be exempted by the course instructor. The students are required to consider a need analysis, search for prior art and present alternate designs. The course ends with the selection of a final design. Projects are selected, approved, monitored and marked by a course coordinator. [Offered: F]

Prereq: MTE 380; Level at least 4A Mechatronics Engineering students only.

Antireq: ME 481

MTE 482 PRJ 0.50

Course ID: 013780

Mechatronics Engineering Project

This course is an extension of MTE 481. Students work on prototyping the designs they proposed and finalized in MTE 481. The students either individually or in small groups demonstrate the working prototypes; make a poster presentation for the design competition; and pitch their product on a web site. The projects are monitored by the course instructor and evaluated by the instructor with feedback from an expert judging panel. [Offered: W]

Prereq: MTE 380, 481; Level at least 4A Mechatronics Engineering students only.

Antireq: ME 482

MTE 500s**MTE 544 LAB,LEC,TUT 0.50**

Course ID: 015392

Autonomous Mobile Robots

Fundamentals of autonomous mobile robotics, including both perception and planning for autonomous operation, sensor modelling, vehicle state estimation using Bayes Filters, Kalman Filters, and Particle Filters as well as onboard localization and mapping. Topics in planning include vehicle motion modelling and control, as well as graph based and probabilistic motion planning of (Micro Electro Mechanical Systems) MEMS devices. [Offered: F]

Prereq: Level at least 3B Computer, Electrical, Mechanical, Mechatronics, or Systems Design Engineering

MTE 545 LAB,LEC,TUT 0.50

Course ID: 013776

Introduction to MEMS Fabrication

Introduction to MEMS. Fabrication processes for MEMS devices. Basic MEMS governing equations in different energy domains (Mechanical, electrical and thermal). Methods for layout, design and modeling of MEMS devices. Simulation techniques. Techniques for testing and characterization of MEMS devices. [Offered: F]

Prereq: Level at least 3B Computer, Electrical, Mechanical, Mechatronics, or Systems Design Engineering

MTE 546 LAB,LEC 0.50

Course ID: 015393

Multi-sensor Data Fusion

Sensor data and information fusion systems. Sensor modelling, including characterization of uncertainty. Sensor fusion approaches for estimation and decisions including weighted least squares, extended Kalman Filter, Dempster-Shafer evidential reasoning, artificial neural networks; Outlier rejection; Spatial and temporal registration. Course project involving independent study of one aspect of sensor data fusion. [Offered: W]

Prereq: ECE 484; (MTE 201 or ME 202)

MATHEMATICS ELECTIVES

Notes

MTHEL courses are not restricted to students in the Faculty of Mathematics. When taken by Mathematics students, MTHEL courses count as non-mathematics courses.

MTHEL 100s

MTHEL 131 LEC,TST 0.50

Course ID: 012764

Introduction to Actuarial Practice

Individual life insurance products. Introduction to property and casualty insurance. Introductory risk management, insurance pricing and valuation. Pension plan design. [Offered: F,W,S]

Prereq: 4U Calculus and Vectors

MTHEL 198 SEM 0.50

Course ID: 010168

Mathematics Elective Topics 1

Special Topics course as announced by the department.

MTHEL 200s

MTHEL 206A LEC 0.50

Course ID: 006940

Introduction to Mathematics Education

Current trends in education, professional practices and administration, the role of the department head, lesson planning, techniques of teaching, evaluation of students, special students, extracurricular activities, the relationship between elementary

and secondary school mathematics, audio-visual materials. [Offered: S]

Prereq: Mathematics Teaching students only

MTHEL 298 SEM 0.50

Course ID: 010169

Mathematics Elective Topics 2

Special Topics course as announced by the department.

MTHEL 300s

MTHEL 300 LEC 0.50

Course ID: 014969

Professional Communications in Statistics and Actuarial Science

This course introduces students to oral and written communication in the fields of Statistics and Actuarial Science. With emphasis on the public presentation of technical knowledge, the ability to give and receive constructive feedback, and communication in a collaborative environment, this course helps students develop proficiencies in critical workplace skills. This course is writing intensive and includes extensive collaborative assignments.

[Note: Students are encouraged to complete this course by their 4A term. Offered: F,W,S]

Prereq: At least 70% in one of EMLS 101R, 102R, EMLS/ENGL 129R, ENGL 109, SPCOM 100, 223; (STAT 331, 371 or ACTSC 331); Actuarial Science or Statistics major students only

(Cross-listed with ENGL 378)

Also offered at St. Jerome's University

MTHEL 398 LEC 0.50

Course ID: 010170

Mathematics Elective Topics 3

Special Topics course as announced by the department.

MTHEL 400s

MTHEL 498 SEM 0.50

Course ID: 010171

Mathematics Elective Topics 4

Special Topics course as announced by the department.

MUSIC

Notes

1. Students should consult their faculty advisor regarding how courses with weights other than 0.5 units are counted for degree credit in their Academic Plan.
2. Students should consult with the [Music web page](#) or the department for the latest information on course offerings. Some courses are offered in rotation.

MUSIC 100s

MUSIC 100 LEC 0.50

Course ID: 006944

Understanding Music

The styles, forms, techniques, and terminology of Western music through lectures and listening, as exemplified by great works from all eras of music history.

[Note: The ability to read music notation is not required.]

Antireq: MUSIC 110

MUSIC 110 LEC 0.50

Course ID: 015135

Music in Cultural Contexts

An intensive study of music from around the globe and throughout the ages, employing several approaches in studying how music reflects and responds to its diverse social, political, and historical contexts.

Antireq: MUSIC 100

MUSIC 111 LEC 0.50

Course ID: 006948

Fundamentals of Music Theory

An introduction to the primary skills of music practice emphasizing the reading and writing of musical notation. Students will learn elementary keyboard, listening, and sight-singing skills.

[Note: For students with minimal musical background. Does not fulfil Music major or minor requirements.]

MUSIC 116 ENS 0.25

Course ID: 006951

Music Ensemble

The study of selected music literature through rehearsals and performance in one of the Music Department's ensembles: Chamber Choir, Chapel Choir, University Choir, Vocal Techniques, Chamber Ensembles, Jazz Ensemble, World Music Ensemble. Regular attendance at rehearsals and performances is required.

[Note: For musical reasons, admission to any particular ensemble is at the discretion of the director. Audition required. Contact music department prior to first day of class. Offered on a CR/NCR basis.]

MUSIC 117 ENS 0.25

Course ID: 006952

Music Ensemble

The study of selected music literature through rehearsals and performance in one of the Music Department's ensembles: Chamber Choir, Chapel Choir, University Choir, Vocal Techniques, Chamber Ensembles, Jazz Ensemble, World Music Ensemble. Regular attendance at rehearsals and performances is required.

[Note: For musical reasons, admission to any particular ensemble is at the discretion of the director. Audition required. Contact music department prior to first day of class. Offered on a CR/NCR basis.]

Prereq: MUSIC 116

MUSIC 140 LEC 0.50

Course ID: 006959

Popular Music and Culture

An examination of the styles, forms and development of 20th-century popular music. The social, commercial and technological aspects of popular music are considered.

MUSIC 200s

MUSIC 216 ENS 0.25

Course ID: 006981

Music Ensemble

The study of selected music literature through rehearsals and performance in one of the Music Department's ensembles: Chamber Choir, Chapel Choir, University Choir, Vocal Techniques, Chamber Ensembles, Jazz Ensemble, World Music Ensemble. Regular attendance at rehearsals and performances is required.

[Note: For musical reasons, admission to any particular ensemble is at the discretion of the director. Audition required. Contact music department prior to first day of class. Offered on a CR/NCR basis.]

Prereq: MUSIC 117

MUSIC 217 ENS 0.25

Course ID: 006982

Music Ensemble

The study of selected music literature through rehearsals and performance in one of the Music Department's ensembles: Chamber Choir, Chapel Choir, University Choir, Vocal Techniques, Chamber Ensembles, Jazz Ensemble, World Music Ensemble. Regular attendance at rehearsals and performances is required.

[Note: For musical reasons, admission to any particular ensemble is at the discretion of the director. Audition required. Contact music department prior to first day of class. Offered on a CR/NCR basis.]

Prereq: MUSIC 216

MUSIC 222 LEC 0.50

Course ID: 006986

Conducting 1

A study of conducting techniques appropriate for song leading, choral rehearsal and public performance. The course will include score analysis and rehearsal procedures for music from a wide variety of historical styles.

Prereq: MUSIC 100 or 110; 270, 271

MUSIC 226 STU 0.50

Course ID: 006988

Music Studio

Individual instruction in Voice, Piano, Organ, Classical Guitar and orchestral instruments.

[Note: Royal Conservatory Grade 8 Level. Audition required. Contact music department prior to first day of class. Studio Fee.]

Department Consent Required

Coreq: One of MUSIC 116, 117, 216, 217, 316, 317

MUSIC 227 STU 0.50

Course ID: 006989

Music Studio

Individual instruction in Voice, Piano, Organ, Classical Guitar and orchestral instruments.

[Note: Studio Fee]

Department Consent Required

Prereq: MUSIC 226.

Coreq: One of MUSIC 116, 117, 216, 217, 316, 317

MUSIC 231 LEC 0.50

Course ID: 006990

Music Cognition

The study of music from a behavioural science perspective. Topics include auditory perception, creativity and aesthetic experience, emotive human responses, and the social psychology of music activities. Recent research in the field of music cognition will be explored in detail.

Prereq: MUSIC 100 or 110

MUSIC 232 LEC 0.50

Course ID: 015136

Music as a Global Phenomenon

A survey of music studied in cross-cultural perspective with regard to its sound, performance practices, meanings, and functions from selected world traditions found in the diverse cultures of Africa, Asia, Latin America, North America, Europe, and the Middle East.

Antireq: MUSIC 245

MUSIC 233 LEC 0.50

Course ID: 015137

Musical Rhythm in Global Perspective

A multidisciplinary survey of rhythm in selected musics examined in terms of scientific, symbolic, and experiential knowledge that connects it to the concepts of time, history, biology, evolution, anthropology, philosophy, psychology, and contemporary globalized culture.

MUSIC 240 LEC 0.50

Course ID: 006991

Introduction to Jazz

A survey of the development of jazz schools and individual styles as well as a study of melodic, harmonic and rhythmic improvisation. Styles will be demonstrated through recordings and live performance.

MUSIC 246 LEC 0.50

Course ID: 011587

Soundtracks: Music in Film

An examination of the techniques, styles, and functions of music in film, and how music interacts with image and narrative to create meanings. Weekly screenings of films selected from the 1930's to the present.

MUSIC 253 LEC 0.50

Course ID: 007001

Cathedral and Court: Music to 1600

A study of major developments in western music during the Middle Ages and Renaissance, including Gregorian chant, mass, secular songs, instrumental music, and other musical genres that flourished under courtly and church patronage from the early Christian church to 1600.

MUSIC 254 LEC 0.50

Course ID: 007002

Monteverdi to Mozart: Music from 1600-1800

A study of Baroque and Classical music of the 17th and 18th centuries in cultural, political, and artistic contexts. Topics include the development of opera, choral music, symphony, sonata, and the music of Monteverdi, Bach, Handel, Mozart, and others.

MUSIC 255 LEC 0.50

Course ID: 007003

The Romantic Century: Beethoven and Beyond

A study of music of the 19th century in cultural, political, and artistic contexts. Topics include the development of principal forms in the music of Beethoven, Schubert, Schumann, Liszt, Chopin, Wagner, Verdi, Brahms, Bruckner, and others.

MUSIC 256 LEC 0.50

Course ID: 007004

Music Since 1900

A study of music of the 20th and early 21st centuries in cultural, political, and artistic contexts. Topics include modern and contemporary composers' challenges to traditional musical ideals in the music of Debussy, Stravinsky, Schoenberg, Cage, and others.

MUSIC 260 LEC 0.50

Course ID: 007009

The Symphony

A survey of the great symphonies from Haydn to Stravinsky, through lectures and listening. A portion of the course will be devoted to works being performed by the Kitchener-Waterloo Symphony Orchestra during the term.

[Note: The ability to read music notation is not required.]

MUSIC 261 LEC 0.50

Course ID: 010205

Opera

An introduction to the themes, sources, forms, and nature of opera through selected works from Monteverdi to Britten. The course explores ways that drama is interpreted through music and considers opera in a broader context of social and artistic issues.

[Note: The ability to read music notation is not required.]

MUSIC 262 LEC 0.50

Course ID: 015138

Music for Vocal Ensemble

A survey of the great masterpieces for vocal ensemble from Medieval times to the present studied through reading, lecture, and listening. Principle choral genres of each historical era are studied and discussed including works performed by the Grand Philharmonic Choir during the term.

[Note: The ability to read music notation is not required.]

Antireq: MUSIC 290 taken Winter 2015

MUSIC 270 LEC 0.50

Course ID: 007018

Music Theory 1

The study of basic melodic, harmonic and voice leading concepts including an introduction to figured bass and functional harmony. Ear-training, sight-singing and keyboard lab sessions will be integrated with written and analytical work.

[Note: A basic knowledge of scales, triads, and music notation is required.]

MUSIC 271 LEC 0.50

Course ID: 007020

Music Theory 2

The study of harmony, counterpoint and form of 18th- and early 19th-century music. Sight-singing, ear-training and keyboard lab sessions will be integrated with written and analytical work.

Prereq: MUSIC 270

MUSIC 275 LAB,LEC 0.50

Course ID: 007025

Music and Technology

A hands-on introduction to music and technology, including recording, audio editing, digital signal processing, and MIDI. Course work will foster a practical understanding of digital music production software and techniques, and involve electroacoustic or acoustic composition.

[Note: Studio Fee]

Prereq: MUSIC 100 or 110

MUSIC 290 LEC 0.50

Course ID: 010206

Special Topics

A special study of a selected topic in music. Consult department for details.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Prereq: Level at least 2A

MUSIC 300s**MUSIC 316 ENS 0.25**

Course ID: 007036

Music Ensemble

The study of selected music literature through rehearsals and performance in one of the Music Department's ensembles: Chamber Choir, Chapel Choir, University Choir, Vocal Techniques, Chamber Ensembles, Jazz Ensemble, World Music Ensemble. Regular attendance at rehearsals and performances is required.

[Note: For musical reasons, admission to any particular ensemble is at the discretion of the director. Audition required. Contact music department prior to first day of class. Offered on a CR/NCR basis.]

Prereq: MUSIC 217

MUSIC 317 ENS 0.25

Course ID: 007037

Music Ensemble

The study of selected music literature through rehearsals and performance in one of the Music Department's ensembles: Chamber Choir, Chapel Choir, University Choir, Vocal Techniques, Chamber Ensembles, Jazz Ensemble, World Music Ensemble. Regular attendance at rehearsals and performances is required.

[Note: For musical reasons, admission to any particular ensemble is at the discretion of the director. Audition required. Contact music department prior to first day of class. Offered on a CR/NCR basis.]

Prereq: MUSIC 316

MUSIC 322 LEC 0.50

Course ID: 007038

Conducting 2

A continuation of the study of conducting techniques begun in MUSIC 222. The course focuses on the development of analytical and musical skills including score study, aural skills, and gestural clarity.

Prereq: MUSIC 222

MUSIC 326 STU 0.50

Course ID: 007039

Music Studio

Individual instruction in Voice, Piano, Organ, Classical Guitar and orchestral instruments.

[Note: Studio Fee]

Department Consent Required

Prereq: MUSIC 100 or 110; 227, 270; Music majors and minors.

Coreq: One of MUSIC 116, 117, 216, 217, 316, 317.

MUSIC 327 STU 0.50

Course ID: 007040

Music Studio

Individual instruction in Voice, Piano, Organ, Classical Guitar and orchestral instruments.

[Note: Studio Fee]

Department Consent Required

Prereq: MUSIC 326.

Coreq: One of MUSIC 116, 117, 216, 217, 316, 317

MUSIC 332 LEC 0.50

Course ID: 007041

Aesthetics of Music

This course employs various methods to explore questions of musical meaning. Through study and discussion of selected sources from antiquity to the present, such themes as imitation, abstraction, beauty and other debated issues will be examined in historical context and in relation to the other arts.

Prereq: Level at least 2A

MUSIC 333 SEM 0.50

Course ID: 015139

Music and Landscape

This course explores how landscape is represented in music from Vivaldi and Beethoven to popular genres and Canadian music. Topics include the role of landscape and music in cultural identity, ways in which music evokes space and place, music and the environment, soundscape, and site-specific music.

Prereq: Level at least 2A.

Antireq: MUSIC 390 taken Winter 2011, Winter 2014

MUSIC 334 LEC 0.50

Course ID: 007042

Women and Music

An examination of women's roles in music from a cross-cultural perspective. Topics include women's music as a genre, historical accounts of women's music-making, the effects of gender ideology on women's musical activities, and music behaviour and performance in inter-gender relations.

Prereq: Level at least 2A

(Cross-listed with WS 334)

MUSIC 335 SEM 0.50

Course ID: 015140

Perspectives in Music and Peace

This course examines music's role in peace and conflict from a variety of perspectives through listening, reading, discussion, and using examples from around the world. Topics include the use of music in dissent and resistance, and as an instrument of propaganda, conflict, and peacebuilding.

Prereq: Level at least 2A.

Antireq: MUSIC 391 taken Winter 2015 and PACS 301 taken Winter 2015

(Cross-listed with PACS 335)

MUSIC 355 FLD 0.50

Course ID: 007045

Music and Culture Travel Course

A Spring term seminar approximately three weeks long, taught on location including daily lectures, attendance at music performances, and tours to places of cultural importance. Past and possible future locations include Vienna, London, Leipzig, South Africa, Morocco, Bali, and Estonia.

[Note: Additional costs will apply.]

Department Consent Required

MUSIC 361 LEC 0.50

Course ID: 007049

Art Song

A study of the music written for solo voice from the 17th century to the present.

Prereq: MUSIC 100 or 110

MUSIC 362 LEC 0.50

Course ID: 007050

Piano Literature

A study of music for solo piano from its 17th- and 18th-century antecedents to the present. Using historical and analytical approaches, individual works will be considered within a tradition of particular forms, genres, and styles.

Prereq: MUSIC 100 or 110

MUSIC 363 LEC 0.50

Course ID: 007051

The Christian Hymn

The origins of the Christian hymn and its development up to the present. The course considers the hymn as theological, poetic, musical, cultural, and spiritual expression, and the use of hymns in a variety of worship settings.

[Note: This course fulfils an Area 2C requirement for Religious Studies majors.]

(Cross-listed with CMW 363, RS 357)

MUSIC 364 LEC 0.50

Course ID: 007052

Worship and its Music

The nature of worship and the role of music within worship in historical, theological, and cultural perspective. Field trips to services of various traditions.

[Note: This course fulfils an Area 2C requirement for Religious Studies majors.]

(Cross-listed with CMW 364, RS 358)

MUSIC 370 LAB,LEC 0.50

Course ID: 007058

Music Theory 3 (19th-Century)

The study of chromatic harmony as well as melodic and formal aspects of 19th-century music. Ear-training, sight-singing and keyboard lab sessions will be integrated with written and analytical work.

Prereq: MUSIC 271

MUSIC 371 LAB,LEC 0.50

Course ID: 007059

Theory 4 (20th-Century)

The study of the compositional aspects of 20th-century music, including extended tonality, atonality, 12-tone writing, neo-classical idioms and contemporary compositional procedures. Lab sessions will cover non-tonal melodic reading and complex chord structures.

Prereq: MUSIC 370

MUSIC 376 SEM 0.50

Course ID: 007064

Composition Seminar

An exploration of the discipline and craft of composing and arranging. Topics include choral, chamber ensemble, and orchestral techniques; electronic music; and charting for popular music. The course includes both score preparation and opportunities for recital performances of original works.

Prereq: MUSIC 271

MUSIC 380 RDG 0.50

Course ID: 007066

Directed Study in Music

An independent term project completed under tutorial guidance of a faculty advisor.

Department Consent Required

MUSIC 381 RDG 0.50

Course ID: 007069

Directed Study in Music

An independent term project completed under tutorial guidance of a faculty advisor.

Department Consent Required

MUSIC 390 SEM 0.50

Course ID: 007072

Special Topics in Music

A special study of a selected topic in music. Consult department for details.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Department Consent Required

MUSIC 392 SEM 0.50

Course ID: 015141

Special Topics in Global Music

A study of a selected topic in global music. Consult department for details.

[Note: This is a repeatable course, subject to different content; it may be completed a total of two times.]

Department Consent Required

MUSIC 400s

MUSIC 426 STU 0.50

Course ID: 007076

Music Studio

Individual instruction in Voice, Piano, Organ, Classical Guitar and orchestral instruments.

[Note: Studio Fee]

Department Consent Required

Prereq: MUSIC 327.

Coreq: One of MUSIC 116, 117, 216, 217, 316, 317

MUSIC 427 STU 0.50

Course ID: 007077

Music Studio

Individual instruction in Voice, Piano, Organ, Classical Guitar, and orchestral instruments.

[Note: Studio Fee]

Department Consent Required

Prereq: MUSIC 426.

Coreq: One of MUSIC 116, 117, 216, 217, 316, 317.

Antireq: MUSIC 428

MUSIC 428 STU 0.50

Course ID: 013997

Music Studio

Individual instruction in Voice, Piano, Organ, Classical Guitar and orchestral instruments. Students perform a senior recital in place of a jury.

[Note: Studio Fee]

Department Consent Required

Prereq: MUSIC 426.

Coreq: One of MUSIC 116, 117, 216, 217, 316, 317.

Antireq: MUSIC 427

MUSIC 491 SEM 0.50

Course ID: 012958

Senior Research Seminar

A research seminar for Music majors designed to give students an opportunity to develop research techniques through individual research projects and regular meetings with other students and faculty.

Prereq: Level at least 3A Music

MUSIC 492 PRJ 0.50

Course ID: 007083

Senior Honours Thesis

An independent research project for Honours Music students. The topic is determined through consultation between the student and a faculty advisor.

Department Consent Required

Prereq: MUSIC 491

NANOTECHNOLOGY ENGINEERING

NE 100s

NE 100 LAB,LEC,TST,TUT 0.50

Course ID: 011923

Introduction to Nanotechnology Engineering

An introduction to nanotechnology engineering and its applications. Basic engineering principles and methodology, including the roles of standards, safety, and intellectual property. The purpose, structure, format, and essential components of

engineering technical reports. Introduction to the areas of nanomedicine, nanomaterials, and nanoelectronics. Professional development, including résumé skills, interview skills, and preparation for co-op terms. [Offered: F]

Prereq: 1A Nanotechnology Engineering students.

Antireq: CHE 100, CIVE 125, ECE 100, ME 100, SYDE 101

NE 101 SEM 0.00

Course ID: 011915

Nanotechnology Engineering Practice

Areas of research and professional practice in Nanotechnology Engineering; exposure to concepts from other Engineering disciplines; support material for the 1A academic term. [Offered: F]

Prereq: Level 1A Nanotechnology Engineering

NE 102 LEC 0.15

Course ID: 011916

Introduction to Nanomaterials Health Risk; Nanotechnology Engineering Practice

Introduction to types of nanomaterials hazards: their identification, toxicity, and characterization; exposure health-risk assessment; cancer and non-cancer risks. Areas of research and professional practice in Nanotechnology Engineering; exposure to concepts from other Engineering disciplines; support material for the 1B academic term, including aspects of co-operative education and professional or career development.

[Note: This course is graded as CR/NCR and is considered as DRNC. Offered: W]

Prereq: Level at least 1B Nanotechnology Engineering

NE 109 LEC,TUT 0.50

Course ID: 014982

Societal and Environmental Impacts of Nanotechnology

An introduction to the field of nanotechnology and its ability to impact society and affect sustainability. How utilization of nanotechnology has simultaneously improved societal standards of living and introduced new ethical, health, and environmental concerns will be examined. Topics covered will include: the history of changing perceptions of and attention devoted to developments in nanotechnology; special health and environmental concerns associated with nanomaterials; the development and means of implementation of regulations to deal with the use of nanomaterials; ethical issues associated with nanotechnology and its applications. Intellectual property issues in general, and those pertaining to nanotechnology specifically, will also be discussed briefly. Relevant case studies will be presented and discussed. [Offered: F]

Prereq: Level 1A Nanotechnology Engineering

NE 111 LEC,TST 0.25

Course ID: 014677

Introduction to Programming for Engineers

Introduction to programming and numerical computing using a high-level interpreted programming language. Programming fundamentals, computer architecture, design and use of functions, strings and text input/output, relational operators, conditionals, lists, loops, designing algorithms, numerical computing, plotting, and file input/output.

[Note: This course includes online components. Offered: F]

Prereq: Level 1A Nanotechnology Engineering

NE 112 LEC,TST,TUT 0.50

Course ID: 011924

Linear Algebra for Nanotechnology Engineers

Matrices, operations on matrices. Determinants. Adjoints and inverses. Solution of linear equations: elimination and iterative methods. Eigenvalues and eigenvectors with engineering applications. Complex numbers. [Offered: F]

Prereq: 1A Nanotechnology Engineering.

Antireq: MATH 114, 115, 125/106, 136, 146, SYDE 114

NE 113 LAB,LEC,TST,TUT 0.50

Course ID: 011925

Introduction to Computational Methods

Spreadsheets for problem solving, plotting, fitting data. Problem solution plotting, and creating complex programs in an engineering prototypical programming environment. Elementary numerical methods: Taylor-series summations, roots of equations, roots of polynomials, direct and indirect solution methods for systems of linear, and nonlinear algebraic equations, integration. Applications in nanotechnology engineering. [Offered: W]

Prereq: Level at least 1B Nanotechnology Engineering students.

Antireq: CHE 121, CIVE 121, CS 115, 123, 134, 135, 145, ECE 150, GENE 121, PHYS 139, SYDE 121

NE 121 LEC,TST,TUT 0.50

Course ID: 011928

Chemical Principles

Chemical reactions. Mass and charge balance. Introduction to the first, second, and third laws of thermodynamics. Chemical equilibrium. Applications of chemical equilibrium principles to proton-transfer reactions. Electronic structure of atoms and molecules. Periodicity and chemical bonding. [Offered: F]

Prereq: Level 1A Nanotechnology Engineering.

Antireq: CHE 102, CHEM 120, 123

NE 125 LEC,TST,TUT 0.50

Course ID: 012238

Introduction to Materials Science and Engineering

Fundamentals of crystalline structure, crystal defects, and noncrystallinity. Structure and properties of metals, ceramics, glasses, amorphous materials, polymers, and composites. Processing and concepts of engineering design of materials. [Offered: W]

Prereq: NE 121; Level at least 1B Nanotechnology Engineering students

.Antireq: CHE 241, CIVE 265, ME 135/235

NE 131 LEC,TST,TUT 0.50

Course ID: 011930

Physics for Nanotechnology Engineering

A first course in physics that introduces basic topics in classical mechanics, wave mechanics, and physical optics. [Offered: W]

Prereq: MATH 117; Level at least 1B Nanotechnology Engineering students.

Antireq: PHYS 111, 115, 121, SYDE 182

NE 140 LAB,LEC,TUT 0.50

Course ID: 015631

Linear Circuits

Charge, current and voltage. Resistance, Ohm's Law, Kirchhoff's voltage and current laws. Nodal, mesh analysis and source transformation. Superposition, Thévenin and Norton equivalents. Capacitance, inductance, electrical energy dissipation and first-order transient response circuits. Phasors, impedances and alternating current (AC) steady state analysis. Signals, amplifier concepts and nonlinear circuit analysis. Diodes circuit applications. Ideal operational amplifier circuits. Frequency filter types and active filter circuits' configuration. [Offered: W, first offered Winter 2019]

Prereq: Level at least 1B Nanotechnology Engineering.

Antireq: BME 392, ECE 140, 240, GENE 123, MTE 120, SYDE 292

NE 201 LEC,TST 0.15

Course ID: 011917

Nanotoxicology; Nanotechnology Engineering Practice

Nanotoxicology, including inhalation and dermal exposure effects; translocation, cytotoxicity, mutagenicity, and neurotoxicity; carbon nanotubes as cancer hazards. Areas of research and professional practice in Nanotechnology Engineering; exposure to concepts from other Engineering disciplines; support material for the 2A academic term, including aspects of co-operative education and professional or career development.

[Note: This course is graded as CR/NCR and is considered as DRNC. Offered: F]

Prereq: 2A Nanotechnology Engineering students only

NE 202 LEC 0.15

Course ID: 011918

Nanomaterials and Environmental Impact; Nanotechnology Engineering Practice

Environmental fate and behaviour, bio-availability, consumer exposure, environmental exposure-assessment, aquatic toxicology, bio-accumulation and biomagnification. Areas of research and professional practice in Nanotechnology Engineering; exposure to concepts from other Engineering disciplines; support material for the 2B academic term, including aspects of co-operative education and professional or career development.

[Note: This course is graded as CR/NCR and is considered as DRNC. Offered: S]

Prereq: Level at least 2B Nanotechnology Engineering

NE 215 LEC,TST,TUT 0.50

Course ID: 011926

Probability and Statistics

Elementary probability theory. Random variables and distributions. Binomial, Poisson, and normal distributions. Elementary sampling. Statistical estimation. Tests of hypotheses and significance. Regression. Goodness-of-fit tests. [Offered: F]

Prereq: MATH 119, NE 112; Level at least 2A Nanotechnology Engineering students.

Antireq: CHE 220, CIVE 224, ME 202, STAT 202, 206, 220, 230, SYDE 213

NE 216 LAB,LEC,TST,TUT 0.50

Course ID: 013158

Advanced Calculus 1 for Nanotechnology Engineering

Ordinary differential equations with constant coefficients. Boundary value problems and applications to quantum mechanics. Laplace and Fourier transforms, Fourier series and applications. Numerical solution of ordinary differential equations. [Offered: F]

Prereq: MATH 119; 2A Nanotechnology Engineering students.

Antireq: AMATH 350, MATH 218, 228

NE 217 LAB,LEC,TST,TUT 0.50

Course ID: 013160

Advanced Calculus 2 for Nanotechnology Engineering

Gradient, Divergence and Curl: Applications. Line and Surface Integrals. Green's, Gauss', and Stokes' Theorems: Applications to electromagnetism and fluid mechanics. Numerical solution of partial differential equations. [Offered: S]

Prereq: NE 216; 2B Nanotechnology Engineering students only

NE 220L LAB 0.25

Course ID: 012582

Materials Science and Engineering Laboratory

Labs following the NE 125 Introduction to Materials Science and Engineering course. This laboratory course introduces students to techniques for the characterization of various materials, such as metals, polymers, ceramics, and composites. Experimental exercises will study the physical properties and characteristics of materials, including mechanical, thermal, electrical, and structural/morphological properties at different length scales. [Offered: F]

Prereq: NE 125; 2A Nanotechnology Engineering students only

NE 222 LAB,LEC,TST,TUT 0.50

Course ID: 012237

Organic Chemistry for Nanotechnology Engineers

Nomenclature, stereochemistry and reactions of important classes of organic compounds. Reaction mechanisms and energetics. Aromaticity and simple molecular orbital theory of conjugated systems. Applications to nanomaterials and/or devices. [Offered: F, first offered Fall 2019]

Prereq: Level at least 2A Nanotechnology Engineering.

Antireq: CHEM 262/262L, 264, 266/266L

NE 224 LAB,LEC,TUT 0.50

Course ID: 011933

Biochemistry for Nanotechnology Engineers

An introduction to the chemistry of amino acids, carbohydrates, lipids and nucleic acids. Structure and properties of proteins and enzymes. An introduction to cell biochemistry. Applications to nanobiotechnology. [Offered: S, first offered Spring 2020]

Prereq: Level at least 2B Nanotechnology Engineering.

Antireq: CHEM 233, 237

NE 225 LEC,TUT 0.50

Course ID: 012239

Structure and Properties of Nanomaterials

Electronic orbitals in atoms, molecules and the solid state. Structures and properties of covalent and ionic solid nanoparticles including their catalytic, electrochemical, electrical, optical and magnetic properties. Semiconductors and carbon/silicon-based nanoparticles. Examples discussed include carbon nanoparticles, dendrimers, micelles and quantum dots. [Offered: S]

Prereq: Level at least 2B Nanotechnology Engineering

NE 226 LEC,TUT 0.50

Course ID: 011934

Characterization of Materials

Materials structure analysis. Materials composition and chemical bonding analysis. In-situ analysis and monitoring of fabrication process parameters. Materials properties characterization. [Offered: S]

Prereq: NE 125; 2B Nanotechnology Engineering students only.

Coreq: NE 232

NE 226L LAB 0.25

Course ID: 014070

Laboratory Characterization Methods

This laboratory course introduces students to six materials characterization techniques employed routinely by nanotechnology engineers in their practices. Specifically, the six techniques are: Fourier-Transform Infrared (FTIR), Raman light-scattering, and ultra-violet and visible (UV-Vis) spectroscopies, ellipsometry, X-ray diffraction (XRD), and scanning electron microscopy (SEM). This course is intended to familiarize students with the instrumentation involved, prior to its application to nanomaterials in a follow-up laboratory course, NE 320L. [Offered: S]

Prereq: 2B Nanotechnology Engineering students.

NE 232 LEC,TUT 0.50

Course ID: 011935

Quantum Mechanics

Historical background; the differential equation approach to quantum mechanics; treatments of solvable problems such as the particle-in-a-box, harmonic oscillator, rigid rotor, and the hydrogen atom; introduction to approximation methods for more complex systems; application to solid state problems, including band theory. [Offered: F]

Prereq: NE 121, 125, 131; Level at least 2A Nanotechnology Engineering students.

Coreq: NE 216.

Antireq: CHEM 356, ECE 405, PHYS 233, 234

NE 241 LAB,LEC,TUT 0.50

Course ID: 011931

Electromagnetism

Coulomb's law, electric field and electric flux, Gauss's law, electric potential, potential and field, magnetic field, Ampere's law, solenoid, electromagnetic induction, magnetic flux, Lenz' law, Faraday's law, capacitors and capacitance, inductors and inductance, Maxwell's equations, electromagnetic fields and waves, polarization. [Offered: F]

Prereq: Level at least 2A Nanotechnology Engineering.

Antireq: ECE 106, GENE 123, MTE 120, SYDE 283

NE 242 LAB,LEC,TUT 0.50

Course ID: 011937

Semiconductor Physics and Devices

Introduction to the physical principles and electrical behavior of semiconductor materials and devices: electronic band structure, charge carriers, doping, carrier transport, pn-junctions, metal-oxide-semiconductor capacitors, transistors, and related optoelectronic devices (photodetectors, light emitting diodes, solar cells). [Offered: S]

Prereq: NE 125, 232, 241; 2B Nanotechnology Engineering students only.

Antireq: ECE 331

NE 250 PRJ 0.13

Course ID: 015209

Work-term Report 1

An engineering report based upon a technical project, activity, or analysis carried out by the student, normally during work-term employment following the 2A academic term. Evaluation is based upon a level of written communication, technical proficiency, and engineering analysis appropriate to a second-year engineering student. [Offered: S]

Prereq: Level at least 2B Nanotechnology Engineering.

Antireq: MSCI 391, WKRPT 200, 201

NE 300s**NE 301 LEC 0.15**

Course ID: 011919

Nanomaterials and Human Risks, Benefits; Nanotechnology Engineering Practice

Detoxification and bioactivation pathways; surface modification; biopersistence; quantum dots and cellular imaging; biomedical applications of nanomaterials. Areas of research and professional practice in Nanotechnology Engineering; exposure to concepts from other Engineering disciplines; support material for the 3A academic term, including aspects of co-operative education and professional or career development.

[Note: This course is graded as CR/NCR and is considered as DRNC. Offered: S]

Prereq: Level at least 3A Nanotechnology Engineering

NE 302 SEM 0.00

Course ID: 011920

Nanotechnology Engineering Practice

Areas of research and professional practice in Nanotechnology Engineering; exposure to concepts from other Engineering disciplines; support material for the 3B academic term, including aspects of co-operative education and professional or career development. [Offered: F]

Prereq: Level at least 3B Nanotechnology Engineering

NE 307 SEM 0.25

Course ID: 011963

Introduction to Nanosystems Design

Introduction to the engineering design process: problem definition and needs analysis; process synthesis, analysis, optimization and troubleshooting; safety and environmental protection in design; written and oral communication for design reports. Students form four-person design teams and start a team-oriented project based on the knowledge and skills acquired in previous courses and on co-operative work terms, culminating in a design proposal presentation. [Offered: F]

Prereq: 3B Nanotechnology Engineering students only

NE 318 LEC,TUT 0.50

Course ID: 011938

Continuum Mechanics for Nanotechnology Engineering

Scaling analysis of differential equations. Tensor operations and tensor calculus. Kinematics of a continuum: material and spatial frames, strain and displacement, conservation of mass. Stress, conservation of momentum and energy. Linear elastic solids: Hooke's Law, infinitesimal elasticity theory and the Navier-Cauchy equation. Newtonian viscous fluids: hydrostatics, Navier-Stokes equations, flow regimes, and the Reynolds number. Engineering applications: plane elastic waves and vibrations, buoyancy forces, Couette, Poiseuille, and Stokes flows. [Offered: S]

Prereq: NE 216, 217; 3A Nanotechnology Engineering students only

NE 320L LAB 0.25

Course ID: 012874

Characterization of Materials Laboratory

Follow-up labs associated with the NE 226 (Characterization of Materials) course. The laboratory exercises focus upon the synthesis and characterization of nano-based materials. Specifically, the synthesis of carbon nanotubes, quantum dots, magnetic ceramics, or other common nanomaterials will be investigated, and sample preparations for various characterization tools will be carried out. Characterization techniques such as infrared and Raman spectroscopy, x-ray diffraction, scanning electron microscope (SEM), and magnetic inductive heating will be utilized. [Offered: S]

Prereq: NE 226; 3A Nanotechnology Engineering students only

NE 330L LAB 0.25

Course ID: 013323

Macromolecular Science Laboratory

Labs associated with NE 333 (Macromolecular Science 1) course. Lab exercises exploring the kinetics of radical co-polymerization, the analysis of copolymer composition, concepts in the determination and control of polymer molecular weight distribution, and the kinetics and particle size development in emulsion polymerization. [Offered: F]

Prereq: NE 333; 3B Nanotechnology Engineering students.

Antireq: CHEM 471L

NE 333 LEC,TUT 0.50

Course ID: 011936

Macromolecular Science

Basic definitions and polymer nomenclature, molecular weight averages and distributions, constitutional and configurational isomerism, rubber elasticity, step-growth and free-radical chain-growth polymerizations, emulsion polymerization. [Offered: S]

Prereq: NE 225; 3A Nanotechnology Engineering students only.

Antireq: CHE 541, CHEM 370, MNS 322

NE 334 LEC,TUT 0.50

Course ID: 011939

Statistical Thermodynamics

Statistical mechanics vs. thermodynamics. Review of statistical concepts. Canonical and grand canonical ensembles. Entropy. General formulation of statistical thermodynamics. Fermi-Dirac, Bose-Einstein and Boltzmann statistics. Quantum ideal gases. Specific heat of solids. Electrons in metals and semiconductors. Radiation: the photon gas. [Offered: S]

Prereq: NE 115/215, 225, 232; 3A Nanotechnology Engineering students only.

Antireq: CHEM 450 (topic: Statistical Mechanics), PHYS 359

NE 335 LEC 0.50

Course ID: 011940

Soft Nanomaterials

Introduction to the applications of macromolecules in nanotechnology. Block copolymers and self-assembled polymerization. Micelles and colloids. Dendrimers and molecular brushes. Supramolecular polymers, polymeric blends and macromolecular nanocomposites. Polymer templates. Applications in the manufacturing of nanostructured materials and nanoscale devices. [Offered: F]

Prereq: NE 333; Level at least 3B Nanotechnology Engineering students.

Antireq: CHE 541, CHEM 471

NE 336 LAB,LEC,TUT 0.50

Course ID: 011941

Micro and Nanosystem Computer-aided Design

Modeling and simulation. Lumped versus distributed approaches. Review of differential-equation systems, constitutive relations, boundary conditions, and solvers for complex, coupled transport problems pertinent to micro and nanosystems. Coupling strategies. Numerical schemes for nonlinear systems. Basic modeling and simulation of micro and nanosystems, and fluidic systems. Relevant nanotechnology applications: optical, thermal, mechanical, and fluidic microstructures, and nanoscale devices. [Offered: F]

Prereq: NE 216, 217, 242, 318, 334; 3B Nanotechnology Engineering students only

NE 340L LAB 0.25

Course ID: 012875

Microfabrication and Thin-film Technology Laboratory

Labs associated with the NE 343 (Microfabrication and Thin-film Technology) course. Lab topics may include: thin film deposition by PECVD and PVD (sputtering); photolithography; dry and wet etching; and C-V and I-V analysis of MIS structures. [Offered: F]

Prereq: NE 343; 3B Nanotechnology Engineering students only

NE 343 LEC,TUT 0.50

Course ID: 011942

Microfabrication and Thin-film Technology

Key processes for electronic device fabrication. Single crystal growth. Substrate preparation. Homoepitaxy, heteroepitaxy, and molecular-beam epitaxy. Ion implantation. Oxidation and diffusion. Physical and chemical vapor deposition. Sputtering and evaporation. Etching. Micromachining. Spin coating and printing. Photolithography. Effects of device scaling on chip performance. Process integration. Yield and reliability. [Offered: S]

Prereq: NE 121, 125, 242; 3A Nanotechnology Engineering students only.

Antireq: ECE 433

NE 344 LEC 0.50

Course ID: 011943

Electronic Circuits

Metal-oxide-semiconductor field-effect transistor (MOSFET), circuit biasing and load-line analysis. Small-signal equivalent circuits and single stage amplifier configurations. Differential and multistage MOSFET amplifiers. The cascode configuration, current mirror and active loads. Feedback circuit configurations and stability. Oscillators, waveform shaping circuits and delay analysis. Introduction to digital circuits, the transistor switch, inverter circuits and complementary metal-oxide-semiconductor (CMOS) logic circuits. [Offered: F, first offered Fall 2021]

Prereq: Level at least 3B Nanotechnology Engineering.

Antireq: ECE 240, 242, 340, SYDE 292

NE 345 LEC 0.50

Course ID: 011944

Photonic Materials and Devices

Wave nature of light, refractive index and dispersion, group velocity, irradiance and Poynting vector, Snell's law, Fresnel's Equation, antireflection coatings, absorption of light, temporal and spatial coherence, dielectric waveguides and optical fibers, planar waveguides, dispersion in waveguides; light emitting diodes (LED), pn junction, LED materials, stimulated emission, lasers, photodetectors, photovoltaic devices, solar cells. [Offered: F]

Prereq: Level at least 3B Nanotechnology Engineering

NE 350 PRJ 0.13

Course ID: 015210

Work-term Report 2

An engineering report based upon a technical project, activity, or analysis carried out by the student, normally during work-term employment following the 2B academic term. Evaluation is based upon a level of written communication, technical proficiency, and engineering analysis appropriate to a third-year engineering student. [Offered: F]

Prereq: Level at least 3B Nanotechnology Engineering.

Antireq: MSCI 392, WKRPT 300, 301

NE 352 LEC 0.50

Course ID: 011945

Surfaces and Interfaces

Surfaces and interfaces in microelectronics and nanofabrication. Physicochemistry of interfaces. Capillary phenomena and molecular self-assembly. Structure and properties of clean and adsorbate covered surfaces (metals, semiconductors, oxides). Reactions at surfaces and catalysis. Surface electrochemistry, growth and diffusion, nanoscale structure formation/surface patterning, biological interfaces. [Offered: F]

Prereq: NE 334; Level at least 3B Nanotechnology Engineering students only.

Antireq: CHEM 450 (topic: Surface Science and Nanotechnology)

NE 353 LEC 0.50

Course ID: 011946

Nanoprobng and Lithography

Theory and application of nanoprobng based on scanning probe microscopy (scanning tunneling microscopy, atomic force microscopy, scanning near-field optical microscopy). Nanolithographic techniques (extreme-UV lithography, X-ray lithography, e-beam lithography, focused ion beam lithography, nano-imprint lithography and soft lithography). [Offered: F]

Prereq: NE 343; Level at least 3B Nanotechnology Engineering students

NE 381 LEC 0.50

Course ID: 015220

Introduction to Nanoscale Biosystems

Specific aspects of biosystems required for the engineering of nanobiotechnological applications: topics to be covered may include surface and bulk science concepts needed for the development of lab-on-chip systems and those aspects of molecular

biology of the cell necessary for application to medical diagnostics. Elements of design required for the development of modern instrumentation may also be covered, thereby providing a solid foundation for more advanced topics and applications. [Offered: F]

Prereq: Level at least 3B Nanotechnology Engineering students

NE 400s

NE 408 PRJ 0.50

Course ID: 011964

Nanosystems Design Project

Design work for the project proposed in NE 307, culminating in a progress report presentation. [Offered: F]

Prereq: NE 307; 4A Nanotechnology Engineering students only

NE 409 PRJ 0.50

Course ID: 011965

Nanosystems Design Project and Symposium

Completion and presentation of the design project from NE 307 and NE 408. Teams communicate their design in the form of a final report, a poster, and a seminar presentation. [Offered: W]

Prereq: NE 408; 4B Nanotechnology Engineering students only

NE 450 PRJ 0.13

Course ID: 015211

Work-term Report 3

An engineering report based upon a technical project, activity, or analysis carried out by the student, normally during work-term employment following the 3B academic term. Evaluation is based upon a level of written communication, technical proficiency, and engineering analysis appropriate to a fourth-year engineering student. [Offered: W, first offered Winter 2019]

Prereq: Level at least 4B Nanotechnology Engineering.

Antireq: MSCI 491, WKRPT 400, 401

NE 450L LAB 0.25

Course ID: 012876

Nanoprobng and Lithography Laboratory

Labs associated with the NE 353 (Nanoprobng and Lithography) course. Lab topics may include: Scanning probe microscopic characterization of polymer and bio-polymer surfaces; scanning tunneling characterization of semiconductors and thin films; fluorescence and laser microscopic testing of proteins; micro-contact printing using molecular self-assembly, nano-soft lithography by AFM. [Offered: F]

Prereq: NE 224, 335, 353; 4A Nanotechnology Engineering students only

NE 451 LEC 0.50

Course ID: 014071

Simulation Methods

This course provides an introduction to and an overview of computational methods that are currently employed for the simulation of structural and bulk properties of matter, particularly as applied to physical and biological systems at the nanometer scale. Topics to be covered in this course include energy functions and force fields, geometry optimization, normal mode analysis, and reaction--path techniques at the molecular level, and an introduction to the simulation of static and dynamic properties of substances via both Monte Carlo and molecular dynamics (MD) methodologies. [Offered: F]

Prereq: Level at least 3B Nanotechnology Engineering

NE 452 LEC 0.50

Course ID: 014072

Special Topics in Nanoscale Simulations

Topics in this theme area may include: an overview of modern computational methods and algorithms in nanoscale materials, such as steered molecular dynamics, ab initio molecular dynamics, multiscale modelling, dissipative particle dynamics, transition path sampling, phase-field modelling, quantum simulations using Feynman path integral techniques, condensed-phase spectroscopy, linking of simulations to experiment, simulations and their practical applications. [Offered: W]

Prereq: NE 451; 4B Nanotechnology Engineering students

NE 453 LEC 0.50

Course ID: 015391

Special Topics in Nanotechnology Engineering

Special topics that significantly span two (or more) areas of concentration in or that provide methodologies relevant to nanotechnology engineering will be offered from time to time when resources are available. [Offered: F,W]

Prereq: Nanotechnology Engineering students

NE 454A LAB 0.25

Course ID: 015212

Nano-instrumentation Laboratory 1

Application of experimental tools and techniques in nano-instrumentation. Experimental exercises involve circuit simulation and design, circuit prototyping, design of a driver circuit for a quartz crystal microbalance (QCM), printed circuit board (PCB) design and layout optimization, and the use of various characterization instrumentation. [Offered: F]

Prereq: 4A Nanotechnology Engineering students

NE 454B LAB 0.25

Course ID: 015213

Nano-electronics Laboratory 1

Application of experimental tools and techniques involved in nanotechnology. Experimental exercises may involve simulation, design, optimization of micro-electro-mechanical-system (MEMS) devices, and the generation of a mask layout. [Offered: F]

Prereq: 4A Nanotechnology Engineering students

NE 454C LAB 0.25

Course ID: 015214

Nanobiosystems Laboratory 1

Application of experimental tools and techniques in nanobiotechnology. Experimental exercises may involve simulation and design, optimization, nanoparticle formulation reactions, microfluidics, and the use of various characterization instrumentation. [Offered: F]

Prereq: 4A Nanotechnology Engineering students

NE 454D LAB 0.25

Course ID: 015215

Nanostructured Materials Laboratory 1

Application of experimental tools and techniques in nanomaterials. Experimental exercises may involve design, use of image analysis software, optimization, electrodeposition, encapsulation and templating, synthetic chemistry protocols, and the use of selected characterization instrumentation. [Offered: F]

Prereq: 4A Nanotechnology Engineering students

NE 455A LAB 0.25

Course ID: 015216

Nano-instrumentation Laboratory 2

Application of experimental tools and techniques in nano-instrumentation. Experimental exercises involve printed circuit board (PCB) assembly and soldering, measurement of the formation of a nonanethiol self- assembled monolayer, determination of the partition coefficient for a solvent vapour into a monolayer-protected-cluster film deposited on a quartz crystal microbalance (QCM), and the use of various characterization methods. [Offered: W]

Prereq: NE 454A; 4B Nanotechnology Engineering

NE 455B LAB 0.25

Course ID: 015217

Nano-electronics Laboratory 2

Application of experimental tools and techniques employed in nanotechnology. Experimental exercises may involve microfabrication (photolithography, film deposition, and etching) and testing of micro-electro-mechanical-system (MEMS) devices. [Offered: W]

Prereq: NE 454B; 4B Nanotechnology Engineering

NE 455C LAB 0.25

Course ID: 015218

Nanobiosystems Laboratory 2

Application of experimental tools and techniques employed in Nanobiotechnology. Experimental exercises may involve investigation of microbial culture protocols, biosensor applications, and the use of various characterization techniques. These exercises also stress the need for safe handling of micro-organisms and biomaterials. [Offered: W]

Prereq: NE 454C; 4B Nanotechnology Engineering students

NE 455D LAB 0.25

Course ID: 015219

Nanostructured Materials Laboratory 2

Application of experimental tools and techniques employed in nanomaterials. Experimental exercises investigate catalytic activity enhancement by nanoparticles in fuel cell reactions. This includes the use of synthetic chemistry protocols to prepare nanoparticles on multi-walled carbon nanotubes. The exercise also stresses safe handling of nanomaterials and the use of various characterization methods. [Offered: W]

Prereq: NE 454D; 4B Nanotechnology Engineering

NE 459 PRJ 0.50

Course ID: 012240

Nanotechnology Engineering Research Project

A nanotechnology engineering research project that requires students to demonstrate initiative and to assume responsibility. Students will select projects at the end of the 4A term. Although students may propose their own projects, a faculty member will provide supervision. A project report is required at the end of the 4B term. [Offered: W]

Prereq: 4B Nanotechnology Engineering students only

NE 461 LEC 0.50

Course ID: 011947

Micro and Nano-instrumentation

Fabrication technology for development of micro and nanosensors, actuators, and modules (e.g., micro or, nano-electromechanical systems, micro or nanofluidics channels). Integration using examples drawn from chemical analysis micro and nano-instrumentation. An overview of current micro and nano-instrumentation. [Offered: F]

Prereq: NE 352, 353; 4A Nanotechnology Engineering students

NE 469 LEC 0.50

Course ID: 012241

Special Topics in Micro and Nano-instrumentation

Topics in this theme area may include: micro and nanosensors, micro and nano-actuators, micro and nanofluidics, micro and nanoscale fabrication, emerging and unconventional nanofabrication technologies. (Note: Each year, at least one elective course will be offered in this theme area. For a current list of offerings, see the Associate Director for Nanotechnology Engineering.) [Offered: W]

Prereq: 4B Nanotechnology Engineering students only

NE 471 LEC 0.50

Course ID: 011951

Nano-electronics

Transport phenomena. Quantum confinement. Single molecule transistors. Resonant tunnelling devices. Large area and mechanically flexible electronics. Deposition and patterning techniques. [Offered: F]

Prereq: 4A Nanotechnology Engineering students

NE 479 LEC 0.50

Course ID: 012242

Special Topics in Nanoelectronics

Topics in this theme area may include: quantum effects in electronic devices, molecular electronics, solid state nanoelectronics, organic electronics, advanced nanofabrication technologies such as vacuum deposition, electron beam patterning and nanolithography. (Note: Each year, at least one elective course will be offered in this theme area. For a current list of offerings, see the Associate Director for Nanotechnology Engineering.) [Offered: W]

Prereq: 4B Nanotechnology Engineering students only

NE 481 LEC 0.50

Course ID: 011955

Nanomedicine and Nanobiotechnology

Overview of biomedical engineering principles, and their utilization in understanding how our bodies interact with nano- and biomaterials: topics related to innate and acquired inflammatory response, cellular and humoral immunity, complement systems and thrombosis, biocompatibility, and toxicity will be covered. Route of administered nanoparticles will be introduced. This course will also study the formulation and manufacturing process for producing nanoparticles in the biotechnology and pharmaceutical industries. [Offered: F]

Prereq: NE 381; 4A Nanotechnology Engineering students only

NE 489 LEC 0.50

Course ID: 012243

Special Topics in Nanoscale Biosystems

Topics in this theme area may include: nanoscale biomaterials for medical and drug delivery devices, biointerfaces, biomembranes, nanoscale patterning on biological interfaces, biomicroelectromechanical systems (BioMEMS), biomimetics, biochips, self-assembly of peptides and proteins, bioseparation, biosensors. (Note: Each year, at least one elective course will be offered in this theme area. For a current list of offerings, see the Associate Director for Nanotechnology Engineering.) [Offered: W]

Prereq: 4B Nanotechnology Engineering students only

NE 491 LEC 0.50

Course ID: 011959

Nanostructured Materials

Application of inorganic nanostructured materials and nanocomposites. Synthesis and processing techniques for inorganic nanomaterials and the devices that use them. Students will be required to provide critical analyses and seminar presentations of patents utilizing nanomaterials.[Offered: F]

Prereq: NE 335, 352; 4A Nanotechnology Engineering students only

NE 499 LEC 0.50

Course ID: 012244

Special Topics in Nanostructured Materials

Topics in this theme area may include: membrane nanotechnology, nanoengineered catalysts, nanoengineered polymers, and nanocomposites; manufacturing of nanotubes, nanoparticles, quantum dots, nanowires and other nanomaterials (Note: Each year, at least one elective course will be offered in this theme area. For a current list of offerings, see the Associate Director for Nanotechnology Engineering.) [Offered: W]

Prereq: 4B Nanotechnology Engineering students only

NANOTECHNOLOGY ENGINEERING

OLRD 100s

OLRD 140W LEC 0.50

Course ID: 015800

Leadership Foundations (WLU)

Department Consent Required

OPTOMETRY

OPTOM 100s

OPTOM 103 LEC 0.50

Course ID: 007086

Pathophysiology

Pathogenesis of human disease based on a molecular and cellular framework. Fundamental concepts such as homeostasis, cell injury, protective responses (inflammation, fever, immune response) and the healing process. Systemic pathophysiology: abnormal functions of the cardiovascular system, endocrine system, nervous system, urinary system, muscular system, respiratory system and digestive system.

Prereq: Optometry students only

OPTOM 104 LAB,LEC 0.50

Course ID: 007087

Anatomy of the Eye 1

The gross, microscopic and ultra structure of ocular tissues. The embryology of the eye is included. The relationship of the eye to the vascular supply of the head and the nervous system will be studied. This course is credited only upon completion of OPTOM 114.

Prereq: Optometry students only

OPTOM 105 LEC 0.50

Course ID: 007088

Medical Microbiology

Bacterial physiology and genetics, normal flora, bacteria (including chlamydiae and rickettsiae), fungi, viruses, parasites and related diseases, with emphasis on molecular mechanisms of ocular disease and relevant ocular manifestations in appropriate topics.

Prereq: Optometry students only

OPTOM 106 LAB,LEC,TUT 0.50

Course ID: 007089

Geometrical, Physical and Visual Optics

Nature of light, wave motion and superposition, rectilinear propagation, reflection and refraction, image formation and quality, optical properties of plane and curved surfaces, prisms and thin lenses. Apertures and pupils. Thick lens theory, lens systems, ray construction, Fraunhofer diffraction and resolution limit. Fresnel diffraction. Simple optical eye models. Refractive error and its correction. Interference and coherence of light: applications. Lasers

Prereq: PHYS 121 and 121L and PHYS 122 and 122L and MATH 127 and 128; Optometry students only

OPTOM 108 LEC 0.50

Course ID: 012881

Histology of Tissues and Organs

The organization of human cells, tissues and organs. Cellular structure and function is presented as a foundation for understanding fundamental pathological constructs (e.g. carcinoma versus sarcoma). Detailed histology of major organ systems that are likely to have ocular manifestations when diseased. This coursework will provide the basis for subsequent courses in the pathobiology of ocular and systemic human disease.

Prereq: Optometry students only

OPTOM 109 LAB,LEC 0.50

Course ID: 007090

Visual Perception 1: Perception of Light

Sensory processes involved in visual perception. Topics include spectral sensitivity, light and dark adaptation, temporal and spatial resolution, and principles of photometry.

Prereq: Optometry students only

OPTOM 114 LAB,LEC 0.50

Course ID: 007092

Anatomy of the Eye 2

A continuation of OPTOM 104

Prereq: OPTOM 104; Optometry students only

OPTOM 124 LAB,LEC 0.50

Course ID: 012882

Human Gross Anatomy

A selective study of human gross anatomy as a basis for understanding disease. Strong emphasis is placed on head and neck anatomy, including the orbit, but thorough coverage of thorax, abdomen and pelvis is provided as well. Didactic material is illustrated in laboratory experience with prosected human cadavers, plasticized cadaveric material, anatomical models and computer-based learning tools.

Prereq: Optometry students only

OPTOM 126 LAB,LEC 0.50

Course ID: 009975

Fundamentals of Visual Optics

Refraction and reflection of light by the surfaces of the eye. Optical properties of emmetropic and ametropic eyes as a function of growth and pupil size and their measurement. Properties of the retinal image including size, blur and quality and their relationship to imperfections of the optics. Light scattered in the eye. Relationships between the retinal image and visual perception. The retinal image and accommodation.

Prereq: OPTOM 106, 116; Optometry students only;

Antireq: OPTOM 111

OPTOM 134 LAB,LEC 0.50

Course ID: 012883

Immunology

An introduction to the vertebrate immune response; the cells and tissues of the lymphoid system; humoral and cell-mediated immunity; initiation and regulation of the immune response; the immune system and disease, techniques used in immunology. Unique features of the immunobiology of the eye are included.

Prereq: Optometry students only.

Antireq: BIOL 441

OPTOM 143 LAB,LEC,TUT 0.50

Course ID: 009988

Physiology of the Eye

The physiology of the smooth muscles of the eye, the extraocular striate muscles, the lacrimal apparatus, the cornea, the iris, the lens, the ciliary body and the vitreous body. Production and drainage of aqueous and related influences on intraocular pressure. The vascular supply of the eye.

Prereq: OPTOM 104; Optometry students only;

Antireq: OPTOM 254

OPTOM 152 LEC 0.50

Course ID: 009955

Clinical Techniques 1

Clinical techniques for the primary care examination of the optical properties and ocular health of the eye. Case history taking. Medical emergency responses. Professional boundaries.

Prereq: Optometry students only;

Antireq: OPTOM 242

OPTOM 152L LAB,TUT 0.25

Course ID: 012247

Clinical Techniques 1 Laboratory

Selected clinical techniques for students taking 152.

Coreq: OPTOM 152

OPTOM 200s**OPTOM 215 LEC 0.50**

Course ID: 007093

Systemic Disease

Etiology, signs, symptoms, diagnosis and management of diseases affecting the organs and tissues of the human body including: circulatory, hemopoietic/lymphoid, lungs/upper respiratory tract, kidney, gastrointestinal tract, liver/biliary tract, pancreas, urogenital system, endocrine system, musculoskeletal system, skin, nervous system diseases.

Prereq: OPTOM 103, 105; Optometry students only

OPTOM 216 LAB,LEC 0.50

Course ID: 007097

Ophthalmic Optics 1

Single vision spectacle lenses. Lens and frame materials. Optical and ophthalmic instrumentation. Image quality. Polarization. Tinted lenses. Decentration and prismatic effect. Obliquely crossed cylinders. Spectacle magnification. Ophthalmic laboratory procedures: measurement of spectacle lens power.

Prereq: OPTOM 106, 116; Optometry students only

OPTOM 219 LAB,LEC 0.50

Course ID: 009957

Visual Perception 2: Monocular and Binocular Visual Processes

Physical space and visual space. Fundamental perceptual processes, binocular vision, stereopsis, binocular space perception. Systems of analysing binocular vision. Theory of aniseikonia. Perceptual aspects of aniseikonia.

Prereq: OPTOM 109, 142; Optometry students only.

Antireq: OPTOM 251

OPTOM 231 LEC 0.50

Course ID: 009958

Introductory Clinical Pharmacology

Pharmacokinetic and pharmacodynamic theory. Systemic medications used to manage most major diseases. Mechanism of action, contraindications and systemic and ocular adverse drug reactions.

Prereq: Optometry students only.

Antireq: OPTOM 264

OPTOM 243 LEC 0.50

Course ID: 009990

Neurophysiology of Vision

The neural processing of colour, brightness, movement and form by the retina, lateral geniculate, cortex, superior colliculus and other brain centres. Neural mechanisms underlying binocular depth perception, the accommodative response and eye movement.

Prereq: OPTOM 104, 114; Optometry students only.

Antireq: OPTOM 244

OPTOM 245 LEC 0.50

Course ID: 009956

Diseases of the Eye 1

Anterior segment disease including etiology, pathogenesis, signs, symptoms, differential diagnosis and management of diseases of the ocular adnexa and anterior segment of the eye: the lids, orbit and adnexa, conjunctiva, cornea, uvea, sclera, lens and cataract, the glaucomas and ocular emergencies.

Prereq: OPTOM 103, 105; Optometry students only.

Antireq: OPTOM 245

OPTOM 245L LAB,TUT 0.25

Course ID: 012248

Diseases of the Eye 1 Laboratory

Selected clinical techniques for students taking OPTOM 245.

Prereq: Optometry students only.

Coreq: OPTOM 245

OPTOM 246 LAB,LEC 0.50

Course ID: 007102

Ophthalmic Optics 2

Multifocal spectacle lenses. Aberrations of thin lenses and spectacle lens design. Prescribing and fitting of spectacles. Environmental and occupational prescribing. Prescription analysis. Ophthalmic and visual standards. Computer vision syndrome. Ophthalmic laboratory procedures: measurement of complex spectacle lenses, and spectacle frame adjustment and repairs.

Prereq: OPTOM 106, 216; Optometry students only

OPTOM 250 LEC 0.50

Course ID: 009991

Optometric Jurisprudence

Legal aspects of practising optometry in Canada. Fundamentals of Canadian law. Negligence. Informed consent. Legislation and regulations affecting optometric practice.

Antireq: OPTOM 350; Optometry students only

OPTOM 252 LEC 0.50

Course ID: 007104

Clinical Techniques 2

Basic and clinical ocular motility. Basic concepts of ocular motility are integrated with clinical methods. Assessment and diagnosis of strabismic and non-strabismic disorders.

Prereq: OPTOM 142, 152; Optometry students only

OPTOM 252L LAB,TUT 0.25

Course ID: 012249

Clinical Techniques 2 Laboratory

Selected clinical techniques for students taking OPTOM 252.

Coreq: OPTOM 252

OPTOM 255 LEC 0.50

Course ID: 007106

Diseases of the Eye 2

Etiology, signs, symptoms, diagnosis, management, and epidemiology of diseases of the posterior segment of the eye; higher visual and oculomotor systems; multisystem diseases.

Prereq: OPTOM 155/245; Optometry students only

OPTOM 255L LAB,TUT 0.25

Course ID: 012250

Diseases of the Eye 2 Laboratory

Selected clinical techniques for students taking OPTOM 255.

Coreq: OPTOM 255

OPTOM 261 LEC 0.50

Course ID: 007107

Clinical Ocular Pharmacology

Pharmacokinetic and pharmacodynamic principles of ophthalmic drug design and delivery. Selection and use of ophthalmic diagnostic pharmaceutical agents, palliative agents and therapeutic pharmaceutical agents. Mechanism of action, contraindications and adverse drug reactions. Recommended guidelines for use and follow-up procedures.

Prereq: OPTOM 155/245, 231, 255; Optometry students only.

Antireq: OPTOM 364

OPTOM 262 LAB,LEC 0.25

Course ID: 009993

Clinical Techniques 3

Differential diagnosis and problem specific testing using a systems examination approach. Minimum database expectations. Record keeping, case presentations, counselling, referrals and report writing. Preparation for entry into Optometry Clinic including policy review and standards of practice. Observation and preliminary testing in the Optometry Clinic.

Prereq: OPTOM 242, OPTOM 252; Optometry students only

OPTOM 270 LEC 0.50

Course ID: 009995

Public Health Optometry

Introduction to the foundation and basic sciences of public health with an emphasis on the epidemiology of vision problems.

Prereq: Optometry students only.

Antireq: OPTOM 349

OPTOM 272 LAB,LEC 0.50

Course ID: 009996

Strabismus and Aniseikonia

Detection and evaluation of sensory and motor characteristics of vision in aniseikonic, strabismic and nonstrabismic patients. Classifications, diagnoses, prognoses, and modes of therapy for aniseikonic, nonstrabismic, and strabismic patients.

Prereq: OPTOM 152, 219, 252; Optometry students only.

Antireq: OPTOM 352

OPTOM 300s

OPTOM 339 LAB,LEC 0.50

Course ID: 009989

Visual Perception 3: Colour Vision

An introduction to colour perception, colorimetry and colour discrimination. Characteristics of congenital and acquired colour vision deficiencies, colour vision test design and patient management.

Prereq: OPTOM 109; Optometry students only

OPTOM 342A LEC,TUT 0.50

Course ID: 010388

Case Analysis and Optometric Therapies 1

The clinical application of the visual sciences. Emphasis is placed on the differential diagnostic method of analyzing clinical data with consideration given to appropriate clinical techniques, effective record keeping, recommended optometric therapies and prognoses.

Prereq: OPTOM 155/245, 255, 272; Optometry students only.

Antireq: OPTOM 342

OPTOM 342B LEC,TUT 0.50

Course ID: 010389

Case Analysis and Optometric Therapies 2

A continuation of Optometry 342A. Emphasis is placed on the differential diagnostic method of analyzing clinical data with special emphasis on refractive and binocular vision conditions.

Prereq: OPTOM 342A; Optometry students only

OPTOM 346 LAB 0.25

Course ID: 007113

Ophthalmic Optics 3

Spectacle frame materials. Fitting and adjusting techniques. Selection of lens design. Lenses for high myopia. Dispensing of eye protectors. Optics of low vision aids. Patient counselling and management of dispensing problems. Laboratories provide experience in practical aspects of ophthalmic dispensing.

Prereq: OPTOM 216, 246; Optometry students only

OPTOM 347 LEC 0.50

Course ID: 007115

Contact Lenses 1

Indications and contra-indications for contact lens wear. Lens selection and design. Fitting and evaluating rigid and hydrogel soft contact lenses. Physico-chemical and mechanical properties of contact lens materials. Optical and mathematical concepts. The ocular physiological response to contact lens wear. Care and maintenance of contact lenses.

Prereq: OPTOM 143, 246, 252; Optometry students only

OPTOM 347L LAB 0.25

Course ID: 012251

Contact Lenses 1 Laboratory

Selected clinical techniques for students taking OPTOM 347.

Coreq: OPTOM 347

OPTOM 348A CLN 1.00

Course ID: 007118

Optometry Clinics

Students are assigned to various areas within the clinic where, under direct clinical faculty supervision, they participate in the provision of optometric services to clinic patients. In addition to primary care, they are exposed to the provision of contact lens, ocular health and optical services.

Prereq: Level at least 3A Optometry students

OPTOM 348B CLN 1.00

Course ID: 007119

Optometry Clinics

Students are assigned to various areas within the clinic where, under direct clinical faculty supervision, they participate in the provision of optometric services to clinic patients. In addition to primary care, they are exposed to the provision of contact lens, ocular health and optical services.

Prereq: Level at least 3A Optometry students

OPTOM 360 LEC 0.50

Course ID: 009992

Professional Ethics and Optometric Communication

A survey of alternative philosophical perspectives involved in resolution of sample ethical and moral issues confronting optometrists. Awareness of the explicit and implicit contents of written and vocal communications. An exploration of optometric communication issues related to letter and report writing, patient counselling, patient referral, fee presentation, and complaint management.

Prereq: Optometry students only.

Antireq: OPTOM 353

OPTOM 365 LEC 0.50

Course ID: 009994

Ophthalmic Lasers and Refractive Surgery

General principles, types and uses of lasers in eyecare. Biagnostic, thermal, ionizing, and excimer lasers. Refractive surgery. Safety and efficacy. Pre-operative and post-operative care.

Prereq: Optometry students only

OPTOM 367 LAB,LEC 0.50

Course ID: 007128

Contact Lenses 2

Detection and management of chronic and acute complications induced by contact lenses. Contact lens management options for special conditions such as dry eye, aphakia and keratoconus (and other corneal irregularities). Disposable lenses and replacement regimens. Extended wear options. Alternative management of refractive errors such as orthokeratology and refractive surgery. Contact lenses and presbyopia.

Prereq: OPTOM 155/245, 347; Optometry students only

OPTOM 375 LEC 0.50

Course ID: 010390

Diseases of the Eye 3

Advanced considerations of the etiology, signs, symptoms, diagnosis, treatment and management of ocular disease. Emphasis will be placed on the clinical case management with therapeutic pharmaceutical agents.

Prereq: OPTOM 155/245, 255; Optometry students only.

Antireq: OPTOM 374

OPTOM 375L LAB 0.25

Course ID: 012252

Diseases of the Eye 3 Laboratory

Selected clinical techniques for students taking OPTOM 375.

Coreq: OPTOM 375

OPTOM 377 LAB,LEC 0.50

Course ID: 010391

Pediatric Optometry and Learning Disabilities

Optometric examination and management of infants, children and patients with learning disabilities or multiple-challenges. General child development and the development of the optical and sensory-motor functions of the visual system. Learning disabilities and related vision problems. The role of the optometrist in conjunction with parents, teachers and psychologists.

Prereq: OPTOM 152, 252; Optometry students only.

Antireq: OPTOM 372

OPTOM 380 LEC 0.50

Course ID: 010392

Practice Management

Practice management issues relating to solo, associate-ships, contracts, the development and running of a clinical practice, opening a practice, staff training, dealing with complaints, data collection, practice promotion and marketing, advertising, financial and legal issues.

Prereq: Optometry students only.

Antireq: OPTOM 350

OPTOM 385 LAB,LEC 0.50

Course ID: 010393

Clinical Medicine for Optometric Practice

Overview of current medical diagnoses and management of systemic diseases with ocular involvement. History and physical examination (including neurological examination), clinical laboratory testing, and diagnostic imaging. Diseases of high prevalence including cardiovascular, cancer, endocrine, and neurological disorders.

Prereq: OPTOM 115/215, 231; Optometry students only

OPTOM 387 LAB,LEC 0.50

Course ID: 010394

Gerontology and Low Vision

Aging and its effects on the visual system in both health and disease, care and management of the aging patient. Assessment and management of visual impairment and disability, including both optical and non-optical therapies. Epidemiology and psychology of vision impairment, and associated rehabilitative services.

Prereq: OPTOM 152, 252, 346/346A; Optometry students only.

Antireq: OPTOM 368

OPTOM 400s

OPTOM 412 LEC,TUT 0.75

Course ID: 007132

Case Analysis 3

Building on analytical principles developed in OPTOM 342, this course involves student, case-based presentations in a grand rounds format. Each student chooses one, different, interesting case from his/her previous clinical experience. The student presents the case and answers questions related to the case and the patient's condition(s). Faculty discussants will direct the students in assessing the basic and clinical science features of the cases. Patient cases may be chosen from any aspect of optometric practice.

Prereq: Level at least 4A Optometry students

OPTOM 441 SEM 0.50

Course ID: 007134

Optometry Research Proposal

An independent paper in the form of literature review on the student's area of interest, experimental design proposition, and preliminary data. Before registering in the course the student and the designated supervisor must submit to the coordinator a research proposal for the student's research area. The format of the paper is to be determined with the supervisor and may be in chapters, in journal style, or in an oral presentation, during the registered term, at seminar sessions (OPTOM 609/OPTOM 629).

Prereq: Optometry students only

OPTOM 451 PRJ 0.50

Course ID: 007140

Optometry Research Project

An independent research project on an approved topic, supervised by a faculty member. This is the completion of the research proposal in OPTOM 441 and it is recommended that the format of the report, to be determined with the supervisor, follow the format selected for OPTOM 441.

Prereq: OPTOM 441; Optometry students only

OPTOM 458 CLN 3.00

Course ID: 007137

Primary Care Externship

Supervised optometric patient care in various external clinical settings. Activities include practice management; optometric assessment, diagnosis, treatment, and dispensing; and management and prevention of disorders and diseases of the eye and

associated systemic conditions.

Prereq: Level at least 4A Optometry students

OPTOM 460 LAB,LEC 0.50

Course ID: 010025

Advanced Study Topics

Intensive study of a speciality optometric topic. Course formats may involve lectures, clinical workshops, literature reviews or research projects.

Prereq: Optometry students only

OPTOM 461S LEC 0.50

Course ID: 007150

Optometry Seminar

This is a seminar course

Prereq: Optometry students only

OPTOM 468 CLN 3.00

Course ID: 007138

Ocular Disease and Therapeutics Externship

Ocular therapeutics and disease management, externship supervised patient care and clinical instruction.

Prereq: Level at least 4A Optometry students

OPTOM 477 LAB,LEC 0.75

Course ID: 007152

Clinical Techniques 4

This course will provide an opportunity for optometry students to discuss and evaluate clinical techniques, instrumentation, and ideologies not covered in the current curriculum. Students will be encouraged to use their basic knowledge of the vision sciences to provide a perceptive critique of the clinical subjects addressed.

Prereq: Optometry students only

OPTOM 478 CLN 3.00

Course ID: 007136

Optometry Clinics

The course involves a variety of clinical rotations both on-site and off-site. Students provide direct patient care while receiving clinical instruction and evaluation by licensed supervisors. The clinical rotations allow students to enhance their optometric skills pertaining to examination, diagnosis, treatment, management and prevention. These skills are applied to diseases and disorders of the eye, the visual system, and associated structures as well as the diagnosis of related systemic conditions. Students encounter a wide variety of clinical settings (e.g. hospitals, community health clinics, nursing homes, etc.) and patient types (e.g. age, background, special needs, etc.). Students are required to show successful performance in each component of clinical training to which they are assigned.

Prereq: Level at least 4A Optometry students

OPTOM 488 CLN 2.00

Course ID: 011554

Exit Exam Remediation

Remediation in areas failed during clinical exit examinations. On-site clinical rotations and self-study guided by the faculty.

Department Consent Required

Prereq: Optometry students only

PEACE AND CONFLICT STUDIES

Note

The following courses are administered by Conrad Grebel University College.

PACS 100s

PACS 101 LEC 0.50

Course ID: 014548

Peace is Everybody's Business

This course explores ways in which individuals and groups from multiple sectors of society have contributed to peace by engaging conflict constructively and advancing social justice. Attention will be given to the diversity of peacemaking approaches, and to interpersonal and intergroup as well as international applications.

PACS 200s

PACS 201 LEC 0.50

Course ID: 007191

Roots of Conflict, Violence, and Peace

An examination of influential theories about the sources and nature of conflict, violence, and peace. Contributions from the social sciences as well as the humanities will be explored, with attention to connections between interpersonal, intergroup, and international levels of analysis.

Also offered Online

PACS 202 LEC 0.50

Course ID: 007192

Conflict Resolution

An examination of the resolution of conflicts, ranging from interpersonal to broader social and international conflicts. Students are introduced to negotiation, mediation, and nonviolent resistance, and are encouraged to develop their own theoretical understandings that aid in addressing conflict.

(Cross-listed with LS 271)

Also offered Online

PACS 203 LEC 0.50

Course ID: 011120

A History of Peace Movements

A survey of individuals and groups that have created popular movements for peace globally and locally throughout history. The scope will be international, with a particular focus on the nineteenth- and twentieth-century movements. The choice of peace movements will allow for a contrast in comparison of ideology, strategy, and impact.

(Cross-listed with HIST 232)

PACS 300s

PACS 301 LEC 0.50

Course ID: 010211

Special Topics in Peace and Conflict Studies 1

A seminar course investigating special issues related to peace and conflict. Content may vary from year to year.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: Level at least 2A or Peace and Conflict Studies Diploma students

PACS 302 LEC 0.50

Course ID: 007203

Special Topics in Peace and Conflict Studies 2

A seminar course investigating special issues related to peace and conflict. Content may vary from year to year.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: Level at least 2A or Peace and Conflict Studies Diploma students

PACS 310 SEM 0.50

Course ID: 015558

Peace and the Environment

This course explores the natural environment as a potential source of both conflict and peacebuilding in local, national, and international contexts. In this course, we examine both the gravity of the global environmental crisis and the inspiration of the growing grassroots movement toward resilience and peaceful change.

Prereq: Level at least 2A or Peace and Conflict Studies Diploma students.

Antireq: PACS 301 (001) taken Fall 2016 and PACS 301 (002) taken Fall 2017

PACS 311 LEC 0.50

Course ID: 007210

Doing Development: Issues of Justice and Peace

This course introduces a variety of theoretical and practical perspectives on international development. It examines current and alternative development programs in terms of their contribution to justice and/or peace at local, national, and global levels.

Prereq: Level at least 2A or Peace and Conflict Studies Diploma students

PACS 312 LEC 0.50

Course ID: 007211

Quest for Peace in Literature and Film

A study of works of literature and film which express a resistance to war. The course examines how the desire to articulate an anti-war position has engaged the artistic sensibilities and shaped the visions and modes of expression of selected writers and filmmakers.

Prereq: Level at least 2A or Peace and Conflict Studies Diploma students

PACS 313 LEC 0.50

Course ID: 007212

Community Conflict Resolution

An analysis of the growing use of mediation and other conflict resolution strategies in community conflicts, race relations, church disputes, and alternatives to the legal system. The course focuses on case studies with attention to both practical and theoretical issues.

Prereq: Level at least 2A or Peace and Conflict Studies Diploma students

PACS 314 LEC 0.50

Course ID: 007213

Conflict Resolution in the Schools

This course examines the potential for utilizing the principles of mediation and conflict resolution in school administration, curricula, teaching, classroom management, and school counselling.

Prereq: Level at least 2A or Peace and Conflict Studies Diploma students

PACS 315 SEM 0.50

Course ID: 015675

Engineering and Peace

This course is built on the conviction that the kinds of problems engineers seek to address, and the ways they seek to address them, should matter for anyone interested in advancing peace in the world. Topics include historical connections between the discipline of engineering and warfare, understanding the engineering method and mindset, and technological frontiers for peacebuilding.

Prereq: Level at least 2A or Peace and Conflict Studies Diploma students.

Antireq: PACS 301 (001) taken Spring 2016 and PACS 301 (001) taken Fall 2017

PACS 316 LEC 0.50

Course ID: 009925

Violence, Non-violence, and War

An exploration of the traditional debates concerning the legitimacy of violence and war as instruments in the pursuit of personal and political goals. The course critically examines a continuum of views from religious doctrines of non-resistance, to various forms of pacifism and non-violent resistance, "just-war theory", and political realism. The strategic arguments for political non-violent action are also considered.

Prereq: Level at least 2A or Peace and Conflict Studies Diploma students

(Cross-listed with PHIL 329)

PACS 318 LEC 0.50

Course ID: 009927

Peacebuilding, Human Rights, and Civil Society

This course will examine the close causal connection between violations of human rights and violent conflict/war. It will also analyse the role of human rights and civil society principles in forging or consolidating peace. Course work will include case studies, assigned readings, class participation, and simulation exercises.

Prereq: Level at least 2A or Peace and Conflict Studies Diploma students

PACS 320 LEC 0.50

Course ID: 008329

Christian Approaches to Peacemaking

Current Christian approaches to peacemaking in areas of conflict: war and militarism, crime, poverty, racism, and gender relations. Attention will be given to various biblical, theological, and historical bases for these approaches.

[Note: This course fulfils an Area 2C requirement for Religious Studies majors.]

Prereq: Level at least 2A or Peace and Conflict Studies Diploma students

(Cross-listed with RS 256)

PACS 321 LEC 0.50

Course ID: 011121

Gender in War and Peace

An examination of various themes in the history of peace and war using gender as a central category of analysis. Theoretical literature and international case studies will be used to explore how the discourse and enactment of war and peace are influenced by societal constructions of gender, both historically and in the present.

Prereq: Level at least 2A or Peace and Conflict Studies Diploma students

(Cross-listed with WS 331)

PACS 323 LEC 0.50

Course ID: 007201

Negotiation: Theories and Strategies

This course explores different ways of negotiating between people and groups with conflicting interests. You will learn the theory behind the strategies and develop practical negotiation skills you can put to use in your daily life at home, at work, and in the community.

Prereq: Level at least 2A or Peace and Conflict Studies Diploma students.

Antireq: PSYCH 439

(Cross-listed with LS 319)

PACS 324 LEC 0.50

Course ID: 011009

Human Rights, Peace, and Business

This course will explore the tension between the values of human security/human rights and traditional economic policy. The impact of this dynamic relationship on the well-being of individuals as well as on corporations and international economic institutions to promote peace and just development will also be analyzed.

Prereq: Level at least 2A or Peace and Conflict Studies Diploma students

PACS 326 LEC 0.50

Course ID: 012189

Religion and Peacebuilding

This course investigates the roles of religion and spirituality in peacemaking, exploring both obstacles and opportunities facing religious peace builders. Cases involving representatives of major world religions (Christianity, Islam, Judaism, Hinduism, and Buddhism) will provide a basis for comparing practices of faith-based advocacy for social justice, reconciliation, and coexistence.

[Note: This course fulfils an Area 3C requirement for Religious Studies majors.]

Prereq: Level at least 2A or Peace and Conflict Studies Diploma students

(Cross-listed with RS 380)

PACS 327 LEC 0.50

Course ID: 013306

Cultural Approaches to Conflict Resolution

Cultural differences enrich our world while also creating bases for disagreement and misunderstanding among individuals, social groups, and nations. This course explores the cultural dimensions of conflict and conflict resolution, shedding light on major patterns of human difference and their implications for contemporary peacebuilding practice.

Prereq: Level at least 2A or Peace and Conflict Studies Diploma students

PACS 328 LEC 0.50

Course ID: 013486

Fair Trade

This course examines the history, theory, and practice of fair trade and how it differs from traditional principles of international trade. It will specifically explore the impact that the fair trade movement has had on small scale producers, consumers, and more broadly on the global economic system.

Prereq: Level at least 2A or Peace and Conflict Studies Diploma students

PACS 329 LEC 0.50

Course ID: 013487

Restorative Justice

This course investigates the history, theory, principles, practices, and people of restorative justice. Content will centre particularly on restorative justice as a way of dealing with crime and interpersonal violence in the Canadian context.

Prereq: Level at least 2A or Peace and Conflict Studies Diploma students

(Cross-listed with LS 344)

PACS 330 LEC 0.50

Course ID: 008399

War and Peace in Christian Theology

Christian teachings on war and peace from the early church to the present, including crusade, just war, and pacifist traditions, focusing especially on the 20th century discussion around realism, just revolution, nuclear pacifism, and non-violent resistance.

[Note: This course fulfils an Area 2C requirement for Religious Studies majors.]

Prereq: Level at least 2A or Peace and Conflict Studies Diploma students

(Cross-listed with RS 353)

PACS 331 LEC 0.50

Course ID: 014277

Trauma, Healing and Conflict Resolution

This course examines how the conflict resolution process can be impacted by trauma. With case examples from armed conflict to family violence, participants explore the emotional, physical, and relational aspects of conflict to better understand the potential for interventions that promote peace and justice. Studies include causes, types, and impacts of trauma; cycles of interpersonal and societal violence; frameworks for healing; and exploration of apology, reconciliation, revenge, and forgiveness.

Prereq: Level at least 2A or Peace and Conflict Studies Diploma students

PACS 332 LEC 0.50

Course ID: 014869

Ethics of Peacebuilding

This course will explore ethical challenges in peacebuilding. It will answer the questions: What are ethical problems in peacebuilding? How can we better understand and assess these problems? And, how can we improve our ability to support, or engage in, ethical peacebuilding practice?

Prereq: Level at least 2A or Peace and Conflict Studies Diploma students

PACS 333 LEC,WSP 0.50

Course ID: 014870

Advanced Mediation Practice

This course will give students both a thorough understanding of the mediation process and practical, hands-on mediation experience. Students will develop in-depth, first-hand knowledge and experience resolving conflicts through the role of the mediator as third party. The course will include a series of role-plays, readings, and case studies.

Prereq: PACS 202/LS 271; Level at least 2A or Peace and Conflict Studies Diploma students

PACS 335 SEM 0.50

Course ID: 015140

Perspectives in Music and Peace

This course examines music's role in peace and conflict from a variety of perspectives through listening, reading, discussion, and using examples from around the world. Topics include the use of music in dissent and resistance, and as an instrument of propaganda, conflict, and peacebuilding.

Prereq: Level at least 2A or Peace and Conflict Studies Diploma students.

Antireq: PACS 301 taken Winter 2015 and MUSIC 391 taken Winter 2015

(Cross-listed with MUSIC 335)

PACS 390 FLD 0.50

Course ID: 007215

Internship

An internship allows students to engage in experiential learning with an organization that deals with peace and conflict issues, in either a Canadian or international context. The course integrates theory and practice, while facilitating the development of attitudes, strategies, skills, and knowledge that support work in a Peace and Conflict Studies-related setting. Students will

identify an appropriate placement, read relevant texts, and submit a report reflecting on what the internship revealed about the integration of peace and conflict studies theory and practice.

[Note: Additional costs should be expected.]

Department Consent Required

PACS 391 SEM 0.25

Course ID: 013484

Conflict Resolution Skills

This course provides a framework for students to pursue conflict resolution skills training by completing intensive skills-building workshops in the Certificate Program in Conflict Management with additional academic work supervised by Peace and Conflict Studies faculty.

[Note: Offered on a credit/no credit basis. Additional costs should be expected. This is a repeatable course, subject to different content; it may be completed a total of two times.]

Department Consent Required

Prereq: Level at least 3A Peace and Conflict Studies students or Peace and Conflict Studies Diploma students

PACS 395 FLD 0.50

Course ID: 013485

Peace and Conflict Studies Travel Course

A travel seminar of approximately three weeks in length, taught on location, which will involve travel to a region that has experienced conflict. Student preparation, in the form of readings and/or written assignments, will be required prior to departure. Regular lectures and interaction with persons who have worked for peace will be scheduled. Hands-on examples merging theory with practice will be emphasized. Possible locations include the Middle East, Central/South America, Africa, Asia.

[Note: Additional costs should be expected. This is a repeatable course, subject to different content; it may be completed a total of two times.]

Department Consent Required

Prereq: Level at least 2A or Peace and Conflict Studies Diploma students

PACS 398 RDG 0.50

Course ID: 007217

Directed Readings in Peace and Conflict Studies

Students may arrange independent studies in the area of peace and conflict studies on problems of special interest.

Department Consent Required

Prereq: Level at least 3A Peace and Conflict Studies students or Peace and Conflict Studies Diploma students

PACS 399 RDG 0.50

Course ID: 007218

Directed Readings in Peace and Conflict Studies

Students may arrange independent studies in the area of peace and conflict studies on problems of special interest.

Department Consent Required

Prereq: Level at least 3A Peace and Conflict Studies students or Peace and Conflict Studies Diploma students

PACS 400s

PACS 401 DIS,RDG,SEM 0.50

Course ID: 012182

Senior Research Seminar

Each student will work on an integrative research project and will meet regularly with other students and faculty for discussion.

Prereq: Level at least 4A Peace and Conflict Studies students

PACS 402 DIS,RDG,SEM 0.50

Course ID: 012195

Senior Research Seminar

A continuation of PACS 401. Each student will work on an integrative research project or projects and will meet regularly with other students and faculty for discussion.

Department Consent Required

Prereq: PACS 401

PROFESSIONAL DEVELOPMENT FOR ARCHITECTURE

PDARCH 00s

PDARCH 1 LEC,OLN 0.50

Course ID: 014333

Portfolio Development

This course will elaborate upon the graphic and communication conventions established in the fundamental architecture curriculum. Intermediate investigations in two dimensional representation and photographic manipulation are developed to enhance presentation skills within a professional and academic context. The topics covered in the course culminate in the generation of an architecture portfolio in readiness for job interviews.

[Note: This course will be graded on a CR/NCR basis. Offered: S]

Prereq: Level at least 1B Architecture students.

Antireq: ARCH 114

PDARCH 2 OLN,PRA 0.50

Course ID: 014332

Co-op Fundamentals for Architects

This course will explore aspects of career development related to preparing for and being successful in co-op work terms, such as understanding Co-operative Education and Career Action (CECA) policies and procedures, using JobMine, preparing résumés, interviewing effectively, meeting employers' expectations and preparing work-term reports.

[Note: This course will be graded on a CR/NCR basis. Offered: F]

Prereq: PDARCH 1; Level at least 2A Architecture students

PDARCH 3 LEC,OLN 0.50

Course ID: 014334

Electronic Communications and Web Design

This course will elaborate upon digital skills introduced in PDARCH 2. Students will learn the fundamentals of web design and will create a living, interactive, digital portfolio. Students will learn how to structure, design and manage web sites and web logs.

[Note: This course will be graded on a CR/NCR basis. Offered: W]

Prereq: PDARCH 1

PDARCH 4 LEC,OLN 0.50

Course ID: 014335

Writing, Editing and Research

This course is designed to assist students in building a foundation of skills for academic research, editing texts and designing a research program in preparation for higher studies, essay writing and thesis development. This course offers concise and pragmatic approaches to the challenges of academic and professional writing, including issues in formatting, referencing, creation of bibliographies, footnoting and endnoting.

[Note: This course is graded on a CR/NCR basis. Offered: F]

Prereq: PDARCH 3

PROFESSIONAL DEVELOPMENT

Notes

Students are to take only one PD course per term unless they are repeating a previously failed PD course.

PD 00s

PD 1 LEC 0.50

Course ID: 012559

Career Fundamentals

This course is a combination of career development advice and work search information. Topics include preparing résumés, developing interview skills and preparing for success in the workplace. Program specific information is provided for students pursuing different forms of work integrated education.

Prereq: Not open to Engineering students

Only offered Online

PD 3 LEC 0.50

Course ID: 012637

Communication

In this course, students will come to understand the nature and function of communication, particularly communication in the workplace, with a view to assessing, monitoring, and improving their own communications skills. At the end of this course, students will be equipped to converse cordially with peers; collaborate more effectively in teams; give and receive clear instructions and messages; resolve conflicts amicably; and appreciate the ethical dimensions of workplace communication.

[Note: Course will be graded on a CR/NCR basis.]

Prereq: COOP or EDGE students only

Only offered Online

PD 4 LEC 0.50

Course ID: 012770

Teamwork

An introduction to the processes and skill required of high-performance teams. Application of teamwork skills to decision making, conflict resolution and leadership. Development of self-awareness and relational skills to improve one's ability to collaborate effectively, give and receive assistance, and empower others. Personal reflection and case discussion is integrated with observations of teamwork in the co-op experience work environment.

[Note: Course will be graded on a CR/NCR basis.]

Prereq: COOP or EDGE students only

Only offered Online

PD 5 LEC 0.50

Course ID: 012988

Project Management

This course is intended to provide students with knowledge of basic project management techniques and practices while placing these within their organizational context. Students should understand how these techniques and practices are used and the human issues in their application.

[Note: Course will be graded on a CR/NCR basis.]

Prereq: COOP or EDGE students only

Only offered Online

PD 6 LEC 0.50

Course ID: 012989

Problem Solving

This course provides students with the knowledge and skills needed to problem solve effectively in today's workplaces. Emphasis is on understanding how both critical and creative thinking can be applied to workplace problems as well as identifying the barriers that can interfere with the problem solving process. Students will have the opportunity to apply a variety of problem solving strategies in order to develop their own Problem Solving Action Plan.

[Note: Course will be graded on a CR/NCR basis.]

Prereq: COOP or EDGE students only

Only offered Online

PD 7 LEC 0.50

Course ID: 012990

Conflict Resolution

This course will help students analyze and understand typical sources of conflict in the workplace, individual and group conflicts, mediation, negotiation, alternative dispute resolution, working with difficult people, and how to recover from conflict. Students will develop a personal vision/model of conflict and communication skills.

[Note: Course will be graded on a CR/NCR basis.]

Prereq: COOP or EDGE students only

Only offered Online

PD 8 LEC 0.50

Course ID: 014258

Intercultural Skills

This course provides students with the knowledge and skills needed to work effectively in today's culturally and linguistically diverse workplaces. Emphasis is on understanding how cultural values shape our everyday behaviours, attitudes, thinking processes, and communication styles. Students will examine their own cultural preferences, become familiar with key models used to describe cultures, and apply intercultural concepts and tools to analyze cultural issues in the workplace.

[Note: Course will be graded on a CR/NCR basis.]

Prereq: COOP or EDGE students only

Only offered Online

PD 9 LEC 0.50

Course ID: 014451

Ethical Decision Making

Borrowing from philosophy, game theory, and economics, this course equips students with the theoretical knowledge required to objectively evaluate and discuss ethical issues in the workplace. It provides students with practical advice regarding how to make ethical decisions in an increasingly competitive marketplace. Topics include the ethics of profit-making, why good people make bad decisions, moral hazard, and personal responsibility in group contexts.

[Note: Course will be graded on a CR/NCR basis.]

Prereq: COOP or EDGE students only

Only offered Online

PD 10 LEC 0.50

Course ID: 014721

Professional Responsibility in Computing

This course considers many of the legal and ethical issues that arise in the development of software and digital-content products or services that are to be sold to the public. Course topics include laws that impose obligations on products or producers (e.g., privacy laws, accessibility laws, intellectual-property laws, regulated industries); contracts (e.g., licenses, warranties, privacy policies); and ethical responsibilities to employers, clients, the users of products, and to society as a whole.

Prereq: COOP or EDGE students only

Only offered Online

PD 11 LEC 0.50

Course ID: 015133

Processes for Technical Report Writing

This course develops flexible and broadly applicable report writing skills by involving students in various stages of the writing process, from drafting to revision. Students develop context-specific content for their own technical report and learn strategies for peer review.

[Note: Course will be graded on a CR/NCR basis.]

Prereq: Co-op students only.

Antireq: PD2

Only offered Online

PD 12 LEC 0.50

Course ID: 015134

Reflection and Learning in the Workplace

This course strengthens self-awareness and goal-setting in the workplace and, by extension, in academic and personal life. Students set, track, and meet goals. They assess their own progress and performance. Students learn to adapt to changing situations, to take initiative and responsibility, and to effectively accept assignments. This course helps students transfer both classroom and workplace learning to new contexts.

[Note: Course will be graded on a CR/NCR basis.]

Prereq: Co-op students only.

Antireq: PD2

Only offered Online

PD 20 LEC 0.50

Course ID: 013870

Engineering Workplace Skills I: Developing Reasoned Conclusions

An introduction to critical thinking and communication in the workplace for co-op engineering students. Students will practise general critical thinking and communication skills to assess evidence, interpret textual and visual information, and work through ethical and professional situations. Topics include: the role of self-reflection in successful professional development, admitting ignorance to develop improved knowledge, understanding arguments, evaluating evidence, communicating conclusion and findings, recognizing and avoiding bias, and application to professional conduct.

[Note: Course will be graded on a CR/NCR basis.]

Prereq: Engineering students only

Only offered Online

PD 21 LEC 0.50

Course ID: 013871

Engineering Workplace Skills II: Developing Effective Plans

An introduction to problem formulation and problem strategies in the workplace for co-op engineering students. Students will practice defining problems, developing solution plans, and creating technical and non-technical presentations of plans. Topics include: translating client requirements into technical requirements, using SWOT analysis to identify high priority problems and issues, typical solution strategies, brainstorming, appropriate use of technology, assessing potential solution strategies for risk and impact on employer, public and environment, identifying specific tasks along with their priorities, developing and

following work schedules, and communication to team members, organizational members, clients, and the public.

[Note: Course will be graded on a CR/NCR basis.]

Prereq: Engineering students only

Only offered Online

PD 22 LEC 0.50

Course ID: 014339

Professionalism and Ethics in Engineering Practice

This course provides a framework for understanding professionalism and ethics within society as reflected through practice in the field of professional engineering. Course topics on professionalism include: the history of engineering and professions, the licensing of professional engineers and the certification of the practice of offering engineering services to the public, and the regulation of professional engineering in Ontario through Professional Engineers Ontario. Course topics on ethics include: the philosophy of ethics and the Code of Ethics, the philosophy of justice, and the definition and disciplining of professional misconduct. Case studies will apply these principles to workplace situations including factors such as environmental ethics, whistle blowing, conflict of interest, and health and safety.

[Note: Course will be graded on a CR/NCR basis.]

Prereq: Co-op students only.

Antireq: ECE 290

Only offered Online

PROFESSIONAL DEVELOPMENT

FOR PHARMACY STUDENTS

PDPHRM 00s

PDPHRM 1 RDG 0.25

Course ID: 013412

Co-op Fundamentals

This course explores aspects of career development related to preparing for and being successful in co-op work terms, such as preparing resumes, and interviewing effectively.

[Note: Course will be graded on a CR/NCR basis. Offered: F]

Prereq: PHARM 120. Pharmacy students only

PDPHRM 2 RDG 0.50

Course ID: 013413

Communication for Pharmacy

Students will have received strong grounding in key communication concepts during the first two academic semesters in the pharmacy program. This course requires that the student apply these concepts to their co-op work term and assess their own performance. Students are required to reflect on the development of their communication skills and formulate objectives to further develop their communication skills.

[Note: Course will be graded on a CR/NCR basis. Offered: W, S, F]

Prereq: Pharmacy students only

PDPHRM 3 RDG 0.50

Course ID: 013414

Drug Distribution for Pharmacy

This course asks students to apply concepts from the pharmacy professional practice courses including: medication dispensing, jurisprudence, drug information, self care, patient safety and human resources. Students are required to reflect on the development of their technical and interpersonal skills and formulate objectives to further develop these skills. Pharmacy

students must complete this PDPHRM course in their first or second work term.

[Note: Course will be graded on a CR/NCR basis. Offered: W, F]

Prereq: Pharmacy students only

PDPHRM 4 RDG 0.50

Course ID: 013415

Patient Safety for Pharmacy

Patient safety has been integrated throughout the four year pharmacy curriculum. This course requires the student to apply patient safety concepts to their co-op work term environment.

[Note: Course will be graded on a CR/NCR basis. Offered: W, S, F]

Prereq: Pharmacy students only

PDPHRM 5 RDG 0.50

Course ID: 013416

Patient Care for Pharmacy

Pharmacy students have had extensive classroom opportunities to develop their skills in providing direct patient care. This course asks students to apply their critical appraisal, patient assessment, and clinical problem-solving skills in the co-op work term to real-life scenarios. Students are expected to successfully provide pharmaceutical care to select patients in their work environment. Pharmacy students must complete this PDPHRM course in their second or third work term.

[Note: Course will be graded on a CR/NCR basis. Offered: S, F]

Prereq: Level at least 2B Pharmacy students

PDPHRM 6 RDG 0.50

Course ID: 013417

Drug Information for Pharmacy

Students are required to apply critical appraisal concepts learned in the classroom to demonstrate their ability to effectively provide drug information and education.

[Note: Course will be graded on a CR/NCR basis. Offered: W, S, F]

Prereq: Pharmacy students only

PDPHRM 7 RDG 0.50

Course ID: 013418

Interprofessional Relations

Students are required to demonstrate their ability to work collaboratively with other health care providers to optimize patient safety and improve health outcomes. Students will apply teamwork skills to decision making, conflict resolution and leadership. Personal reflection is integrated with observations of interprofessional relations in the co-op work environment.

[Note: Course will be graded on a CR/NCR basis. Offered: W, S, F]

Prereq: Pharmacy students only

PDPHRM 8 RDG 0.50

Course ID: 013419

Pharmacy Practice - Management and Leadership

This course requires the student to apply the business/management concepts learned in the classroom to the workplace.

[Note: Course will be graded on a CR/NCR basis. Offered: W, S, F]

Prereq: Pharmacy students only

Notes

1. Normally, Pharmacy courses (designated as PHARM) are restricted to students registered in the PharmD program or who have been admitted as special (non-degree) students.
2. It is not necessary for pharmacy students to enrol in CECA professional development as the curriculum includes professional development courses designed to prepare students for the workplace environment.
3. Normally, electives are taken beginning in Year 3. For students who enter Pharmacy and qualify for transfer credits, electives may be selected earlier in consultation with the Associate Director (or delegate). Independent Study electives require permission of the Associate Director (or delegate). A student may take a maximum of 1.0 credit as Independent Study electives.

PHARM 100s

PHARM 110 LAB,LEC 1.00

Course ID: 013120

Systems Approach to the Study of the Human Body 1

This integrated anatomy and physiology course and its continuation in PHARM 111 cover all the major human body systems using a systems approach. Major themes are the relationships between structure and function, and homeostasis of the cellular environment. [Offered: W]

Prereq: Pharmacy students only

PHARM 111 LAB,LEC 0.50

Course ID: 013121

Systems Approach to the Study of the Human Body 2

This integrated anatomy and physiology course and its prerequisite PHARM 110 cover all the major human body systems using a systems approach. Major themes are the relationships between structure and function, and homeostasis of the cellular environment. [Offered: S]

Prereq: PHARM 110; Pharmacy students only

PHARM 120 LEC 0.25

Course ID: 012459

Introduction to the Profession of Pharmacy

This course introduces students to the profession of pharmacy with its many opportunities. Topics include Canadian and global health care systems, the roles of health care professionals, the social determinants of health and the current and future practice of pharmacy. [Offered: W]

Prereq: PHARM students only.

Antireq: PHARM 120A

PHARM 124 LAB,LEC 1.00

Course ID: 012458

Pharmaceutics 1

This course, and PHARM 125, consider the scientific and technical aspects important in dosage form design. The lectures and practical laboratory experiences emphasize the role of biopharmaceutics, preformulation and physical pharmacy in the development of safe and effective dosage forms. [Offered: W]

Prereq: Pharmacy students only

PHARM 125 LAB,LEC 1.00

Course ID: 012460

Pharmaceutics 2

This course is a continuation of PHARM 124. [Offered: S]

Prereq: PHARM 124; Pharmacy students only

PHARM 126 TST,TUT 0.13

Course ID: 013420

Pharmaceutical Calculations

This course provides students with the tools necessary to carry out calculations in a wide range of settings. The scope of pharmaceutical calculations includes concentration expressions, physical and chemical properties, measurement of quantities, dosing calculations, rates of administration, and allocation methods.

[Note: Course will be graded on a CR/NCR basis. Offered: W]

Prereq: Pharmacy students only

PHARM 127 LEC 0.50

Course ID: 012461

Professional Communication Skills in Pharmacy Practice

This course is designed to help students develop the core communication skills required for success in a career in Pharmacy. This is a foundational course. Key concepts introduced in this course are applied throughout the curriculum. [Offered: W]

Prereq: Pharmacy students only

PHARM 129 LEC 0.50

Course ID: 012463

Professional Practice 1

This course introduces students to the building blocks of pharmacy practice including medication dispensing, jurisprudence, drug information and patient safety. Patient care focuses on self-care and providing students with processes for assessing, educating, and counselling patients about non-prescription medications. [Offered: W]

Prereq: Pharmacy students only

PHARM 130 LEC 0.50

Course ID: 012464

Professional Practice 2

Professional Practice 2 continues to develop the foundational knowledge and skills introduced in PHARM 129. [Offered: S]

Prereq: PHARM 129; Pharmacy students only

PHARM 141 LEC 0.50

Course ID: 012467

Introduction to Medicinal Chemistry, Toxicology and Pharmacology

The basic principles of medicinal chemistry, toxicology, and pharmacology are introduced and examined in the context of the autonomic nervous system. Pharmacokinetics, adverse drug reactions, drug interactions, pharmacogenetics, and the body's response to drug compounds are also discussed. The tools and principles discovered are applied to specific disease states as well as physiological systems, including the visual and cardiovascular systems. [Offered: S]

Prereq: Pharmacy students only

PHARM 151 LEC,TUT 0.50

Course ID: 012483

Foundation and Application of Health Informatics

This course provides a fundamental understanding of Health Informatics. This will encompass the nature, key concepts, and applications of this discipline to address challenges in the health field. The material presented will target the high profile areas of Health Informatics and point the participants in the direction of broader and deeper explorations. [Offered: S, F]

Prereq: PHARM students only.

Antireq: PHARM 262

PHARM 155 LEC 0.25

Course ID: 014639

Introduction to Drug Information Fundamentals

This course provides students with basic skills in retrieving and assessing drug information and medical literature. The foundation acquired in this course will be used throughout the Integrated Patient Focused Care series in critically appraising literature to support an evidence-based patient care model. [Offered: S]

Prereq: Pharmacy students only

PHARM 200s

PHARM 220 LAB,LEC,TUT 1.00

Course ID: 012470

Integrated Patient Focused Care 1

This is the first of nine sequential courses that are designed to enable students to understand, integrate, and apply concepts from Pharmacology, Medicinal Chemistry, Toxicology, Clinical Pharmacokinetics, Clinical Biochemistry and Pathphysiology, and Applied Microbiology to patient scenarios. Students will not only learn core principles from each of these disciplines, but they will also develop skills in critical appraisal, patient assessment, and clinical problem-solving. Ultimately, students will be able to make confident decisions regarding a patient's care plan. The first course will cover core foundational knowledge. [Offered: F]

Prereq: PHARM 110, 111, 141; Pharmacy students only

PHARM 221 LAB,LEC,TUT 1.00

Course ID: 012471

Integrated Patient Focused Care 2

This is the second of nine sequential courses. Topics discussed through patient scenarios and assignments will focus on two to three body systems. [Offered: F]

Prereq: PHARM 110, 111, 141; Pharmacy students only

PHARM 222 LEC,TUT 1.00

Course ID: 013124

Integrated Patient Focused Care 3

This is the third of nine sequential courses. Topics discussed through patient scenarios and assignments will focus on two to three body systems. [Offered: S]

Prereq: PHARM 220, 221, 224; Pharmacy students only

PHARM 223 LEC,TUT 1.00

Course ID: 013125

Integrated Patient Focused Care 4

This is the fourth of nine sequential courses. Topics discussed through patient scenarios and assignments will focus on two to three body systems. [Offered: S]

Prereq: PHARM 220, 221, 224; Pharmacy students only

PHARM 224 LEC,TUT 0.50

Course ID: 012472

Pharmacokinetic Fundamentals

Pharmacokinetic principles and quantitative analysis will be used to describe the events that transpire following drug administration. The influence of physiological and biochemical processes on drug pharmacokinetics will be discussed.[Offered: F]

Prereq: PHARM 110, 111, 124, 125; Pharmacy students only

PHARM 227 LEC 0.25

Course ID: 012474

Health Systems in Society

Building on PHARM 120 and PHARM 129, students will extend their understanding of the Canadian health-care system, including its structure, financing, regulation and policies. By means of relevant health-care examples, students will develop their skills in ethical analysis, and learn to apply basic principles of public policy analysis, political science, economics, and quality measurement. Students will also be exposed to some international drug issues and how they compare with Canada's pharmaceutical system. The course emphasizes critical analysis and writing skills. [Offered: F]

Prereq: PHARM 120, 129; Pharmacy students only

PHARM 228 LAB 0.25

Course ID: 012475

Professional Practice 3

Professional Practice 3 is a lab-based course where knowledge acquired in the introductory Professional Practice courses is applied to simulated pharmacy situations and patient case scenarios. This provides students with the opportunity to demonstrate their technical skill and clinical knowledge in a practical way and helps prepare students for their first co-op work experience. [Offered: F]

Prereq: PHARM 130; Pharmacy students only.

Coreq: PHARM 220, 221

PHARM 229 LAB,LEC 1.00

Course ID: 012476

Professional Practice 4

Professional Practice 4 combines lecture and lab components, focusing on providing students with the knowledge and skills to fulfil requirements of the expanding role pharmacists play in providing patient care. Physical assessment and an understanding of how analyses and devices inform decision-making are examples of topics that may be covered. [Offered: S]

Prereq: PHARM 228; Pharmacy students only.

Coreq: PHARM 222, 223

PHARM 232 LAB,LEC 0.25

Course ID: 013122

Medical Microbiology

This course applies microbiological methods (aseptic techniques, streak plating, culture handling, laboratory safety, etc.) to clinically relevant microbiological and immunological practice. Course material is applicable to and coordinated with Integrated Patient Focused Care courses. [Offered: F]

Prereq: PHARM students only.

Antireq: PHARM 232L

PHARM 252 LEC 0.50

Course ID: 012482

Institutional Pharmacy Practice

This course offers insight into how organizations/institutions manage patient health. It examines the structure, governance and delivery of services within health systems such as primary care, family health teams, acute care, home care and long-term care facilities. Processes within health care institutions for optimizing management of patients, operations, facilities and medications are all addressed. [Offered: S]

Prereq: PHARM 227; Pharmacy students only

PHARM 290 SEM 0.13

Course ID: 012484

Seminars in Pharmacy 1

Through the Seminar Series of courses students are exposed to a number of speakers who address relevant topics within a content area. Speakers may include subject-matter experts, patients, and health care professionals.

[Note: Course will be graded on a CR/NCR basis. Offered: S]

Prereq: Pharmacy students only

PHARM 300s

PHARM 320 LEC,TUT 1.00

Course ID: 012486

Integrated Patient Focused Care 5

This is the fifth of nine sequential courses. Topics discussed through patient scenarios and assignments will focus on two to three body systems. [Offered: W]

Prereq: PHARM 222, 223; Pharmacy students only

PHARM 321 LEC,TUT 1.00

Course ID: 012487

Integrated Patient Focused Care 6

This is the sixth of nine sequential courses. Topics discussed through patient scenarios and assignments will focus on two to three body systems. [Offered: W]

Prereq: PHARM 222, 223; Pharmacy students only

PHARM 323 LEC,TUT 1.00

Course ID: 013126

Integrated Patient Focused Care 7

This is the seventh of nine sequential courses. Topics discussed through patient scenarios and assignments will focus on two to three body systems. [Offered: F]

Prereq: PHARM 320, 321; Pharmacy students only.

Antireq: PHARM 420

PHARM 324 LEC,TUT 1.00

Course ID: 012510

Integrated Patient Focused Care 8

This is the eighth of nine sequential courses. Topics discussed through patient scenarios and assignments will focus on two to three body systems. [Offered: F]

Prereq: PHARM 320, 321; Pharmacy students only.

Antireq: PHARM 421

PHARM 329 LAB 0.25

Course ID: 012494

Professional Practice 5

Professional Practice 5 is a lab-based course that refines basic skills and addresses additional areas of expanding scope of practice for pharmacists. In particular, a component of the course provides students with an opportunity to acquire skills in immunizing patients. [Offered: W]

Prereq: PHARM 229; Pharmacy students only.

Coreq: PHARM 320, 321

PHARM 330 LAB,LEC 0.50

Course ID: 012493

Professional Practice 6

Professional Practice 6 combines lecture and lab components and focuses on preparing students for their first years of professional life. [Offered: F]

Prereq: PHARM 329; Pharmacy students only.

Coreq: PHARM 323, 324.

Antireq: PHARM 428

PHARM 350 LEC 0.50

Course ID: 012496

Fundamentals of Business Administration and Management

This course teaches the strategic management principles behind marketing, operations, finance and accounting, and human resources management in an integrated format. [Offered: W]

Prereq: PHARM 130, 228; Pharmacy students only

PHARM 351 LEC 0.25

Course ID: 014644

Management Issues in Community Pharmacy Practice

This business course leverages concepts presented in PHARM 350 and applies them to the specific opportunities and challenges found in community practice settings. Topics that will be addressed include business planning and human resource management in the community pharmacy context.

[Note: Selective Business Course; Offered: F]

Prereq: PHARM 350; Pharmacy students only

PHARM 352 LEC 0.25

Course ID: 014645

Management Issues in Pharmacy Practice in Organizations

This business course leverages concepts presented in PHARM 350 and applies them to the specific opportunities and challenges found in institutional settings. Topics that will be addressed include business planning and human resource management in hospitals and long-term care facilities.

[Note: Selective Business Course; Offered: F]

Prereq: PHARM 350; Pharmacy students only

PHARM 353 LEC 0.25

Course ID: 014646

Entrepreneurship in Pharmacy

This business course leverages concepts presented in PHARM 350 and applies them to the specific opportunities and challenges facing entrepreneurs and/or individuals creating innovative solutions within more traditional pharmacy environments. Topics that will be addressed include business planning and relationship management for entrepreneurs.

[Note: Selective Business Course; Offered: F]

Prereq: PHARM 350; Pharmacy students only

PHARM 361 LAB,TUT 0.50

Course ID: 013363

Advanced Compounding

Building upon experiences gained in Pharmacy 124 and 125 (Pharmaceutics 1 and 2), Advanced Compounding introduces the student to more complex formulations and their use in specific patient populations. Example topics include compounding for geriatric and pediatric patients, veterinary products, USP and its application to extemporaneous compounding, and stability and QC testing. [Offered: W, S, F]

Prereq: PHARM 124, 125; Pharmacy students only

PHARM 362 LEC,TUT 0.50

Course ID: 013364

Advanced Patient Self Care

Advanced Patient Self Care teaches students to critically evaluate the use of self-care therapeutic options such as Natural Health Products, Schedule II and III drugs and functional foods in various disease states and populations. Other topics include: the Natural Health Product approval process, regulatory issues for self-selection products and reimbursement for self-care services. [Offered: W, S, F]

Prereq: PHARM 220, 228; Pharmacy students only

PHARM 363 LEC,TUT 0.50

Course ID: 013365

Global Infectious Disease Management

This course addresses global infectious diseases from a public health perspective in an integrated case study format. It focuses on the role of the pharmacist, mode of transmission of these diseases, prevention, control, emergency preparedness, appropriate use of vaccines and vaccine administration. [Offered: W, S, F]

Prereq: PHARM 220, 232/232L; Pharmacy students only

PHARM 364 LEC,TUT 0.50

Course ID: 013367

The Pharmacist as Educator

This course will introduce the basic learning theory and practice that pharmacists use as educators of specific audiences, such as patients, other healthcare providers, other pharmacists, etc. [Offered: W, S, F]

Prereq: PHARM 127; Pharmacy students only

PHARM 366 LEC,TUT 0.50

Course ID: 013791

Concepts in Nutritional Sciences

This course focuses on the role of nutrition in the attainment of optimal patient health. Topics include nutrition for optimal growth and risk reduction of chronic disease; nutrition in special populations; functional foods and nutraceuticals; enteral and parenteral nutrition; and the role of the pharmacist in nutrition counseling. [Offered: W,S, F]

Prereq: PHARM 220; Pharmacy students only

PHARM 367 LEC,TUT 0.50

Course ID: 013792

Pediatric Pharmacy

This course introduces the student to the more complex pediatric therapeutics and pharmacy-specific issues associated with a pediatric population. [Offered: W, S, F]

Prereq: PHARM 220, 221, 229; Pharmacy students only

PHARM 368 LEC,TUT 0.50

Course ID: 013793

Advanced Drug Information & Evidence-Based Medicine

This course builds on the knowledge and skills students have acquired about the retrieval, analysis and use of drug information. Students will apply the principles of evidence-based medicine and critically appraise literature in responding to the needs of a variety of patient and professional audiences. [Offered: W, S, F]

Prereq: PHARM 223, 229; Pharmacy students only

PHARM 370 LEC,TUT 0.50

Course ID: 013795

Personal & New Venture Financial Management

This course covers topics that are relevant to the financial decision making of individuals, with a particular focus on future professionals who have any interest in being involved in new business ventures. Knowledge and skills learned will allow students to take advantage of the career diversity and resulting business opportunities related to pharmacy. [Offered: W, S, F]

Prereq: Pharmacy students only.

Coreq: PHARM 350

PHARM 372 LEC,TUT 0.50

Course ID: 013797

Strategic Global Health & Pharmacy Practice

This course focuses on the challenges of providing health care and pharmacy-related services within a global context. The course will examine how cultural variations and socio-political factors affect drug therapy and patient care. The specific impact of pharmaceuticals/vaccinations on global health will be featured. [Offered: W, S, F]

Prereq: Pharmacy students only.

Coreq: PHARM 350

PHARM 373 LEC,TUT 0.50

Course ID: 014161

Healthcare Delivery in Rural and Underserved Populations

This course will develop students' understanding of the unique challenges and opportunities in providing healthcare to rural and underserved populations. Through lectures and field work, students will examine topics such as health care disparities, interprofessional collaboration, the role of the rural pharmacist, and underserved patient case studies. [Offered: W, S, F]

Prereq: Pharmacy students only

PHARM 374 LEC 0.50

Course ID: 014162

Complementary and Alternate Medicine

This Complementary and Alternate Medicine course is designed to give the student an overview of complementary and alternative healing practices and will heighten student awareness that CAM is multifactorial and often includes belief systems and practices other than drug therapy. [Offered: W, S, F]

Prereq: PHARM 228; Pharmacy students only

PHARM 375 LEC,TUT 0.50

Course ID: 014163

Substance Abuse & Chemical Dependency

This course serves as an overview of addiction, chemical abuse and chemical dependency and how pharmacists can impact those affected. Topics include prevention, identification, treatment options, clinical aspects of treatment, and an understanding of support systems available for those in recovery. [Offered: W, S, F]

Prereq: PHARM 220, 221. Pharmacy students only.

Also offered Online

PHARM 376 LEC,TUT 0.50

Course ID: 014164

Practicing Pharmacy with Diverse Populations

This course will provide students with tools to optimize patient care when working with diverse communities. Diversity will be defined in its broadest sense encompassing a discussion in how differences in ethnicity, gender, sexual orientation, physical or mental ability etc. impact patient care. Students will learn about the unique needs of different populations and through a combination of lectures and case studies learn how to sensitively and effectively work with a variety of patients. [Offered: W, S, F]

Prereq: PHARM 220, 221. Pharmacy students only.

PHARM 377 LEC,TUT 0.50

Course ID: 014165

Drug-Induced Disease

Drug-Induced Disease will explore the most appropriate interventions for prevention, detection and management of drug-induced diseases. Emphasis will be placed on the role of the pharmacist as a proactive practitioner in minimizing morbidity and mortality from drug-induced diseases. [Offered: W, S, F]

Prereq: Pharmacy students only

PHARM 378 LEC 0.50

Course ID: 014742

Advanced Women's Health Pharmacotherapeutics

This course will examine the pharmacotherapy of health conditions commonly experienced by women across their lifespan. Topics will include menstrual and reproductive disorders; contraception, pregnancy and childbirth; and common diseases that may be experienced differently by women. The course will also explore the ethics, commercialization and medicalization of women's health. [Offered W, S, F]

Prereq: PHARM 222; Pharmacy students only

PHARM 379 LEC 0.50

Course ID: 014745

Ethical Decision-Making in Pharmacy Practice

This course explores the principles of ethical decision-making in healthcare and applies them to various scenarios and actual cases in different pharmacy practice settings. Discussion will focus on ethical dilemmas where a variety of stakeholders and implications must be considered. [Offered: W, S, F]

Prereq: Pharmacy students only

PHARM 391 SEM 0.13

Course ID: 012503

Seminars in Pharmacy 2

Through the Seminar Series of courses students are exposed to a number of speakers who address relevant topics within a content area. Speakers may include subject-matter experts, patients, and health care professionals.

[Note: Course will be graded on a CR/NCR basis. Offered: W]

Prereq: PHARM students only.

Antireq: PHARM 490

PHARM 400s**PHARM 400 RDG,TUT 0.25**

Course ID: 012504

Independent Study 1

This elective is designed to permit students to pursue areas of personal interest and/or to gain personal experience in scientific research through a research project. PHARM400 typically involves a reading/survey based project involving a review of and collection of data from relevant scientific literature, and the synthesis of new information based upon this review. Research may be conducted in the School of Pharmacy, in a hospital, community pharmacy, pharmaceutical company, etc. A maximum of 1.0 credit may be taken as Independent Study courses.

Instructor Consent Required

Prereq: Pharmacy students only

PHARM 401 LAB,TUT 0.50

Course ID: 012505

Independent Study 2

This elective is designed to permit students to pursue areas of personal interest and/or to gain personal experience scientific research through a research project. PHARM 401 requires a research based project and will typically include a review of pertinent scientific literature and generation and analysis of new data. Research may be conducted in the School of Pharmacy, in a hospital, community pharmacy, pharmaceutical company, etc. A maximum of 1.0 credit may be taken as Independent Study courses.

Instructor Consent Required

Prereq: Pharmacy students only

PHARM 422 LEC,TUT 1.00

Course ID: 013127

Integrated Patient Focused Care 9

This is the ninth of nine sequential courses. Complex integrated cases will be covered, along with special topics. [Offered: W, S]

Prereq: PHARM 323/420, 324/421; Pharmacy students only

PHARM 425 LEC 0.50

Course ID: 014640

Symposium

Symposium offers senior students the opportunity to deliver a seminar in a content area of their choice. Students will demonstrate an ability to critically appraise literature from a variety of sources and synthesize information in both written and presentation formats. [Offered: W, S]

Prereq: PHARM 323/420, 324/421, 330. Pharmacy students only

PHARM 430 CLN 2.50

Course ID: 014641

Clinical Rotation 1: Primary Care

Students will provide supervised direct patient care in a primary care setting. Over the course of 24 weeks, students will be placed in three 8-week rotations where the student's ability to apply therapeutic knowledge in a live practice setting will be refined and assessed. [Offered: W, S]

Prereq: Pharmacy students only. Students must have successfully completed all courses to the end of the 3B academic term, as well as three co-op work terms, to enrol in this course.

PHARM 440 CLN 2.50

Course ID: 014642

Clinical Rotation 2: Institutional

Students will provide supervised direct patient care in an institutional setting. Over the course of 24 weeks, students will be placed in three 8-week rotations where the student's ability to apply therapeutic knowledge in a live practice setting will be refined and assessed. [Offered: W, S]

Prereq: Pharmacy students only. Students must have successfully completed all courses to the end of the 3B academic term, as well as three co-op work terms, to enrol in this course.

PHARM 450 CLN 2.50

Course ID: 014643

Clinical Rotation 3: Elective

Students will practice in a variety of Pharmacy settings under the supervision of qualified preceptors. Over the course of 24 weeks, students will be placed in three 8-week rotations where the student's ability to apply therapeutic knowledge in a live practice setting will be refined and assessed. [Offered: W, S]

Prereq: Pharmacy students only. Students must have successfully completed all courses to the end of the 3B academic term, as well as three co-op work terms, to enrol in this course.

PHARM 460 LEC,TUT 0.50

Course ID: 013798

Leadership in Pharmacy

This course focuses on application of leadership principles, human, organizational and motivational behaviour, and power relationships in the healthcare workplace. [Offered: W, S, F]

Prereq: PHARM 350; Pharmacy students only

PHARM 461 LEC,TUT 0.50

Course ID: 013799

Advanced Patient Safety

This course focuses on applying the Canadian Patient Safety Institute's domains to projects with community partners and local health care agencies. Students will learn to develop strategies to integrate medication safety updates and implement recommendations into their practices. [Offered: W, S, F]

Prereq: PHARM 329, 350; Pharmacy students only

PHARM 462 LEC,TUT 0.50

Course ID: 013800

Interprofessional Case Management

This course focuses on developing the enhanced communication and teamwork skills necessary for working in interprofessional teams to optimize patient care. [Offered: W, S, F]

Coreq: PHARM 323; Pharmacy students only

PHARM 464 LEC,TUT 0.50

Course ID: 013801

Advanced Therapeutic Concepts in Oncology

This course examines advanced oncology therapeutic concepts required as foundation for patient management in the inpatient, ambulatory, and community settings. Topics include a comprehensive review of cancer epidemiology and pathophysiology, therapeutic agents used in the oncology setting, management of cancer therapy toxicities, and treatment and palliation of cancer symptoms. [Offered: W, S, F]

Coreq: PHARM 323; Pharmacy students only

PHARM 465 LEC,TUT 0.50

Course ID: 013802

Critical Care & Emergency Medicine for Pharmacists

This course focuses on the types of care provided by interdisciplinary health team members involved in caring for critical care and emergency room patients. Invited respiratory therapists, nurses, dietitians, pharmacists, social workers and intensivists will discuss critical care topics such as sepsis, respiratory insufficiency, toxicology, ethical deliberations and end of life care. [Offered: W, S, F]

Prereq: PHARM 321; Pharmacy students only.

PHARM 466 LEC,TUT 0.50

Course ID: 013803

Advanced Geriatric Care

This course focuses on key concepts of ageing that are related to geriatric pharmacotherapy. Topics include: the biology and demography of ageing, optimal medication use in older people, disease presentation, geriatric assessment, roles for pharmacists and challenges and complexity of geriatric care. [Offered: W, S, F]

Prereq: Pharmacy students only.

Coreq: PHARM 323/420, 324/421

PHARM 469 LEC,TUT 0.50

Course ID: 014167

Pharmacoepidemiology and Pharmacy Practice

The course aims to promote an enhanced understanding of conceptual and methodological issues essential for effective critical appraisal of the relevant clinical literature and ultimately, improved patient care. Key topics to be covered will include: basic concepts of epidemiology; data sources and measures, study design and methodological issues in pharmacoepidemiology; and, applications relevant to population-based research and pharmacy. [Offered: W, S, F]

Prereq: Level at least 3B PHARM students.

PHARM 470 LEC,TUT 0.50

Course ID: 014168

Advanced Medical Writing

This course will refine students' writing skills. Students will have opportunities to produce a variety of different documents with a focus on preparing documents suitable for publication. Topics will include audience analysis, modification of content to conform to the requirements of different journals, succinct and clear representation of data and study findings, coordinating the editing process with multiple authors etc. [Offered: W, S, F]

Coreq: PHARM 324/421

PHARM 472 LEC,TUT 0.50

Course ID: 014170

Community Practice in a Changing Environment

This course will prepare pharmacy students to provide services in an advanced community pharmacy practice environment. Students will explore, critique and develop innovative clinical services for the community setting. Students will also develop change management and critical thinking skills. [Offered: W, S, F]

Prereq: Level at least 3B PHARM students.

PHARM 473 LEC 0.50

Course ID: 014647

Advanced Infectious Disease

This course is designed to expand upon students' understanding of infectious disease pharmacotherapy, with a focus on syndromes requiring a higher degree of medical intervention than commonly seen in primary care. The aim of the course is to develop practicing pharmacists with the knowledge, skills and critical dispositions necessary for optimizing the use of anti-infectives in challenging infectious syndromes. [Offered: W, S, F]

Prereq: PHARM 232 or 233L.

Coreq: PHARM 320, 321; Pharmacy students only

PHARM 474 LEC 0.50

Course ID: 014743

Advanced Pharmacotherapeutics in the Hospital Setting

This course will provide students the opportunity to apply clinical knowledge and skills to manage pharmacotherapy problems commonly encountered in hospitalized patients. The focus will be on disease states not covered in the Integrated Patient Focused Care Series. Additionally, problems unique to delivery of care in the hospital setting, such as formulary management, utilization review, and medication problems relating to transitions among care settings will be explored. [W, S, F]

Prereq: Pharmacy students only.

Coreq: PHARM 323/420

PHARM 475 LEC 0.50

Course ID: 014744

Advanced Pharmacotherapeutics in the Ambulatory Care Setting

This course will provide students the opportunity to apply clinical knowledge and skills to manage pharmacotherapy problems commonly encountered by pharmacists practicing in an outpatient environment. The focus will be on disease states not covered in the Integrated Patient Focused Care Series. Additionally, problems unique to delivery of care in the ambulatory setting, such as coordination of care within an interdisciplinary team, working within the constraints of the Ontario Drug Benefit (ODB) program and insurance plan formularies, and provision of best practice care with limited resources. [Offered:

W, S, F]

Prereq: Pharmacy students only.

Coreq: PHARM 323/420

PHARM 476 LEC 0.50

Course ID: 014747

Advanced Skills in Patient Engagement

Research shows that patients actively involved in managing their health report better outcomes. This course is an innovative skills-based program that combines theory and practical techniques to help learners develop the ability to assess readiness, motivate, and support patients in improving their health. Relevant clinical tools will be introduced along with opportunities for hands-on practice. [W, S, F]

Prereq: PHARM 222; Pharmacy students only

PHARM 491 SEM 0.13

Course ID: 012522

Seminars in Pharmacy 3

Through the Seminar Series of courses students are exposed to a number of speakers who address relevant topics within a content area. Speakers may include subject-matter experts, patients, and health care professionals.

[Note: Course will be graded on a CR/NCR basis. Offered: W, S]

Prereq: Pharmacy students only

PHARM 495 LEC,TUT 0.50

Course ID: 014809

Advanced Topics in Patient Focused Care

Update to the Integrated Patient Focused Care course series taken in the BSc Pharmacy curriculum. Focus on management of complex patients, application of clinical pharmacokinetics and evidence-based advancements in pharmacotherapeutics. [Offered: W, S, F]

Prereq: Waterloo BScPhm graduate

Only offered Online

PHARM 496 LAB,LEC 0.50

Course ID: 014810

Advanced Professional Practice

Update to the Professional Practice course series taken in the BSc Pharmacy curriculum. Focus on skills necessary to incorporate changes in the scope of pharmacy practice into a variety of practice settings. This is predominantly an online course with required attendance at a workshop component. [Offered: W, S, F]

Prereq: Waterloo BScPhm graduate

Also offered Online

PHARM 497 CLN 2.50

Course ID: 014811

Clinical Rotation 1: Direct Patient Care Fundamentals

Advanced practice rotation in an approved clinical practice setting. Involves patient case workups; defence and demonstration of knowledge and application of patient care principles. Submission of a clinical experience portfolio. [Offered W, S, F]

Prereq: PHARM 495 & 496

PHARM 498 CLN 2.50

Course ID: 014812

Clinical Rotation 2: Direct Patient Care

Advanced practice rotation (8 weeks) in an approved clinical practice setting (institutional or primary care, depending on prior experience assessed through PHARM 497). Provision of direct patient care in an inter-professional setting. [Offered W, S, F]

Prereq: PHARM 497

PHARM 499 CLN 2.50

Course ID: 014813

Clinical Rotation 3: Elective

Advanced practice rotation (8 weeks) in an approved clinical practice setting. Provision of direct patient care in an inter-professional setting distinct from previous experience assessed through the clinical experience portfolio and courses taken since completing the BSc Pharm. [Offered W, S, F]

Coreq: PHARM 498

PHILOSOPHY

Notes

1. *Some Philosophy courses are offered more often than others. For details on upcoming course offerings, consult the Department of Philosophy [website](#). Details of St. Jerome's Philosophy offering are available on the St. Jerome's University [website](#).*
2. *Students who do not satisfy course requisites may on occasion be admitted to those courses by instructor consent.*
3. *In general, 300-level courses assume some background in Philosophy. Students who have not taken any Philosophy courses before but who wish to register in a 300-level course should consult the course instructor.*
4. *Courses suffixed with "J" are administered by St. Jerome's University.*
5. *Some main campus Philosophy courses are taught by the St. Jerome's University Department of Philosophy, and from time to time by faculty members at Conrad Grebel University College, Renison University College, and St. Paul's University College. Consult [Quest](#) for details.*

PHIL 100s

PHIL 100J LEC 0.50

Course ID: 007231

Introduction to Philosophy

This course seeks to introduce students to the nature of philosophy. This is done through the examination of core texts and figures in the history of philosophy as well as in the discussion of perennial philosophical questions.

Offered at St. Jerome's University

PHIL 101 LEC 0.50

Course ID: 015390

Challenging Ideas: An Introduction to Philosophy

Students will examine and challenge some influential ideas in Philosophy, and consider their importance to our lives. Questions might include: Does science describe the world as it really is? Is the mind just the brain? What can we know? Should we be moral? Do we have free will?

Antireq: PHIL 110A, 110B

PHIL 110A LEC 0.50

Course ID: 007228

Introduction to Philosophy: Knowledge and Reality

An introduction to central issues in metaphysics and epistemology. Questions to be considered might include: "Can we know anything?", "Does God exist?", "Is the mind just a brain?", "Do human beings have free will?"

[Note: Formerly PHIL 100.]

Antireq: PHIL 101

Also offered Online

PHIL 110B LEC 0.50

Course ID: 010344

Introduction to Philosophy: Ethics and Values

This course is an introduction to philosophical thinking about ethics and value, that is, about what is good, right, fair, just, and worthwhile in life. Includes consideration of questions such as "What is the right thing to do?" and "Do human beings have free will?"

[Note: Formerly PHIL 105.]

Antireq: PHIL 101

Also offered Online

PHIL 118J LEC 0.50

Course ID: 007241

Virtue and the Good Life

An examination of the importance of virtue in general and of the cardinal virtues in particular (practical wisdom, justice, courage, and moderation) for the development of moral character and the enjoyment of the good life.

Offered at St. Jerome's University

PHIL 120J LEC 0.50

Course ID: 007242

The Meaning of Life

We may have distinct ideas about the reason why we do this or that, but is there a point to our existence as a whole? What do or should we live for? Or is life essentially meaningless or even absurd? What do such questions mean and how can we best answer them? The views of different philosophers will be explored and compared.

Offered at St. Jerome's University

PHIL 121 LEC 0.50

Course ID: 007271

Moral Issues

This course surveys several controversial moral topics, and a range of philosophical views on each. Topics may include abortion, cloning, euthanasia and suicide, sexism, prostitution, pornography, torture, and animal rights.

[Note: Formerly PHIL 220.]

Antireq: PHIL 220

Also offered Online

PHIL 145 LEC,TUT 0.50

Course ID: 007246

Critical Thinking

An analysis of basic types of reasoning, structure of arguments, critical assessment of information, common fallacies, problems of clarity and meaning.

Also offered Online

PHIL 200J LEC 0.50

Course ID: 007250

Aristotelian Logic

An introduction to the understanding of how words are used, the formation of propositions, the construction of arguments and the examination of fallacies to help the student argue with order, facility and without error.

Offered at St. Jerome's University

PHIL 201 LEC 0.50

Course ID: 007251

Philosophy of Sex and Love

Classic and contemporary philosophical examination of sex and love. Questions considered might include the following: Do you love because your love-object is worthy, or do you find your love-object worthy because of your love for them? Does sex ever involve using persons as mere means to an end? Should it?

Also offered Online

PHIL 202 LEC 0.50

Course ID: 007253

Gender Issues

Philosophical analysis of issues relating to sex/gender. Questions considered might include the following: What, if anything, is the difference between sex and gender? How much of a role do facts about biology play in our ideas about sex and gender? How many sexes are there? What ethical issues arise for us in virtue of our gender?

(Cross-listed with WS 222)

Also offered Online

PHIL 204J LEC 0.50

Course ID: 007254

Philosophy and Culture

An exploration of the nature of culture and its role in the life and development of the human being through an analysis of the assumptions of Western popular culture in such areas as technology and the internet, individual freedom, sexuality, and the global economy.

Offered at St. Jerome's University

PHIL 205 LEC 0.50

Course ID: 015088

Philosophy of Economics

This course considers conceptual, methodological, foundational, and ethical issues in economic theory and practice. Questions include: What can philosophy teach us about economic methodology and justification? Are economic formalizations useful idealizations of human behaviour? Is economics a science? What role do values play in economic reasoning and policy-making?

Antireq: PHIL 371 taken Winter 2014

(Cross-listed with ECON 261)

PHIL 206 LEC 0.50

Course ID: 015089

Philosophy of Sport

This course uses the tools of philosophy to ask important questions about sport, such as: What is sport? What is the value of sport for participants or fans? Are violent sports unethical? Should performance enhancing drugs be banned? What is luck, and how is it different from skill?

Antireq: PHIL 271 taken Fall 2014

PHIL 207J LEC 0.50

Course ID: 015311

Philosophy and J.R.R. Tolkien

An introduction to the implicit philosophical content of Tolkien's works, with a special emphasis on Lord of the Rings. Problems such as the existence of God, fate, free will, evil, death, and technology will be explored. Tolkien's views will be examined in relation to philosophical works.

Antireq: PHIL 209 taken Winter 2015, Fall 2015

Offered at St. Jerome's University

PHIL 208 LEC 0.50

Course ID: 007259

Philosophy Through Science Fiction

Questions regarding such matters as the nature of knowledge, logic and language, mind and brain, space and time, causality, ethics, and politics are explored through classic philosophic texts and science fiction narratives.

PHIL 209 LEC 0.50

Course ID: 007260

Philosophy in Literature

Philosophical themes will be explored through appropriate literary works.

PHIL 210J LEC 0.50

Course ID: 007263

Human Nature

What is a human being? The course examines this question from a philosophical perspective. Topics to be covered may include the soul, the body, emotions, the intellect, the will, relationships, sex, and human dignity.

Offered at St. Jerome's University

PHIL 211J LEC 0.50

Course ID: 015491

Death and the After-Life

What is death? What does it mean for a person to die? Is death an evil thing and what attitude should the living person have toward death? Is there any rational or philosophical reason to believe in immortality? Questions such as these will be explored using the views of a certain number of philosophers.

Antireq: PHIL 120J taken prior to Fall 2017

Offered at St. Jerome's University

PHIL 215 LEC 0.50

Course ID: 007266

Professional and Business Ethics

Study of ethical and moral issues that typically arise in professional and business activity. What responsibilities to society at large do people in such business and professional activities as teaching, engineering, planning, architecture, and accounting have? How far should professional autonomy extend?

(Cross-listed with ARBUS 202)

Also offered Online

PHIL 216 LEC 0.50

Course ID: 007267

Probability and Decision Making

This course covers a set of related topics in probability, inductive reasoning, game theory and decision theory which are of both theoretical and practical interest, having application to the philosophy of science, epistemology, political philosophy,

ethics, political science, and economics. The course begins with probability theory, introduces utility theory, and discusses approaches to the theory of decision making with attention to their epistemological, social, and ethical implications.

PHIL 218J LEC 0.50

Course ID: 007269

Foundations of Ethics

What is ethics and what is it based on? What does it mean for an action, a person, or a life to be morally good? Can philosophy provide any objective and universal answers to moral questions? The views of different philosophers will be discussed.

Offered at St. Jerome's University

PHIL 219J LEC 0.50

Course ID: 007270

Practical Ethics

An examination of contemporary ethical issues pertinent to our Western societies, such as abortion, euthanasia, the treatment of animals, the environment, and free expression.

Offered at St. Jerome's University

PHIL 220J LEC 0.50

Course ID: 015494

Philosophy of Friendship

Friendship is an essential part of a happy life. Ancient western philosophers made friendship one of the cornerstones of their ethics. This course is an exploration of their views on problems such as the necessity of friendship, its nature, its species, and its relationship to happiness and the political community.

Antireq: PHIL 403 taken Winter 2007, Fall 2009, Winter 2013, Winter 2017

(Cross-listed with CLAS 220)

Offered at St. Jerome's University

PHIL 221 LEC 0.50

Course ID: 007272

Ethics

An introduction to moral theories, including ones based on virtue, consequences, and rights and duties, with discussion of historical developments leading to those theories.

Also offered Online

PHIL 224 LEC 0.50

Course ID: 007274

Environmental Ethics

Philosophical perspectives on such issues as climate change, pollution, use of scarce resources, biodiversity, and our relations with animals and future generations. This course will also consider bioactivism and other approaches to environmental problems.

PHIL 226 LEC 0.50

Course ID: 007275

Biomedical Ethics

An examination of ethical issues in the health sciences, such as the patient-doctor relationship, reproductive rights and technologies, genetic testing, allocation of medical resources, and end of life decisions.

PHIL 227 LEC 0.50

Course ID: 012678

Culture and Ethics

This course surveys a variety of competing ethical positions that have been, and continue to be, adopted by different cultures around the world. Can two competing ethical viewpoints both be right? If not, then what grounds should we adopt to decide between them, and under what circumstances? How can we negotiate the difficulties that such differences pose for our practical judgment and moral theorizing? Students will engage these questions by reading texts in philosophical ethics and meta-ethics, and by applying what they have learned in case studies of ethical differences among cultures.

(Cross-listed with INDEV 300)

PHIL 230J LEC 0.50

Course ID: 007277

God and Philosophy

What is God? Does God exist? Can philosophy prove God or is agnosticism or atheism more reasonable? Is God compatible with evil and suffering or with a modern scientific worldview? Such questions will be explored from a variety of perspectives.

Offered at St. Jerome's University

PHIL 237 LEC 0.50

Course ID: 007281

Introduction to the Philosophy of Religion

A critical discussion of basic religious concepts. Among the topics covered will be faith, miracles, religious experience, immortality, arguments for the existence of God, and challenges to religious belief.

[Note: This course fulfils an Area 3A requirement for Religious Studies majors.]

(Cross-listed with RS 261)

PHIL 240 LEC 0.50

Course ID: 007285

Introduction to Formal Logic

An examination of classical propositional logic, covering proof methods, expressive completeness, soundness, and completeness. Also introduction to quantificational logic.

Prereq: Not open to students in the Faculty of Mathematics.

Antireq: PHIL 140

Also offered Online

PHIL 245 LEC 0.50

Course ID: 013567

Critical Thinking About Science

How does science work? Does anything fall outside the scope of scientific inquiry? Under what circumstances do scientific claims deserve our trust? Does corporate funding of research affect its credibility? What can scientific failures teach us about scientific success? By looking at case studies of recognized scientific successes and failures, this course addresses these questions in a way that emphasizes core philosophical concepts in epistemology, philosophy of science, and ethics.

PHIL 251 LEC 0.50

Course ID: 015087

Metaphysics and Epistemology

This course introduces philosophical theories about the nature of reality (metaphysics), how we gain knowledge of it (epistemology), and of why such questions matter. Topics may include skepticism, the nature of rationality, knowledge of other minds, realism and anti-realism, and free will and determinism.

Also offered Online

PHIL 252 LEC 0.50

Course ID: 015388

Quantum Mechanics for Everyone

Quantum mechanics is driving a technological revolution. This course offers an introduction to the basic concepts of quantum mechanics from a historical and philosophical perspective. The course will supply the background needed to understand the controversies surrounding the interpretation of quantum mechanics as well as the principles behind the cutting-edge research being carried out at the Perimeter Institute and the University of Waterloo.

Antireq: PHIL 271 taken Winter 2016, Winter 2017

PHIL 255 LEC 0.50

Course ID: 007292

Philosophy of Mind

This course will discuss fundamental questions concerning the nature of mind, including the relation between mind and body, the plausibility of commonsense views of the mind, and knowledge of other minds.

PHIL 256 LEC 0.50

Course ID: 007293

Introduction to Cognitive Science

Cognitive science is the interdisciplinary study of mind and intelligence. This course will draw on philosophy, psychology, artificial intelligence, linguistics, neuroscience, and anthropology to address central questions about the nature of thinking. Topics discussed will include mental representation, computational models of mind, and consciousness.

(Cross-listed with PSYCH 256)

Also offered Online

PHIL 257 LEC 0.50

Course ID: 007320

Philosophy of Mathematics

An introduction to philosophical problems concerning mathematics. Topics may include: what makes mathematical statements true (e.g. do numbers exist?); whether mathematics is a human creation of something we discover; what counts as a proof; mathematical paradoxes; the relationship between mathematics and other sciences; and mathematical pluralism.

[Note: Formerly PHIL 359.]

Antireq: PHIL 359

PHIL 258 LEC 0.50

Course ID: 008523

Introduction to the Philosophy of Science

This course considers fundamental questions concerning the nature of science. Consideration is given to such topics as scientific methodology, scientific revolutions, natural laws, and the debate about whether scientific theories represent reality, or just our perceptions of reality.

(Cross-listed with SCI 267)

PHIL 259 LEC 0.50

Course ID: 011904

Philosophy of Technology

What is technology? What is its relationship with modern science? Is technology a means or an end? Does the development of technology require a change in the way we conceive human nature and its place within the natural world? What new moral and metaphysical dilemmas does technology raise?

PHIL 265 LEC 0.50

Course ID: 007297

The Existentialist Experience

An introduction to existentialism using both literary and philosophical texts.

Also offered Online

PHIL 271 LEC 0.50

Course ID: 013568

Special Topics

Special topics, as announced by the department.

PHIL 283 LEC 0.50

Course ID: 007248

Great Works: Ancient and Medieval

A historical survey of ancient and medieval philosophy in the Western tradition.

Antireq: PHIL 250A

(Cross-listed with CLAS 261)

Also offered Online

PHIL 284 LEC 0.50

Course ID: 007249

Great Works: Modern

A historical survey of modern philosophy in the Western tradition.

[Note: Formerly PHIL 250B.]

Antireq: PHIL 250B

PHIL 285J LEC 0.50

Course ID: 015495

Great Christian Thinkers

An introduction to and examination of the thought of one important figure of Christian philosophy, such as Augustine, Thomas Aquinas, or Kierkegaard. The choice of the philosopher studied varies from term to term.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Offered at St. Jerome's University

PHIL 286J LEC 0.50

Course ID: 015496

Great German Thinkers

An introduction to and examination of the thought of one important figure (such as Leibniz, Kant, Nietzsche, or Heidegger) or school (such as Idealism, Romanticism, or phenomenology) of German philosophy. The choice of the philosopher(s) studied varies from term to term.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

(Cross-listed with GER 286)

Offered at St. Jerome's University

PHIL 290 LEC 0.50

Course ID: 012693

Nature of Scientific Knowledge

This course examines how knowledge is produced in scientific disciplines, including the nature of inquiry, as well as types of evidence and expertise across different fields. The course features significant input from scientific practitioners in the form of guest lectures.

(Cross-listed with INTEG 220)

PHIL 291 LEC 0.50

Course ID: 012694

The Social Nature of Knowledge

This course examines social aspects of knowledge, including ways that characteristics of individual knowers and their communities affect the acquisition, interpretation, production, and transfer of knowledge. In addition, we analyze the consequences this has for the objectivity of knowledge. The course features significant input from researchers in the humanities and social sciences in the form of guest lectures.

(Cross-listed with INTEG 221)

PHIL 300s**PHIL 302 LEC 0.50**

Course ID: 015384

Topics in Feminist Philosophy

Special topics in feminist philosophy, as announced by the department. Possible topics include (but are not limited to) bodily autonomy, reproductive justice, intersectionality, feminist epistemology, and the metaphysics of race and/or gender.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Prereq: Level at least 2A

PHIL 305J LEC 0.50

Course ID: 007256

Philosophy of Nature

A philosophical study of the most fundamental and common aspects of the natural world. After examining how such a study differs from and complements modern science, topics such as nature, matter, change, cause, time, and chance will be explored.

Prereq: Level at least 2A

Offered at St. Jerome's University

PHIL 306J LEC 0.50

Course ID: 007257

Philosophy of Science

A philosophical study of the approaches to the material world used by contemporary physical science. The nature and the value of the experimental method in the writings of scientists past and present will be examined.

Prereq: Level at least 2A

Offered at St. Jerome's University

PHIL 315 LEC 0.50

Course ID: 005811

Ethics and The Engineering Profession

An analysis from the standpoint of philosophical ethics of moral issues arising in professional engineering practice. Issues include the social responsibility of engineers, conflict of interest and obligation, morally acceptable levels of risk, and moral implications of technology.

Prereq: Level at least 2A

(Cross-listed with GENE 412)

PHIL 318J LEC 0.50

Course ID: 007308

Philosophy and the Family

A philosophical examination of the family: its foundation, its purpose, its importance in personal growth and its relation to political community.

Prereq: Level at least 2A

Offered at St. Jerome's University

PHIL 319J LEC 0.50

Course ID: 007309

Ethics of End-of-Life Care

What options does a person reaching the end of life have and how can they best be cared for? How can we balance patient autonomy with the expertise of the health-care provider and the demands of the health-care system? This course will help students think philosophically and critically about issues like these in their cultural, historical, and legal context. Specific topics may include consent, human dignity, euthanasia, refusal or withdrawal of treatment, palliative care and holistic patient care, pluralism and diverse understandings of dying, and treatment of the elderly.

Offered at St. Jerome's University

PHIL 320 LEC 0.50

Course ID: 015385

Topics in Value Theory

Special topics in value theory, as announced by the department. Possible topics include (but are not limited to) meta-ethics, moral psychology, moral responsibility, justice and oppression, international justice, and specific topics in applied ethics.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Prereq: PHIL 221

PHIL 324 LEC 0.50

Course ID: 010346

Social and Political Philosophy

An examination of central issues in social and political philosophy. This course draws on both contemporary and historical readings to discuss issues such as: Does the state have legitimate authority to govern? What is the just way to distribute resources? What is the value of equality? Of liberty? What rights, if any, do we have, and why?

Prereq: Level at least 2A

Also offered Online

PHIL 326J LEC 0.50

Course ID: 007336

Philosophy of Social Justice

What is justice and more particularly what makes a society just? In the philosophical treatment of this problem, notions such as the purpose of community living, private and common goods, individual freedom, and social responsibility will be explored.

Offered at St. Jerome's University

PHIL 327 LEC 0.50

Course ID: 007311

Philosophy of Law

Basic themes in the philosophy of law. Issues include the nature of law and its relation to morality and politics, legal reasoning, the justification of punishment, and theories of rights, responsibility and liability.

Prereq: Level at least 2A

(Cross-listed with LS 351)

PHIL 328 LEC 0.50

Course ID: 011185

Human Rights

What are human rights? Which do we have, and why? What are the practical implications of human rights, for both individuals and institutions? A comprehensive discussion of theory and history, of law and morality, and of national and international applications.

Prereq: Level at least 2A

(Cross-listed with LS 352)

PHIL 329 LEC 0.50

Course ID: 009925

Violence, Non-violence, and War

An exploration of the traditional debates concerning the legitimacy of violence and war as instruments in the pursuit of personal and political goals. The course critically examines a continuum of views from religious doctrines of non-resistance, to various forms of pacifism and non-violent resistance, "just-war theory", and political realism. The strategic arguments for political non-violent action are also considered.

Prereq: Level at least 2A

(Cross-listed with PACS 316)

PHIL 331 LEC 0.50

Course ID: 007315

Philosophy of Art

What is art? What is beauty? What do the two have to do with each other? This course introduces students to some fundamental issues in the philosophy of art, and to a variety of philosophical views on these issues.

Prereq: Level at least 2A

(Cross-listed with FINE 338)

PHIL 340 LEC 0.50

Course ID: 015386

Topics in Formal Philosophy

Special topics in formal philosophy, as announced by the department. Potential topics may include (but are not limited to) non-standard logics, intermediate classical logic, game and decision theory, philosophy of mathematics, and formal epistemology.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Prereq: Level at least 2A

PHIL 350 LEC 0.50

Course ID: 007317

Topics in Epistemology

Special topics in epistemology, as announced by the department. Potential topics include (but are not limited to) the epistemology of testimony, the epistemology of disagreement, normative social cognition, and the varieties and functions of ignorance.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Prereq: One of PHIL 250B, 251, 255, 284

PHIL 355 LEC 0.50

Course ID: 009527

Topics in Metaphysics

Special topics in metaphysics, as announced by the department. Potential topics include (but are not limited to) universals and particulars, the mind-body problem, realism and anti-realism, and the nature of time.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Prereq: One of PHIL 250A, 250B, 251, 283, 284

PHIL 356 LEC 0.50

Course ID: 014722

Intelligence in Machines, Humans, and Other Animals

A comparison of the representations and processes that produce intelligent performance, such as problem-solving, learning, and language in natural and artificial systems.

Prereq: PHIL/PSYCH 256

(Cross-listed with COGSCI 300)

PHIL 358 LEC 0.50

Course ID: 015387

Topics in Philosophy of Science

Special topics in the philosophy of science, as announced by the department. Possible topics include (but are not limited to) philosophy of physics, philosophy of biology, the philosophy of social science, topics in the history and philosophy of science, general philosophy of science, and science in society.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Prereq: Level at least 2A

PHIL 363 LEC 0.50

Course ID: 009528

Philosophy of Language

Topics in the philosophy of language such as meaning, truth, reference, speech acts, mental representations of syntax and semantics, psycholinguistics, and relations between logical and natural languages.

Prereq: 0.50 units in PHIL

PHIL 371 LEC 0.50

Course ID: 013569

Special Topics

Special topics, as announced by the department.

Prereq: Level at least 2A

PHIL 380 LEC 0.50

Course ID: 007324

History of Ancient Philosophy

In this course, students will examine one or more important figures, periods, or issues in ancient philosophy. Plato and Aristotle are among the philosophers who may be covered.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Prereq: 0.50 units in PHIL

(Cross-listed with CLAS 361)

Also offered Online

PHIL 382 LEC 0.50

Course ID: 007326

Medieval Philosophy

In this course students will examine one or more important figures, periods, or issues in medieval philosophy. Augustine, Boethius, Avicenna, Maimonides, Aquinas, and Scotus are among the philosophers who may be covered.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Prereq: 0.50 unit in PHIL

PHIL 384 LEC 0.50

Course ID: 007328

History of Modern Philosophy

In this course, students will learn about one or more important figures, periods, or issues in modern philosophy. Descartes, Locke, Leibniz, Berkeley, Hume, and Kant are among the figures who may be covered.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Prereq: 0.50 unit in PHIL

Also offered Online

PHIL 386 LEC 0.50

Course ID: 007330

19th- and 20th-Century Philosophy

A course on one or more important figures or issues in 19th- or 20th-century philosophy, as announced by the department. The focus of the course may change each time it is offered. Potential figures include (but are not limited to) Hegel, Marx, Nietzsche, James, Dewey, Peirce, Frege, Carnap, and Russell.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Prereq: 0.50 units in PHIL

PHIL 400s**PHIL 402 SEM 0.50**

Course ID: 007335

Studies in Feminist Philosophy/Philosophy of Sex

Special topics in feminist philosophy, women philosophers and/or the philosophy of sex, as announced by the Department of Philosophy.

Prereq: Level at least 3A Honours Philosophy students

(Cross-listed with WS 422)

PHIL 403 SEM 0.50

Course ID: 011189

Studies in Ancient Philosophy

Special topics in ancient philosophy, as announced by the department.

Prereq: Level at least 3A Honours Philosophy students

(Cross-listed with CLAS 461)

PHIL 404 SEM 0.50

Course ID: 011190

Studies in Medieval Philosophy

Special topics in medieval philosophy, as announced by the department.

Prereq: Level at least 3A Honours Philosophy students

PHIL 405 SEM 0.50

Course ID: 011191

Studies in Modern Philosophy

Special topics in 17th and 18th century philosophy, as announced by the department.

Prereq: Level at least 3A Honours Philosophy students

PHIL 407 SEM 0.50

Course ID: 011193

Studies in 19th- and 20th-Century Philosophy

Special topics in 19th- and 20th-century philosophy, as announced by the department.

Prereq: Level at least 3A Honours Philosophy students

PHIL 416 SEM 0.50

Course ID: 013574

Studies in Probability and Decision Theory

Special topics in probability and decision theory, as announced by the department.

Prereq: Level at least 3A Honours Philosophy students

PHIL 420 SEM 0.50

Course ID: 007337

Studies in Ethics

Special topics in ethics, as announced by the department.

Prereq: Level at least 3A Honours Philosophy students

PHIL 422 SEM 0.50

Course ID: 007339

Studies in Political Philosophy

Special topics in Political Philosophy, as announced by the department.

Prereq: Level at least 3A Honours Philosophy students

PHIL 441 SEM 0.50

Course ID: 007345

Studies in Logic

Special topics in logic, as announced by the department.

Prereq: One of PHIL 240, 341, 342, 440A, 440B, PMATH 330

PHIL 447 SEM 0.50

Course ID: 012715

Seminar in Cognitive Science

An interdisciplinary discussion of central issues concerned with mind and intelligence, such as representation, meaning, inference and consciousness.

Prereq: PHIL/PSYCH 256

(Cross-listed with PSYCH 447)

PHIL 450J LEC 0.50

Course ID: 007348

Being and Existence

A discussion of metaphysics as the kind of examination initiated by the Greeks (e.g., Parmenides and Aristotle) and renewed subsequently by many other philosophers (e.g., Aquinas and Heidegger), understood as ontology or the rational study of being as such. Notions such as reality, essence, existence, and analogy will be discussed.

Prereq: Level at least 3A

Offered at St. Jerome's University

PHIL 451J LEC 0.50

Course ID: 007349

Thomas Aquinas

An in-depth study of a particular theme in Thomas Aquinas. Specific topic to vary.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Prereq: 0.5 units in PHIL; Level at least 3A

Offered at St. Jerome's University

PHIL 452 SEM 0.50

Course ID: 013582

Studies in Epistemology

Special topics in epistemology, as announced by the department.

Prereq: Level at least 3A Honours Philosophy students

PHIL 455 SEM 0.50

Course ID: 007350

Studies in Metaphysics

Special topics in metaphysics, as announced by the department.

Prereq: Level at least 3A Honours Philosophy students

PHIL 458 SEM 0.50

Course ID: 013576

Studies in the Philosophy of Science

Special topics in the philosophy of science, as announced by the department.

Prereq: Level at least 3A Honours Philosophy students

PHIL 459 SEM 0.50

Course ID: 013577

Studies in the Philosophy of Physics

An investigation of philosophical issues raised by physics. Topics could include the interpretation of quantum theory, the arrow of time, or the nature of space and time. This course is suitable for students with a background in either philosophy, physics, or mathematics.

Prereq: Level at least 3A Honours Philosophy students

PHIL 463 SEM 0.50

Course ID: 013578

Studies in the Philosophy of Language

Special topics in the philosophy of language, as announced by the department.

Prereq: Level at least 3A Honours Philosophy students

PHIL 471 SEM 0.50

Course ID: 007355

Special Topics

Advanced study of special topics, as announced by the department.

Prereq: Level at least 3A Honours Philosophy students

PHIL 472 SEM 0.50

Course ID: 007356

Special Topics

Advanced study of special topics, as announced by the department.

Prereq: Level at least 3A Honours Philosophy students

PHIL 481 SEM 0.50

Course ID: 007365

Special Topics

Advance study of special topics, as announced by the department.

Prereq: Level at least 3A Honours Philosophy students

PHIL 482 SEM 0.50

Course ID: 007366

Special Topics

Advanced study of special topics, as announced by the department.

Prereq: Level at least 3A Honours Philosophy students

PHIL 498 RDG 0.50

Course ID: 010026

Directed Reading in Special Areas

Readings in selected topics chosen in discussion with instructor.

Department Consent Required

PHYSICS**PHYS 00s****PHYS 10 SEM 0.00**

Course ID: 009328

Physics Seminar

This seminar brings together Physics students in all years to hear invited speakers, view physics-related films, and learn about current research. [Offered: F,W]

PHYS 100s**PHYS 111 LEC,TST,TUT 0.50**

Course ID: 007388

Physics 1

An introduction to physics for students intending to concentrate their further studies in biology, dentistry, medicine and paramedicine; includes particle kinematics and dynamics, energy and momentum conservation, and rotational mechanics.

[Note: Science students must also take PHYS 111L. Offered: F, W; also offered online: W]

Antireq: PHYS 115, 121

Also offered Online

PHYS 111L LAB 0.25

Course ID: 007389

Physics 1 Laboratory

For students who have taken or are taking PHYS 111.

[Note: Lab alternate weeks. Offered: F]

Antireq: PHYS 121L or 131L

PHYS 112 LEC,TST,TUT 0.50

Course ID: 007390

Physics 2

A continuation of PHYS 111; includes simple harmonic motion, electrostatic force and potential, electric current and power, DC circuits, magnetic field and induction, wave motion, sound and optics.

[Note: Science students must also take PHYS 112L. Offered: W,S; also offered online: S]

Prereq: PHYS 111 or 121;

Antireq: PHYS 122, 125

Also offered Online

PHYS 112L LAB 0.25

Course ID: 007391

Physics 2 Laboratory

For students who have taken or are taking PHYS 112.

[Note: Lab alternate weeks. Offered: W,S]

Antireq: PHYS 122L or 132L

PHYS 115 LEC,TST,TUT 0.50

Course ID: 007392

Mechanics

Brief review of kinematics. Particle dynamics, work, energy, conservation of energy. Conservation of linear momentum, collisions, rotational kinematics and dynamics, conservation of angular momentum. Equilibrium of rigid bodies. [Offered: F]

Antireq: PHYS 111, 121; First year Engineering students only

PHYS 121 LEC,TST,TUT 0.50

Course ID: 007393

Mechanics

An introductory course in physics for students intending to concentrate their future studies in the physical sciences, optometry or mathematics; includes particle kinematics and dynamics, forces in nature, work and energy, conservation of energy and linear momentum, rotational kinematics and dynamics, and conservation of angular momentum.

[Note: Successful completion of 4 U Calculus and Vectors, 4U Advanced Functions and 4U Physics is required. Science students must also take PHYS 121L (or PHYS 131L if they intend to follow any Physics or Mathematical Physics Plan). Students in Honours Life Physics, Biophysics Specialization, are encouraged to take PHYS 111L. Offered: F, also offered online: W]

Coreq: One of MATH 104, 127, 137, 147.

Antireq: PHYS 111, 115, ECE 105

Also offered Online

PHYS 121L LAB 0.25

Course ID: 007394

Mechanics Laboratory

For students who have taken or are taking PHYS 121. Students intending to follow a Physics or Mathematical Physics plan must take PHYS 131L.

[Note: Lab alternate weeks. Offered: F]

Antireq: PHYS 111L or 131L

PHYS 122 LEC,TST,TUT 0.50

Course ID: 013651

Waves, Electricity and Magnetism

A continuation of PHYS 121; includes simple harmonic motion, wave motion and sound, electrostatic force and potential, electric current and power, capacitors, DC circuits, magnetic field and induction.

[Note: Science students must also take PHYS 122L (or PHYS 132L if they intend to follow any Physics or Mathematical Physics Plan). Offered: W,S; also offered online: S]

Prereq: PHYS 111 (minimum grade 70%) or PHYS 115 or 121 or ECE 105.

Coreq: One of MATH 127, 137, 147.

Antireq: PHYS 112, 125

Also offered Online

PHYS 122L LAB 0.25

Course ID: 007396

Waves, Electricity and Magnetism Laboratory

For students who have taken or are taking PHYS 122. Students intending to follow a Physics or Mathematical Physics plan must take PHYS 132L.

[Note: Lab alternate weeks. Offered: W]

Coreq: PHYS 122.

Antireq: PHYS 112L or 132L

PHYS 124 LEC,TST,TUT 0.50

Course ID: 013640

Modern Physics

An introductory course in modern physics; includes relativity, quantum physics, atomic physics, nuclear physics, particle physics and gravitation. [Offered: W]

Prereq: PHYS 111 (minimum grade 70%) or 115 or 121 or ECE 105.

Coreq: PHYS 112 or 122

PHYS 125 LEC,TST,TUT 0.50

Course ID: 007398

Physics for Engineers

Oscillations; simple harmonic motion. Wave motion, travelling and standing waves; transverse and longitudinal waves, including sound. Geometrical optics; reflection and refraction. Physical optics; interference and diffraction. Quantum physics; quantization of radiation; hydrogen atom. [Offered: W,S]

Prereq: PHYS 115; Engineering students only.

Antireq: PHYS 112, PHYS 122

PHYS 131L LAB 0.25

Course ID: 010359

Mechanics Laboratory

For students who have taken or are taking PHYS 121 and who intend to follow a Physics or Mathematical Physics plan; all other students who have taken or are taking PHYS 121 should select PHYS 121L.

[Note: Lab alternate weeks. Offered: F]

Antireq: PHYS 111L or 121L

PHYS 132L LAB 0.50

Course ID: 010360

Waves, Electricity, Magnetism and Measurement Laboratory

For students who have taken or are taking PHYS 122 and who intend to follow a Physics or Mathematical Physics plan; all other students who have taken or are taking PHYS 122 should select PHYS 122L.

[Note: Lab each week. Offered: W]

Antireq: PHYS 112L or 122L

PHYS 175 LEC 0.50

Course ID: 013959

Introduction to the Universe

A survey course in astrophysics intended for Physics and Astronomy students. Astrophysical processes, the sky, the Sun, stars, black holes, the Milky Way and other galaxies, Big Bang cosmology.

[Note: students in any Physics and Astronomy or Astrophysics specialization programs must also take PHYS 175L; Offered: W]

Prereq: One of PHYS 111,115,121; one of MATH 116, 117, 127, 137,147.

Antireq: SCI 237, 238

PHYS 175L LAB 0.25

Course ID: 013960

Introduction to the Universe Laboratory

For students who are taking PHYS 175. [Offered: W]

PHYS 200s**PHYS 224 LEC,TUT 0.50**

Course ID: 013965

Electricity and Magnetism for Life and Medical Physics

Coulomb's law, electric field, Gauss' law, potential, current, resistance, electromotive force, D.C. circuits, magnetic fields, induced electromotive forces; applications include cell membrane potentials, action potentials, role of charge in structure and function of DNA, basis for the magneto-encephalogram and biomedical instrumentations. [Offered: F]

Prereq: PHYS 112 or 122; one of MATH 118, 119, 128, 138, 148.

Antireq: PHYS 222, 223, 241, 242, 252, 253

PHYS 224L LAB 0.25

Course ID: 013966

Electricity and Magnetism Laboratory

For students who have taken or are taking PHYS 224; only for Honours Life Physics students taking the Medical Physics Specialization.

[Note: Lab alternate weeks. Offered: F]

Coreq: PHYS 224.

Antireq: PHYS 241L, 242L, 252L, 253L, 260A

PHYS 225 LEC,TUT 0.50

Course ID: 013968

Modeling Life Physics

Introduction to modeling living systems and their components. Statistical methods in data analysis, curve fitting, including p values. Fourier series and transforms, structural analysis, including nearest neighbor distributions in biomedical applications. Introduction to methods for analysis of transport properties in biological systems. Use of computers in these areas. [Offered: F]

Prereq: PHYS 112 or 122; One of MATH 116, 117, 127, 137, 147.

Coreq: One of MATH 118, 119, 128, 138, 148

PHYS 232L LAB 0.25

Course ID: 010361

Measurement Laboratory

A laboratory that teaches programming (e.g. LabVIEW) for the computer interfacing of physics experiments and automatic data collection.

[Note: Lab alternate weeks. Offered: Fall].

Prereq: PHYS 132L and restricted to students in Physics, Chemical Physics, Science and Business (Physics Option), Materials and Nanosciences

PHYS 233 LEC,TUT 0.50

Course ID: 013969

Introduction to Quantum Mechanics

Introduction to quantization, wave-particle duality and the uncertainty principle The Schroedinger equation and solvable examples. Topics will include stationary states of particle-in-a-box, harmonic oscillator and the hydrogen atom. Quantization of angular momentum and spin. Introduction to approximation methods including time-independent perturbation theory. Modern applications of quantum mechanics. [Offered: W]

Prereq: One of PHYS 111, 115, 121, ECE 105; One of PHYS 112, 125, 122, ECE 106; One of MATH 118 or 119, 128, 138, 148.

Coreq: One of MATH 212, 228, AMATH 250, 251.

Antireq: CHEM 256/356, NE 232, PHYS 234, ECE 405

PHYS 234 LEC,TUT 0.50

Course ID: 007407

Quantum Physics 1

Background of quantum physics. Introduction to formalism of quantum physics. Introduction to operators. Quantization, waves and particles. The uncertainty principle. The Schroedinger equation for one-dimensional problems: bound states in square wells. Harmonic oscillator; transmission through barriers.

[Note: PHYS 236 or knowledge of computational methods recommended. Offered: W, S]

Prereq: PHYS 112 or 122; MATH 114 or 136; MATH 128 or 138 or 148;

Coreq: One of MATH 228, AMATH 250, AMATH 251.

Antireq: CHEM 256/356, NE 232, PHYS 233, ECE 405

PHYS 236 LEC,TUT 0.50

Course ID: 013642

Computational Physics 1

Introduction to scientific computer programming techniques as applied to problem solving in physics, with examples from first year mechanics. Procedural programs, control structures, functions, and data storage. Numerical differentiation, integration, and solution of linear equation systems. Data analysis and visualization. [Offered: F]

Prereq: PHYS 111 or 121; Not open to students in Mathematics.

Antireq: GENE 121, NE 113, SYDE 121

PHYS 239 LEC,TUT 0.50

Course ID: 007408

Computational Physics 2

Object-oriented programming applied to physical problems in astrophysics, electromagnetism, classical and quantum mechanics. Solution methods for differential equations and Monte Carlo techniques. [Offered: W,S]

Prereq: One of PHYS 139, 236, CS 115, 121, 122, 123, 125, 131, 132, 133, 135, 145, CHE 121, CIVE 121, ECE 150, GENE 121, NE 113, SYDE 121; Not open to students in the Faculty of Mathematics

PHYS 242 LEC,TUT 0.50

Course ID: 013643

Electricity and Magnetism 1

Coulomb's law, electric fields, Gauss' law, potential, capacitance, properties of dielectrics, DC circuits, AC circuits.

[Note: Students with PHYS 122 prior to Winter 2012 need to include PHYS 191 as a prerequisite. Offered: W,S]

Prereq: One of PHYS 112,122 (taken Fall2011 or later), PHYS191; One of MATH128,138,148; (MATH227 or co-requisite: AMATH 231).

Coreq: PHYS242L for science students except Mathematical Physics & Materials and Nanosciences plan.

Antireq: PHYS 222,223,241,252

PHYS 242L LAB 0.25

Course ID: 007418

Electricity and Magnetism Laboratory

For students who have taken or are taking PHYS 242.

[Note: Lab alternate weeks. [Offered: W,S]

Antireq: PHYS 224L, 241L, 252L, 253L, 260A

PHYS 256 LEC,TUT 0.50

Course ID: 007422

Geometrical and Physical Optics

Electromagnetic waves and the nature of light. Geometrical optics, aberrations. Physical Optics: interference, Fraunhofer and Fresnel diffraction, polarization. Optical instruments. [Offered: F]

Prereq: PHYS 112 or 122; One of MATH 108, 128, 138, 148.

Coreq: PHYS 256L for Science students except for Mathematical Physics Plan.

Antireq: PHYS 226, 246, ECE 404

PHYS 256L LAB 0.25

Course ID: 007423

Optics Laboratory

For students who have taken or are taking PHYS 256.

[Note: Lab alternate weeks. Offered: F]

Antireq: PHYS 260B

PHYS 260L LAB,LEC 0.25

Course ID: 013118

Intermediate Physics Laboratory

Experiments in selected physics topics.

[Note: Lab alternate weeks. Approximately a week before a particular lab is held a one hour lecture will be given on the material to be covered in the lab. Offered W,S]

Antireq: PHYS 260C

PHYS 263 LEC 0.50

Course ID: 003320

Classical Mechanics and Special Relativity

Newtonian dynamics of particles and systems of particles. Oscillations. Gravity and the central force problem. Lorentz transformations and relativistic dynamics. [Offered: W,S]

Prereq: One of PHYS 111, 121; One of PHYS 112, 122; One of MATH 108, 128, 138, 148; One of MATH 228, AMATH 250, 251;

Antireq: AMATH 261, 271

PHYS 270 LEC 0.50

Course ID: 013961

Astronomical Observations, Instrumentation and Data Analysis

Telescopes, instrumentation and observations at different wavelengths (radio, sub-millimetre, infrared, optical, X-ray). Probability and statistics. Data archives and data analysis. [Offered: W,S]

Prereq: PHYS 256/ECE 404.

Coreq: PHYS 270L

PHYS 270L LAB 0.25

Course ID: 013963

Astronomical Observations, Instrumentation and Data Analysis Laboratory

For students who are taking PHYS 270. [Offered: W,S]

PHYS 275 LEC 0.50

Course ID: 007428

Planets

Terrestrial and gas giant planets in the Solar System, asteroids and comets. Extrasolar planets and astrobiology. Star and planet formation. [Offered: F]

Prereq: PHYS 111 or 115 or 121 or ECE 105

PHYS 280 LEC 0.50

Course ID: 012773

Introduction to Biophysics

Introduction to a physical understanding of biological systems at macro and molecular scales. The course is intended for 2nd year science and engineering students and will cover a broad spectrum of topics in biophysics, as well as an introduction to neurobiology, nanotechnology and biotechnology. [Offered: W,S]

Prereq: Level at least 2A Honours Science or Engineering plans
(Cross-listed with BIOL 280)

PHYS 300s**PHYS 334 LEC 0.50**

Course ID: 007434

Quantum Physics 2

Formalism of quantum mechanics. Operator approach to the harmonic oscillator. Quantum mechanics in three dimensions: Hydrogen atom, angular momentum and spin. Time-independent perturbation theory. Fine structure of hydrogen. Zeeman effect. Identical particles. The variational principle. Ground state of the helium atom. Applications in atomic and molecular physics. [Offered: W]

Prereq: PHYS 234 or CHEM 256/356; One of MATH 228, AMATH 250, 251; MATH 227 or 237 or 247.

Antireq: AMATH 373

PHYS 335 LEC 0.50

Course ID: 012032

Condensed Matter Physics

Overview of condensed matter ordered and disordered systems. Thermodynamic origin of order and phase transitions. Waves. Properties of the solid state. Crystals and fractals. Overview of Fourier Series. Reciprocal lattice. Diffraction. Classical elastic theory of the crystalline state. Electrons in a periodic potential, Band structure and Fermi surface. [Offered: W]

Prereq: PHYS 234 or CHEM 356/256; Level at least 3A Engineering, Mathematics or Science students

PHYS 342 LEC 0.50

Course ID: 013644

Electricity and Magnetism 2

Magnetic fields, Ampere's law, induced electromotive forces, magnetic devices, magnetic properties of materials, inductance, introduction to Maxwell's equations and electromagnetic waves.

[Note: PHYS 236 or knowledge of computational methods recommended. Offered: F, S]

Prereq: PHYS 242 or 252; One of MATH 228, AMATH 250, AMATH 251.

Antireq: PHYS 253

PHYS 358 LEC,TUT 0.50

Course ID: 007444

Thermal Physics

Temperature and thermodynamic equilibrium. Work, internal energy and heat; first law, with examples. Kinetic theory of gases. Basic probability theory. Microscopic states and entropy. Absolute temperature, reversibility and the second law. Thermodynamic Functions and Maxwell's relations. Phase transitions. Third Law. Other applications of thermodynamics. [Formerly PHYS 258. Offered: F, S]

Prereq: PHYS 112 or 122; MATH 227 or 237 or 247; One of MATH 228, AMATH 250, AMATH 251.

Antireq: CHEM 254, ECE 403

PHYS 359 LEC 0.50

Course ID: 007445

Statistical Mechanics

Fundamental postulate of statistical thermodynamics. Entropy. Microcanonical, canonical and grand canonical ensembles. Fermi-Dirac, Bose-Einstein and Boltzmann Statistics. Maxwell-Boltzmann velocity distribution. Applications to specific heat of solids, classical and quantum gases, electrons in metals, Planck's law of radiation, and Bose-Einstein condensation. [Offered: W]

Prereq: (PHYS 258/358/ECE 403 or CHEM 254 or ME 250); (PHYS 233 or 234 or CHEM 356 or co-requisite: AMATH 373).

Antireq: (For Mathematics students only) AMATH 477

PHYS 360A LAB 0.25

Course ID: 007446

Modern Physics Laboratory 1

Selected experiments in mechanics, optics, electronics, atomic, molecular, nuclear and solid state physics.

[Note: There will be 18 hours of experiments. Three year-two physics labs will have to be completed before this lab course is undertaken. Offered: F,W,S]

PHYS 360B LAB 0.25

Course ID: 007447

Modern Physics Laboratory 2

Continuation of 360A.

[Note: 18 hours of experiments. Offered: F,W,S]

PHYS 363 LEC 0.50

Course ID: 007449

Intermediate Classical Mechanics

Non-inertial frames of reference. Calculus of variations. Lagrangian mechanics. Coupled oscillations and normal modes. Hamiltonian dynamics.

[Note: PHYS 236 or knowledge of computational methods recommended. Offered: F,S]

Prereq: One of PHYS 263, AMATH 261, 271 ; One of MATH 227, 237, 247; One of MATH 228, AMATH 250, AMATH 251

PHYS 364 LEC,TUT 0.50

Course ID: 007450

Mathematical Physics 1

Sturm-Liouville theory. Legendre, Bessel and other special functions. Fourier series and introduction to Fourier transforms. Separation of variables. Green's function. [Offered: F,S]

Prereq: MATH 227, MATH 228 or AMATH 250; Honours Physics, Chemical Physics, Physics and Astronomy, Life Physics and Materials and Nanosciences students only.

Antireq: AMATH 353

PHYS 365 LEC 0.50

Course ID: 007451

Mathematical Physics 2

Introduction to probability and statistics. Complex variables, Cauchy-Riemann conditions, Cauchy integral formula, Taylor and Laurent expansions, residue theorem, contour integrals and applications. Fourier and Laplace transforms with applications. [Offered: W]

Prereq: MATH 227, 228 or AMATH 250; Honours Physics, Chemical Physics, Physics and Astronomy, Life Physics and Materials and Nanosciences students only.

Antireq: AMATH 332

PHYS 370L LAB 0.25

Course ID: 013978

Astronomy Laboratory 1

Selected experiments in astronomy. [Offered: W]

Prereq: PHYS 270L

PHYS 375 LEC 0.50

Course ID: 007457

Stars

Stellar distances, masses, ages. Stellar interiors and atmospheres, star formation and evolution. Supernovae, white dwarfs, neutron stars, black holes. [Offered: W]

Prereq: PHYS 112 or 122 and two of PHYS 234, 241, 242, 256, 258/358, 263, 275, AMATH 271

PHYS 380 LEC 0.50

Course ID: 007458

Molecular and Cellular Biophysics

Cell structure and molecular composition; intermolecular interactions and hydration; protein structure and function; cytoskeletal filaments; DNA structure, packing and chromosomes; rate equations and biological dynamics (e.g., cytoskeletal polymerization); self-assembly; cell membranes; action potentials and biological electricity; molecular motors; cell motility. [Recommended PHYS 280/BIOL 280. Offered: F, S]

Prereq: PHYS 112 or 122; CHEM 123

PHYS 383 LEC 0.50

Course ID: 013970

Medical Physics

Applications of physics in medicine. The course will address basic concepts of medical imaging, nuclear medicine and radiation isotopes, radiation therapy and biomedical laser applications. Nuclear structure and binding energy. Nuclear decays, radioactivity and nuclear reactions. Interaction of radiation with matter. [Offered: W]

Prereq: PHYS 112 or 122; one of MATH 118, 119, 128, 138, 148; PHYS 280/BIOL 280

PHYS 391 LEC 0.50

Course ID: 007438

Electronics

p and n materials, pn diodes, junction and FET transistors. Transistor amplifiers and their equivalent circuits. Operational amplifiers. Oscillators and power supplies. Noise. [Formerly PHYS 352. Offered: W even years]

Prereq: One of PHYS 222, 224, 241, 242, 252.

Coreq: PHYS 391L

Also offered Online

PHYS 391L LAB 0.25

Course ID: 007439

Electronics Laboratory

For students who have taken or are taking PHYS 391.

[Note: Lab alternate weeks. Formerly PHYS 352L. Offered: W even years]

PHYS 392 LEC 0.50

Course ID: 007440

Scientific Measurement and Control

Logic gates, flip-flops and shift registers, analogue to digital and digital to analogue conversion, feedback control systems, noise and spectral analysis, RF electronics. [Formerly PHYS 353. Offered: W odd years]

Prereq: One of PHYS 222, 224, 241, 242, 252.

Coreq: PHYS 392L

PHYS 392L LAB 0.25

Course ID: 007441

Scientific Measurement and Control Laboratory

For students who have taken or are taking PHYS 392, [Formerly: PHYS 253L. Note: Lab alternate weeks. Offered: W odd years]

PHYS 393 LEC 0.50

Course ID: 013645

Physical Optics

Fourier Optics: diffraction, dispersion, coherence, imaging. Polarization: birefringence, Jones vectors, Mueller Matrices. Fresnel Equations: optics at an interface, thin films. [Offered: W even years]

Prereq: PHYS 256/ECE 404; PHYS 364 or AMATH 353

PHYS 394 LEC 0.50

Course ID: 013646

Light-Matter Interactions

Lasers: semi-classical interaction, properties, cavity, Gaussian beams. Radiation and Detectors. Introduction to nonlinear optics. [Offered: W odd years]

Prereq: PHYS 256/ECE 404; PHYS 364 or AMATH 353

PHYS 395 LEC 0.50

Course ID: 013659

Biophysics of Therapeutic Methods

The effect of radiation of various kinds on cells and tissues; elements of radiobiology and photobiology; molecular mechanisms of radiation-induced DNA damage and cell death, repair of radiation damage, dose-response relationships; tumor radiobiology and therapies, radiotherapy, photodynamic therapy, combination therapies; radiosensitizers and photosensitizers for cancer therapies; transdisciplinary advances in physical methods (ultrafast laser and ultrasound techniques) for biomedical applications.

[Note: PHYS 380 is recommended. Offered: W even years]

Prereq: One of PHYS 112, 122, 125, ECE 106, (NE 122 and one of PHYS 112, 122, ECE 106); One of BIOL 112, 130, 139/239, CHEM 123, PHARM 141, PHYS 280/BIOL 280, PHYS 380; Level at least 3A Science, Mathematics or Engineering students.

Antireq: PHYS 480

PHYS 396 LEC 0.50

Course ID: 011381

Biophysics of Imaging

Introduction to imaging concepts in biophysics with emphasis on the interrelationship between the physics principles of an imaging modality and the associated image reconstruction; methods for imaging at macroscopic to microscopic scales; computed tomography, magnetic resonance imaging, ultrasound, PET, optical imaging, optical and fluorescence microscopy, scanning probe microscopy (AFM, STM), optical tweezers, electron microscopy. [Formerly PHYS 482. Note: PHYS 380 is recommended. Level at least 3A in Science, Mathematics or Engineering. Offered: W odd years]

Prereq: 1 of PHYS 112, 122, 125, ECE 106, (NE 122, 1 of PHYS 112, 122, 125, ECE 126); 1 of MATH 128, 138, 148, (SYDE 111, 112); 1 of PHYS 233, 234, (1 of PHYS 224, 241, 242, 252), 256, 280, 380, ECE 209, 370, 375, NE 232, 241, SYDE 283, AMATH 231, 373, CS 473, CHEM 209, 356

PHYS 400s**PHYS 434 LEC,TUT 0.50**

Course ID: 007463

Quantum Physics 3

Symmetries and conservation laws. Review of time-independent perturbation theory (degenerate and non-degenerate. Rayleigh-Schrodinger, Brillouin-Wigner and canonical perturbation theory; effective Hamiltonian derivation). Time-dependent perturbation theory (1st and 2nd order, adiabatic perturbation, Aharonov-Bohm effect). Fermi's golden rule. Two-level systems. Emission and absorption of radiation (applications). Second quantization of electromagnetic field in free space; photons. Spontaneous emission and natural lifetime; Lamb shift. Elements of scattering theory. Introduction to the Dirac equation. [Offered: F]

Prereq: PHYS 334 or AMATH 373; PHYS 364 or AMATH 351; PHYS 365 or (AMATH 332 and 353)

PHYS 435 LEC,TUT 0.50

Course ID: 007464

Current Topics in Condensed Matter Physics

Physics pertaining to collective and emergent phenomena in condensed matter systems. Examples of topics to be covered include: magnetism, superconductivity, heavy Fermion systems, quantum hall effect, protein folding, membranes, DNA physics, polymer physics, Modern experimental and theoretical techniques. [Offered: W]

Prereq: PHYS 335, 359; PHYS 334 or AMATH 373

PHYS 437A PRJ 0.50

Course ID: 007465

Research Project

A research project in any area of Physics approved by the course co-ordinator(s). The student is required to present a summary of the project orally and to submit a written report in a style suitable for publication. Some projects, especially those with an experimental emphasis, will likely continue as 437B. In these cases, students will submit an interim written report, in addition to the oral presentation. [Offered: F,W]

Department Consent Required

Prereq: Honours Physics, Chemical Physics, Mathematical Physics, Physics and Astronomy, Materials and Nanosciences or Life Physics students only

PHYS 437B PRJ 0.50

Course ID: 007466

Research Project (continued)

A continuation of the project undertaken in PHYS 437A. The student is required to present a summary of the project orally or by poster and to submit a written report in a style suitable for publication. [Offered: W]

Instructor Consent Required

Prereq: PHYS 437A

PHYS 442 LEC 0.50

Course ID: 013647

Electricity and Magnetism 3

Review of the origin of Maxwell's equations, conservation laws, potential formulation of Maxwell's equations and gauge choices, vacuum solutions of Maxwell's equations (free space, waveguides, dispersion), solution to Maxwell's equations for arbitrary sources (static and time-dependent problems), relativistic formulation of electrodynamics, macroscopic Maxwell's equations and plane waves in macroscopic media. [Offered: F]

Prereq: PHYS 342; (PHYS 364 and 365) or (AMATH 332 and 351 and 353)

PHYS 444 LEC 0.50

Course ID: 007470

Introduction to Particle Physics

This course introduces students to the standard model of particle physics. Topics covered include symmetries, particle classification, experimental methods and tools, scattering, Feynman diagrams, gauge theories, quantum electrodynamics, quarks, quantum chromodynamics, weak interactions, and the Higgs mechanism. [Offered: W]

Prereq: (PHYS 334 or AMATH 373); PHYS 363; (PHYS 364 and 365) or (AMATH 332, 351, 353)

PHYS 454 LEC 0.50

Course ID: 003369

Quantum Theory 2

The Hilbert space of states, observables and time evolution. Feynman path integral and Greens functions. Approximation methods. Coordinate transformations, angular momentum and spin. The relation between symmetries and conservation laws. Density matrix, Ehrenfest theorem and decoherence. Multiparticle quantum mechanics. Bell inequality and basics of quantum computing. [Offered: F]

*Prereq: AMATH 373 or PHYS 334; Level at least 4A in Mathematics or Science
(Cross-listed with AMATH 473)*

PHYS 460A LAB 0.25

Course ID: 010364

Advanced Laboratory 1

Selected advanced experiments in mechanics, optics, electronics, atomic, molecular, nuclear and solid state physics.

[Note: 18 hours of experiments. Offered: F,W]

Prereq: PHYS 360A; Fourth Year Physics Majors only

PHYS 460B LAB 0.25

Course ID: 010365

Advanced Laboratory 2

A continuation of PHYS 460A.

[Note: 18 hours of experiments. Offered: W]

Prereq: PHYS 460A

PHYS 461 LEC 0.50

Course ID: 013648

Nanophysics

Fundamentals of nanotechnology. Applications of nanotechnology in biology and medicine. Nanotechnology and society. Physical foundations of nanodevices. Conduction at the nanoscale. Modern nanodevices. [Offered: F]

Prereq: PHYS 335 or ECE 231; Level at least 4A.

Antireq: NE 471

PHYS 467 LEC,TST 0.50

Course ID: 011497

Introduction to Quantum Information Processing

Basics of computational complexity; basics of quantum information; quantum phenomena; quantum circuits and universality; relationship between quantum and classical complexity classes; simple quantum algorithms; quantum Fourier transform; Shor factoring algorithm; Grover search algorithm; physical realization of quantum computation; error-correction and fault-tolerance; quantum key distribution. [Offered: W]

Prereq: One of MATH 114, 115, 235, 245; Level at least 4A

(Cross-listed with CO 481, CS 467)

PHYS 468 LEC,TUT 0.50

Course ID: 013649

Introduction to the Implementation of Quantum Information Processing

Photonic quantum computing, Superconducting qubits, NMR, Ion Trap quantum computing, Atomic quantum computing. [Offered: W]

Prereq: CO 481/CS 467/PHYS 467 or PHYS 334

PHYS 474 LEC 0.50

Course ID: 013964

Galaxies

Galaxy structure, formation and evolution. Dynamics and stellar populations; gas and dust; supermassive black holes; large-scale structure. [Offered: F]

Prereq: AMATH 261 or 271 or PHYS 263; PHYS 375; Level at least 4A Mathematics or Science

PHYS 475 LEC 0.50

Course ID: 007479

Cosmology

Robertson-Walker metric and Friedmann equations. Observational cosmology. Dark matter and dark energy. Gravitational lensing. Big Bang nucleosynthesis, the cosmic microwave background. Inflation. Structure formation.

[Note: PHYS 474 is recommended. Offered: F]

Prereq: One of AMATH 261, 271, PHYS 263; Level at least 4A in Mathematics or Science

PHYS 476 LEC 0.50

Course ID: 003371

Introduction to General Relativity

Tensor analysis. Curved space-time and the Einstein field equations. The Schwarzschild solution and applications. The Friedmann-Robertson-Walker cosmological models. [Offered: W]

Prereq: One of AMATH 261, 271, PHYS 263; AMATH 231 or MATH 227; Level at least 4A in Mathematics or Science (Cross-listed with AMATH 475)

PHYS 483 LEC 0.50

Course ID: 013971

Advanced Therapeutic Concepts in Oncology and Medical Physics

This course examines advanced oncology therapeutic concepts required as a foundation for patient management in the inpatient, ambulatory, and community settings. Topics include a comprehensive review of cancer epidemiology and pathophysiology, therapeutic agents used in the oncology setting, management of cancer therapy toxicities, and treatment and palliation of cancer symptoms. Physics methods in radiation therapy and the medical physicist's role in cancer treatment will be addressed. [Offered: W] [Held with PHARM 464]

Prereq: Level at least 4A Life Physics, Medical Physics Specialization

PHYS 490 LEC 0.50

Course ID: 010227

Special topics in Physics

A lecture course offered in a particular branch of physics, subject to availability of instructor.

Prereq: Honours Physics or Chemical Physics students only

PHYS 491 LEC 0.50

Course ID: 013972

Special Topics in Life, Medical and Biophysics

A lecture and project course offered in areas of life, medical and biophysics, which will add to the learning experience of the students in these plans at a fourth year level. Lecture topics may include advanced topics in: molecular and cellular biophysics, imaging, biophotonics, interaction of radiation with biomaterials, radiation dosimetry and other physics based diagnostics and therapeutics. Projects may include studies of recent advances in any areas of medical and biophysics. [Offered: F]

Prereq: Level at least 4A; one of PHYS 380, 383, 395, 396

P L A N N I N G

Note

Please view the Schedule of Classes to determine when courses are offered.

PLAN 100s

PLAN 100 LEC,TUT 0.50

Course ID: 007489

The Evolution of Planning

Introduction to planning in its historical and contemporary contexts. Discussion of city types and origins. Consideration of local, national, and international design and management of environment and human habitations. Introduction to selected main themes in planning and architecture.

[Note: Estimated additional cost to student: \$30.]

PLAN 102 LEC,TUT 0.50

Course ID: 011119

Professional Communication

This is a practical introduction to written communications and oral presentations as they are used specifically in the Planning profession. Report writing, correspondence and interaction with the news media are among the forms of communication considered. Students complete both written and oral assignments. Considerable critical comment is provided on assignment content as well as on technical aspects such as style and grammar.

PLAN 103 LEC,TUT 0.50

Course ID: 007531

Planning, Administration, and Finance

Important planning and financial instruments, administrative processes and planning practice are reviewed. Planning and Municipal Acts, official plans, plan amendments, zoning bylaws, site plans, easements, consents, variances, assessments, mill rates, capital works, and debentures. Municipal budgets and accounting concepts, and financing are studied.

Prereq: Planning students

PLAN 104 LEC 0.50

Course ID: 013247

Perspectives on Planning

This course introduces undergraduates to the discipline and practice of Planning. Students will gain a basic understanding of the many facets that make up Planning through interaction with a select complement of the School's faculty members. Emphasis will be placed on exploring research case studies and examining the link between academia and professional planning practice.

Prereq: Planning students

PLAN 105 LAB,LEC,TUT 0.50

Course ID: 013248

Introduction to Planning Analysis

The goal of this course is to introduce students to analytical approaches employed in planning. Students will gain a basic understanding of planning relevant data and approaches to analyzing and communicating planning data. Ideas and techniques drawn from demography are emphasized along with spatial analysis, visualization, and techniques for socio-economic data.

Prereq: Planning students

PLAN 110 LEC,STU 0.50

Course ID: 007493

Visual Approaches to Design and Communication

Practical project-based skill development involving sketching, digital and film photography, and 2 dimensional computer graphics used by planners to conceive, evaluate and communicate design ideas.

[Note: Estimated material cost to student will not exceed \$125+HST.]

Prereq: Planning students

PLAN 200s

PLAN 203 LEC,TUT 0.50

Course ID: 013249

Transportation Planning and Analysis

This course provides an in-depth exploration of Transportation Planning. Topics covered will include fundamentals of transportation systems, the historical evolution of transportation planning, modern approaches to urban and regional transportation planning, and relevant transportation planning methods. Applied analysis emphasizing Canadian urban examples will be undertaken.

Prereq: PLAN 104, ENVS 178

PLAN 210 LEC,STU 0.50

Course ID: 007500

Urban Planning Design and the Environment

A problem-based exploration of urban and regional design in the physical-natural, built, social-cultural environment. Individual and group projects, studio consultation and critiques explore traditional and contemporary approaches using sketches, constructed and computer models, and verbal analysis. This course normally includes a field component.

[Note: Field trip fee will not exceed \$25+HST. Estimated material cost to student will not exceed \$150+HST.]

Prereq: PLAN 110; Level at least 2A Planning students

PLAN 233 LEC,TUT 0.50

Course ID: 011520

People and Plans

This course examines major social problems and the role of social planning as a contributing and resolving factor. The relationship between physical and social planning will be discussed along with a selection of social planning topics.

Prereq: PLAN 100

PLAN 261 LEC,TUT 0.50

Course ID: 011521

Urban and Metropolitan Planning and Development

This course explores the relationship between planning instruments and the urban land use market. It relates urban outcomes to interactions between market processes and planning interventions. It is in this light that it interprets changing urban land use and transportation patterns since the late 1940s, as well as contemporary urban issues. These issues are chosen so as to underscore differences in the circumstances confronting different zones of urbanization (core, inner city, inner suburb and outer suburb).

Prereq: PLAN 100

PLAN 262 LEC 0.50

Course ID: 015434

Introduction to Global Emerging Cities

This course focuses on the dynamics of growth and change in global emerging cities, with a focus on the urban transition underway in cities, with emphasis on Asia and Africa. Current urban challenges (e.g. social inequality, uneven development, climate change) are discussed, as well as opportunities for innovative planning and sustainable urban development.

(Cross-listed with INDEV 262)

PLAN 281 LAB,LEC 0.50

Course ID: 007509

Introduction to Geographic Information Systems (GIS)

Introduction to the fundamental concepts and use of Geographic Information Systems (GIS). Students learn about the nature of geographic information and how to store, manipulate and analyze spatial data in a range of application areas. Students will learn underlying theory in lectures and gain a working knowledge of GIS software in lab sessions.

Prereq: GEOG 165 or 181 or 187 or Planning students

(Cross-listed with GEOG 281)

PLAN 300s**PLAN 300 LEC,TUT 0.50**

Course ID: 007539

Planning Theory

The course will examine key theoretical contributions to planning practice as well as selected theories guiding place and place-making. Issues of professional practice and ethics will also be considered.

Prereq: Level at least 2B Planning students

PLAN 309 STU 0.50

Course ID: 011522

Site Planning and Design Studio

A design studio that focuses on design planning for individual sites and small scale developments. Projects integrate critical features: terrain, natural and cultural context, microclimate, infrastructure, and adjacent land uses. Studio seminars, consultation and critiques explore theory and practice in observation, awareness, comprehension, and idea development.

[Note: Studio fee of \$15+HST may be charged.]

Prereq: PLAN 210

PLAN 313 LEC,STU 1.00

Course ID: 011523

Community Design Studio

A design studio on planning design at the community scale that is sensitive to the natural, built, and cultural context. Field study projects of area development or redevelopment projects are used to examine traditional and contemporary theory and practice. Studio seminars, presentations and critiques explore the definition, management and mapping of physical structures, visual and environmental resources. Included is consideration of the special problems of planning development within a scenic landscape. This course normally includes a field component.

[Note: Studio fee: \$15+HST may be charged. Field trip fee will not exceed \$50+HST. Supply and printing cost will not exceed \$150+HST.]

Prereq: PLAN 210, 309

PLAN 320 LAB,LEC,TUT 0.50

Course ID: 005909

Economic Analyses for Regional Planning

Practical application and critical appraisal of regional analysis techniques used by planners, economic developers and consultants. Problem based approaches to understanding the strength and leverage of business and industrial sectors, projection and forecasting, employment and demographic trends, investment decision-making and cost benefit analysis.

Prereq: ENVS 278

(Cross-listed with GEOG 319)

PLAN 333 SEM 0.50

Course ID: 007557

Neighbourhood and Community Planning

This course examines concepts and issues related to social planning for neighbourhood and community environments. It considers planning for particular target populations in the contexts of gentrification, suburbanization and core area revitalization. It will review models of neighbourhood change and community development and will address ways to involve community members in the planning process. This course normally includes a field component.

[Note: Field trip fee will not exceed \$45+HST.]

Prereq: PLAN 233

PLAN 340 LEC 0.50

Course ID: 007558

Canadian Environmental Policy and Politics

Consideration of the intersection between key ecological themes and recent policy developments. Investigation of current issues in environmental science and politics. Development of critical skills for assessing, framing and conveying information essential to planning, managing and developing policy for environmental stewardship.

Prereq: ENVS 200 or BIOL 150

PLAN 341 LEC 0.50

Course ID: 007559

Conservation/Resource Management of the Built Environment

Consideration of the constraints and guidelines that an application of the principles of ecology places on the planning and management of resources within urban spaces and the implications for urban design. The theory and history of this subject will be discussed together with urban ecomanagement, the management of waste, urban open space and parks, rehabilitated sites, and environmentally sensitive areas.

Prereq: ENVS 200

(Cross-listed with GEOG 368)

PLAN 346 LEC,TUT 0.50

Course ID: 013246

Advanced Tools for Planning: Public Participation and Mediation

A number of approaches and techniques such as Public Participation, Alternative Dispute Resolution and Mediation are used extensively in modern planning. This course addresses these techniques and critically explores their background, rationale, application, and use in contemporary community planning within a modern democratic society.

Prereq: Level at least 3B Planning students

PLAN 349 LEC 0.50

Course ID: 007561

Urban Form and Internal Spatial Structure

An examination of the major factors giving rise to distinctive styles of urban spatial organization. Focus moves from city-wide scale to subareas/sectors - inner city, housing, retailing, etc., with emphasis on understanding and planning for the dynamics of complex environments. Applied issues or problems are dealt with throughout the course.

Prereq: One of GEOG 101, 202/202A, PLAN 100

(Cross-listed with GEOG 349)

PLAN 350 LAB,LEC,TUT 0.50

Course ID: 007562

Research Methods for Planners

This course develops the capacity of students to apply research methods to planning-related issues. Examination of a variety of alternative approaches to designing and conducting research. Students learn how to become informed consumers and producers of planning-related research.

Prereq: PLAN/GEOG 281, ENVS 278

PLAN 351 LAB,LEC,TUT 0.50

Course ID: 005905

Multivariate Statistics

The theory and application of multivariate statistics, with particular emphasis upon the use of the computer.

Prereq: ENVS 278; Not open to students in the Faculty of Mathematics

(Cross-listed with GEOG 316)

PLAN 353 LAB,LEC 0.50

Course ID: 005908

Spatial Analysis

Advanced quantitative analysis in a spatial context. A selection of techniques from sampling, geostatistics, point pattern analysis and cluster detection, spatial classification, and spatial data mining.

Prereq: ENVS 278; Not open to students in the Faculty of Mathematics

(Cross-listed with GEOG 318)

PLAN 362 LEC,TUT 0.50

Course ID: 007502

Regional Planning and Economic Development

The relationship of economic planning to regional planning. Concepts of economic development and models of regional development planning. Case studies and examples are drawn from federal regional development efforts in Canada and/or from Third World nations. Workshops focus on regional planning and development at both a conceptual and empirical level.

Prereq: Level at least 3A

PLAN 381 LAB,LEC 0.50

Course ID: 006014

Advanced Geographic Information Systems

Students learn theoretical and operational approaches to advanced spatial analysis using geographical information systems. Emphasis is placed on the use of automation procedures using models and programming to address a variety of topics that may include but are not limited to digital terrain modeling, suitability analysis, network analysis, and cell-based models. The domain of spatial problems explored may vary by instructor.

Prereq: GEOG/PLAN 255 or GEOG/PLAN 281

(Cross-listed with GEOG 381)

PLAN 387 LAB,LEC 0.50

Course ID: 005943

Spatial Databases

This course focuses on design and development of a GIS database. It addresses theoretical issues regarding data models used in GIS and data modeling techniques used in designing spatial databases. It considers the processing required to input data from a variety of sources and clean and edit a multi-theme database and introduces students to creation and use of internet map services.

Prereq: GEOG/PLAN 255 or GEOG/PLAN 281

(Cross-listed with GEOG 387)

PLAN 400s**PLAN 401 LEC,STU 0.50**

Course ID: 007577

Planners and Planning Tribunals

The course focuses on contemporary planning problems before the Ontario Municipal Board (OMB). Students analyze and synthesize the various planning perspectives involved in real OMB cases. Students explore the challenges associated with presenting a case or appearing as a witness before the Board through lectures, observation and participation in a moot OMB hearing.

[Note: Estimated additional cost for document preparation will not exceed \$100+HST.]

Prereq: Level at least 4A Planning students

PLAN 403 LEC 0.50

Course ID: 007579

Professional Practice, Public and Private Administration

Professional practice responsibility and ethics, administrative methods and organization are considered in the context of the nature of organizations, politics and economics that provide opportunities and limitations. Perspectives are drawn from organizational theory, public administration, land economics, political and planning theory. Public sector decision making and policy development are discussed. This course may have a field component.

[Note: Field trip fee will not exceed \$25+HST.]

Prereq: Level at least 4A Planning students

PLAN 405 LAB,PRJ 0.50

Course ID: 013250

Integrated Planning Project

This senior level course provides an opportunity for students to integrate their planning skills and knowledge in an applied context. Working under the supervision of Planning faculty, student groups will tackle case studies based on local real world examples. The projects will require an integrative approach with required design, analytic, and theoretical elements. Students will develop, implement, and present their term projects in a professional setting.

Prereq: Level at least 4B Planning students

PLAN 408 SEM 0.50

Course ID: 011525

Urban Design Seminar

An exploration of traditional and contemporary theories of urban design and their application in a variety of contexts. This involves study of approaches that lead to improved quality of life within a robust and sustainable urban environment. Topic includes the spatial, environmental, social, cultural and economic aspects of urban design. Precedents and trends will be analyzed. International viewpoints and case studies are considered.

[Note: Estimated material cost will not exceed \$75+HST.]

Prereq: Level at least 3A Planning students

PLAN 409 LEC,STU 1.00

Course ID: 011524

Urban Design Studio

An intensive urban design studio that addresses both new and redevelopment planning design at a community and higher scale. A problem-based exploration involving studio seminars, consultation and critiques to integrate design elements that provide economically and socially viable communities with a sense of place and community, and improved urban quality. This course normally includes a field component.

[Note: Studio fee of \$15+HST may be charged. Field trip fee will not exceed \$50+HST. Estimated additional supply and printing cost will not exceed \$120+HST.]

Prereq: PLAN 309 and 313

PLAN 414 LEC,SEM 0.50

Course ID: 008208

Heritage Planning Workshop

The role of cultural heritage in the community context is examined. Varying forms of heritage preservation, its function and organization are covered. This course may include a field component.

[Note: Field trip fee will not exceed \$25+HST.]

Prereq: Level at least 3A

(Cross-listed with REC 425)

PLAN 416 LAB,LEC 0.50

Course ID: 013996

Modelling the City

This course examines the use of computer modeling and simulation in the realm of urban analysis and forecasting, with the goal of understanding urban land-use change trajectories. Topics include an overview of the drivers and consequences in urban land-use change, the role of models, an overview of current methodological approaches, and an examination of urban simulation models as used in the development of urban policies and official plans. This course provides an applied learning environment in which students will gain experience in the use of spatial (GIS) modeling approaches.

Prereq: PLAN/GEOG 281, ENVS 278

PLAN 418 LAB,LEC 0.50

Course ID: 014145

Spatial Demography

This course develops the capacity of students to apply methods of spatial demography. Spatial demography refers to the statistical study of human population using spatial methods for analyzing demographic data. It can provide insights into the understanding of geographic variations of population's characteristics, which in turn can help to make better plans in building the environment. Through this course, students will learn the basic concepts, data sources, data issues, methodologies, and applications of spatial demography.

Prereq: ENVS 278 and GEOG/PLAN 281

(Cross-listed with GEOG 428)

PLAN 431 LEC 0.50

Course ID: 007588

Issues in Housing

An examination of social planning and policy issues associated with Canada's housing system, considering the roles of various levels of government and the private sector in developing socially sustainable, affordable housing. The course considers the housing needs of various social and demographic groups. We use case study methods to examine redevelopment of social housing. Issues of social mix, live-work, housing need and homelessness, and ways housing can create community are considered. This course normally includes a field component.

[Note: Field trip fee will not exceed \$60+HST.]

Prereq: Level at least 3A

PLAN 432 LEC 0.50

Course ID: 006442

Health, Environment, and Planning

This course examines the relationship between the environment (built/physical, economic, social, political and natural aspects) and population health. It focuses on conceptual and empirical links among current environment-health issues such as air quality, active transportation, injury prevention, climate change, and mental well-being. Emphasis is placed on the role of urban planners in collaboration with allied professionals (e.g., public health, engineering, law enforcement, architecture) in creating and maintaining healthy built environments to improve population health with a focus on key health issues.

Prereq: One of PLAN 233, HLTH 260, ERS 253, GEOG 325

(Cross-listed with GEOG 432, HLTH 420)

PLAN 433 SEM 0.50

Course ID: 011765

Social Concepts in Planning

An advanced examination of planners in their environment considering the relationship between social and land use planning. The course will examine a set of social concepts which may include: safety, gentrification, neighbourhood revitalization, social mix, community, displacement, participation, social capital, social sustainability, accessibility, public space, urban sprawl and social cohesion.

Prereq: PLAN 233

PLAN 440 LEC 0.50

Course ID: 007592

Urban Services Planning

This course will explore the interconnections and cascading effects of urban infrastructure services (waste and water systems, power grids, transport networks, digital circuits) and the politics of planning for urban services in global and globalizing cities across the globe. Students will examine, in particular, the impact of climate change, and our collective responses to it, on the delivery of urban services and the role of progressive planning and policy in mediating infrastructure disruptions and disasters.

Prereq: Level at least 3A

PLAN 450 SEM,TUT 0.50

Course ID: 006011

Changing Form and Structure of Metropolitan Canada

Selected analysis of processes, problems and planning issues associated with the internal growth and spatial reorganization of Canadian metropolitan areas. Three or four topics are chosen for detailed investigation. These will vary from year to year.

Prereq: One of GEOG 426, GEOG/PLAN 349, PLAN 362, PLAN 431

(Cross-listed with GEOG 450)

PLAN 451 SEM 0.50

Course ID: 014146

Tools for Sustainable Communities

This seminar course will focus on conceptual frameworks and tools intended to guide communities to a more sustainable condition. Examples of possible concepts covered in the course are material and energy flows, resilience, adaptability, passive survivability, sufficiency, biophilia, and localization. Course focus will vary from year to year. Recent topics have included The Natural Step, transition towns, LEED-ND, microclimate design, biophilia, and community energy systems.

Prereq: Level at least 3A

PLAN 452 LEC,TUT 0.50

Course ID: 011526

Policy Analysis and Program Evaluation

This course considers Policy Analysis and Program Evaluation as step-by-step processes of prescriptive activities used to aid decision-making. For heuristic purposes, simplified models of the policy and program processes are presented so that basic analytical methods for each step in these processes can be explored. The course highlights quick, yet theoretically defensible, methods useful for smaller-scale analyses or for taking a preliminary approach to larger-scale analyses. The instructor will present case materials from planning and policy to illustrate the analytical methods.

Prereq: PLAN 350

PLAN 453 LEC 0.50

Course ID: 011527

Urban Stormwater Management

Urban stormwater runoff affects the water quality, water quantity, habitat and biological resources, public health and aesthetic appearance of urban waterways. This course reviews the physical and chemical processes, environmental assessment techniques and best management practices related to stormwater management in the urban systems.

Prereq: Level at least 3A

(Cross-listed with GEOG 453)

PLAN 471 LEC 0.50

Course ID: 007599

Planning Law

An analysis of the legal basis for planning in Ontario and the practice of planning law as it affects planners, municipalities, local councils, property owners and residents. The roles of planning boards, municipal councils, the Ontario Municipal Board, the Ministry of Municipal Affairs and Housing, provincial Cabinet and the Niagara Escarpment Commission in the planning process will be discussed.

Prereq: ENVS 201

PLAN 474 DIS,LAB,LEC,SEM,TUT 0.50

Course ID: 010228

Special Topics in Planning

These courses allow for additions to the program on a short-term basis, and for the development of future permanent courses.

Prereq: Level at least 3A

PLAN 475 DIS,FLD,LAB,LEC,SEM,TUT 1.00

Course ID: 007608

Special Topics in Planning

Course content varies according to instructor availability and demand for specific topics in planning, including field courses.

[Note: Field trip fee may be required.]

Instructor Consent Required

Prereq: Level at least 3A

PLAN 477 LEC 0.50

Course ID: 012197

Freight Planning and Policy

This course critically explores the evolution of freight planning and policy in the urban and regional realms from the early importance of ports to modern global logistics. Emphasis is placed on understanding 1) the theory, fundamental characteristics, and methods of analyzing freight systems, and 2) planning/policy perspectives on freight transportation.

Prereq: Level at least 3A

PLAN 478 LEC,TUT 0.50

Course ID: 004249

Transit Planning and Operations

The historical evolution of transit in cities; the technological innovations which made transit possible; and transit mode definitions. Models of transit vehicle motion are presented; transit travel times under different travel regimes are derived. Transit scheduling methods are shown. System operational characteristics are defined and quantitative measures of effectiveness are introduced. Transit network planning objectives are identified; actual geometries are qualitatively and quantitatively analyzed. Transit ownership structures and economics are discussed; contemporary ITS applications are presented. Methods for selecting appropriate transit modes are covered. [Offered: W]

Prereq: CIVE 342 or ENVS 278

(Cross-listed with CIVE 440)

PLAN 480 FLD 0.50

Course ID: 009499

Theory and Practice of Planning in the U.K.

Familiarization with the contribution of U.K. theory and practice to Canadian planning. Study of development of U.K. planning from mid-eighteenth century to present with reference to new town and urban redevelopment. Additional student costs for travel include flight, food and lodging. For information on duration, itinerary and travel costs contact the instructor.

Department Consent Required

Prereq: Level at least 3A Planning students

PLAN 481 LAB,PRJ,SEM,TUT 1.00

Course ID: 009505

Geographic Information Systems Project

The development, implementation, and presentation of a response to a set of GIS related project requirements is the focus of this course. Students work in small teams to enhance and develop their abilities to work with GIS and related spatial technologies and analytical methods in an advanced project setting. The nature of the project requirements and themes varies with faculty and student strengths and interests. Projects may emphasize development of software applications, use of programming, or advanced GIS analysis methods, and draw from theme areas such as environment studies and management, human and physical geography, or planning.

Prereq: GEOG/PLAN 387, GEOG/PLAN 381 and ENVS 278

(Cross-listed with GEOG 481)

PLAN 483 LEC 0.50

Course ID: 007636

Land Development Planning

An examination of planning issues related to the design, economics and financing of private land and building construction projects including residential high-rise condominium, low-rise residential subdivision, infill, intensification and brownfield

redevelopment and industrial/commercial land development. The course focuses on developer decision-making, analysis of risk, sources of financing, planning, environmental and engineering aspects of land development. This course may include a field component.

[Note: Field trip fee will not exceed \$50+HST]

Prereq: Level at least 3A

PLAN 484 LEC,TUT 0.50

Course ID: 007637

Physical Infrastructure Planning

The need for infrastructure and environmental assessments; the impacts of infrastructure on urban form; core infrastructure concepts; economics of infrastructure costs, finance and pricing. Infrastructure evaluation and management methods.

Prereq: Level at least 3A

(Cross-listed with CIVE 484)

PLAN 485 PRJ 0.50

Course ID: 007638

Projects, Problems, and Readings in Planning

Special planning projects and problems chosen in consultation with instructor.

[Note: Prior to registering for this course, students must arrange with a faculty member to serve as advisor and complete a contract.]

Instructor Consent Required

Prereq: Level at least 3A Planning students

PLAN 487 SEM 0.50

Course ID: 009498

Management Issues in Geographic Information Systems

Built around a set of key issues in the management of Geographic Information Systems. Focuses on middle management concerns and covers topics including GIS needs assessment, benchmarking, the law and spatial data, spatial data warehousing, multi-user GIS modelling and GIS application development. Uses of GIS in both public and private sector organizations are covered.

[Note: formerly: GEOG/PLAN 555]

Prereq: GEOG/PLAN 355 or GEOG/PLAN 381 or GEOG/PLAN 387 or GEOG/PLAN 455.

Antireq: GEOG/PLAN 555

(Cross-listed with GEOG 487)

PLAN 490 ESS 1.00

Course ID: 007655

Senior Honours Essay

Practical experience in carrying out a research proposal under the direction of a faculty member. The results of this research will be presented in the form of an essay that meets both professional and academic standards.

Department Consent Required

Prereq: Level at least 4A Planning students

P L A N N I N G

Note

Please view the Schedule of Classes to determine when courses are offered.

PLCG 200s

PLCG 200W LEC 0.50

Course ID: 015791

Police Psychology (WLU)

Department Consent Required

PLCG 203W LEC 0.50

Course ID: 015790

Diversity in Policing (WLU)

Department Consent Required

PURE MATHEMATICS

Notes

1. In some areas, the Department of Pure Mathematics offers two distinct streams of courses, one for students in a Pure Mathematics major plan, and another for students in other majors. PMATH courses numbered from 345 to 352 are designed for Pure Mathematics majors. However they are open to all students. The PMATH courses numbered from 331 to 336 cover similar topics at a less intensive level.
2. More detailed course descriptions and availability information can be obtained from the [Pure Mathematics departmental web pages](#).

PMATH 300s

PMATH 320 LEC 0.50

Course ID: 015485

Euclidean Geometry

Euclid's axioms, triangle centres, conic sections, compass-and-straightedge constructions, isometries of the Euclidean plane and of Euclidean space, regular and star-shaped polygons, tessellations of the Euclidean plane, regular and quasi-regular polyhedra, symmetries of polygons and polyhedra, four-dimensional polytopes, sphere packings, and the kissing problem. Applications.

[Note: This course will be of interest to all math students.]

Prereq: (MATH 106 or 114 or 115 or 136 or 146 or 215 or NE 112) and (MATH 104 or 109 or 116 or 117 or 124 or 127 or 137 or 147)

PMATH 321 LEC 0.50

Course ID: 015486

Non-Euclidean Geometry

An introduction to three types of non-Euclidean geometry: spherical, projective and hyperbolic geometry. Lines, distances, circles, triangles, and areas in these non-Euclidean spaces. Conic sections in the projective plane. Inversions and orthogonal circles. Models of the hyperbolic plane (such as the Poincaré disc model or the upper-half plane model). Tilings of the hyperbolic plane.

[Note: This course will be of interest to all math students.]

Prereq: (MATH 106 or 114 or 115 or 136 or 146 or 215 or NE 112) and (MATH 104 or 109 or 116 or 117 or 124 or 127 or 137 or 147).

Antireq: PMATH 360.

PMATH 330 LEC 0.50

Course ID: 007659

Introduction to Mathematical Logic

A broad introduction to Mathematical Logic. The notions of logical consequence and derivation are introduced in the settings of propositional and first order logic, with discussions of the completeness theorem and satisfiability.

[Note: PMATH 432 may be substituted for PMATH 330 whenever the latter is a requirement in an Honours plan.]

Prereq: (MATH 225/126 and CS 116/136/145) or MATH 235 or 245; Not open to Computer Science students.

Antireq: CS 245, SE 212.

PMATH 331 LEC 0.50

Course ID: 003323

Applied Real Analysis

Topology of Euclidean spaces, continuity, norms, completeness. Contraction mapping principle. Fourier series. Various applications, for example, to ordinary differential equations, optimization and numerical approximation.

[Note: PMATH 351 may be substituted for AMATH/PMATH 331 whenever the latter is a requirement in an Honours plan.

Offered: F,W]

Prereq: MATH 237 or 247

(Cross-listed with AMATH 331)

PMATH 332 LEC 0.50

Course ID: 003324

Applied Complex Analysis

Complex numbers, Cauchy-Riemann equations, analytic functions, conformal maps and applications to the solution of Laplace's equation, contour integrals, Cauchy integral formula, Taylor and Laurent expansions, residue calculus and applications.

[Note: PMATH 352 may be substituted for AMATH/PMATH 332 whenever the latter is a requirement in an Honours plan.

Offered: W,S]

Prereq: MATH 237 or 247.

Antireq: PHYS 365

(Cross-listed with AMATH 332)

PMATH 333 LEC 0.50

Course ID: 015092

Introduction to Real Analysis

The purpose of the course is to present the familiar concepts of calculus at a rigorous level and to provide students who took the MATH 137/MATH 138/MATH 237 sequence with the background needed to be successful in PMATH 351 and PMATH 352. Topics discussed include the completeness properties of the reals; the density of the rationals; the topology of real n-dimensional space: open and closed sets, connectedness, compactness (by open covers), the Heine-Borel theorem, completeness; sequences in real n-dimensional space: convergence, Cauchy sequences, subsequences, the Bolzano-Weierstrass theorem; multivariable functions: limits, point-wise and uniform continuity, the extreme value theorem, uniform convergence of sequences of functions, Taylor's theorem, term-by-term differentiation of power series; integration in real n-dimensional space: Riemann integrability, Fubini's theorem for continuous functions on rectangles, term-by-term integration of power series.

Prereq: MATH 138.

Coreq: MATH 237.

Antireq: MATH 247

PMATH 334 LEC 0.50

Course ID: 007662

Introduction to Rings and Fields with Applications

Rings, ideals, factor rings, homomorphisms, finite and infinite fields, polynomials and roots, field extensions, algebraic numbers, and applications, for example, to Latin squares, finite geometries, geometrical constructions, error-correcting codes.

Prereq: MATH 235 or 245.

PMATH 336 LEC 0.50

Course ID: 007663

Introduction to Group Theory with Applications

Groups, permutation groups, subgroups, homomorphisms, symmetry groups in 2 and 3 dimensions, direct products, Polya-Burnside enumeration.

Prereq: MATH 235 or 245.

PMATH 340 LEC 0.50

Course ID: 007664

Elementary Number Theory

An elementary approach to the theory of numbers; the Euclidean algorithm, congruence equations, multiplicative functions, solutions to Diophantine equations, continued fractions, and rational approximations to real numbers.

[Note: PMATH 440 may be substituted for PMATH 340 whenever the latter is a requirement in an Honours plan.]

Prereq: MATH 225 or 135 or 145

PMATH 347 LEC 0.50

Course ID: 014182

Groups and Rings

Groups, subgroups, homomorphisms and quotient groups, isomorphism theorems, group actions, Cayley and Lagrange theorems, permutation groups and the fundamental theorem of finite abelian groups. Elementary properties of rings, subrings, ideals, homomorphisms and quotients, isomorphism theorems, polynomial rings, and unique factorization domains.

Prereq: MATH 235 or 245

PMATH 348 LEC 0.50

Course ID: 014183

Fields and Galois Theory

Fields, algebraic and transcendental extensions, minimal polynomials, Eisenstein's criterion, splitting fields, and the structure of finite fields. Sylow theorems and solvable groups. Galois theory. The insolubility of the quintic.

Prereq: PMATH 347

PMATH 351 LEC 0.50

Course ID: 007669

Real Analysis

Normed and metric spaces, open sets, continuous mappings, sequence and function spaces, completeness, contraction mappings, compactness of metric spaces, finite-dimensional normed spaces, Arzela-Ascoli theorem, existence of solutions of differential equations, Stone-Weierstrass theorem.

Prereq: MATH 247 or PMATH 333

PMATH 352 LEC 0.50

Course ID: 007672

Complex Analysis

Analytic functions, Cauchy-Riemann equations, Goursat's theorem, Cauchy's theorems, Morera's theorem, Liouville's theorem, maximum modulus principle, harmonic functions, Schwarz's lemma, isolated singularities, Laurent series, residue theorem.

Prereq: MATH 247 or PMATH 333

PMATH 360 LAB,LEC 0.50

Course ID: 007675

Geometry

An introduction to affine, projective and non-Euclidean forms of geometry. Conic sections in the projective plane. Inversion in circles. Theorems of Desargues, Pappus, and Pascal.

[Note: This course will be of interest to all math students.]

Prereq: MATH 225 or MATH 235 or 245

PMATH 365 LEC 0.50

Course ID: 003325

Differential Geometry

Submanifolds of Euclidean n -space; vector fields and differential forms; integration on submanifolds and Stokes's Theorem; metrics and geodesics; Gauss-Bonnet Theorem.

Prereq: (AMATH 231 or MATH 247) and (MATH 235 or 245)

PMATH 370 LEC 0.50

Course ID: 009496

Chaos and Fractals

The mathematics of iterated functions, properties of discrete dynamical systems, Mandelbrot and Julia sets.

[Note: Programming experience on one computer language with graphical output is recommended.]

Prereq: (One of MATH 118, 119, 128, 138, 148) and (One of MATH 114, 115, 225, 235, 245)

PMATH 399 RDG 0.50

Course ID: 007680

Readings in Pure Mathematics

Reading course as announced by the department.

PMATH 400s

PMATH 432 LEC 0.50

Course ID: 007687

First Order Logic and Computability

The concepts of formal provability and logical consequence in first order logic are introduced, and their equivalence is proved in the soundness and completeness theorems. Goedel's incompleteness theorem is discussed, making use of the halting problem of computability theory. Relative computability and the Turing degrees are further studied.

Prereq: PMATH 347

PMATH 433 LEC 0.50

Course ID: 012623

Model Theory and Set Theory

Model theory: the semantics of first order logic including the compactness theorem and its consequences, elementary embeddings and equivalence, the theory of definable sets and types, quantifier elimination, and omega-stability. Set theory: well-orderings, ordinals, cardinals, Zermelo-Fraenkel axioms, axiom of choice, informal discussion of classes and independence results.

[Note: PMATH 348 is highly recommended.]

Prereq: PMATH 347

PMATH 440 LEC 0.50

Course ID: 007690

Analytic Number Theory

Summation methods, analytic theory of the Riemann zeta function, Prime Number Theorem, primitive roots, quadratic reciprocity. Dirichlet characters and infinitude of primes in arithmetic progressions, and assorted topics.

Prereq: PMATH 352 or AMATH/PMATH 332

PMATH 441 LEC 0.50

Course ID: 007691

Algebraic Number Theory

An introduction to algebraic number theory; unique factorization, Dedekind domains, class numbers, Dirichlet's unit theorem, solutions of Diophantine equations.

Prereq: PMATH 348

PMATH 445 LEC 0.50

Course ID: 014184

Representations of Finite Groups

Basic definitions and examples: subrepresentations and irreducible representations, tensor products of representations. Character theory. Representations as modules over the group ring, Artin-Wedderburn structure theorem for semisimple rings. Induced representations, Frobenius reciprocity, Mackey's irreducibility criterion.

Prereq: PMATH 347

PMATH 446 LEC 0.50

Course ID: 014185

Introduction to Commutative Algebra

Module theory: classification of finitely generated modules over PIDs, exact sequences and tensor products, algebras, localisation, chain conditions. Primary decomposition, integral extensions, Noether's normalisation lemma, and Hilbert's Nullstellensatz.

Prereq: PMATH 347.

Coreq: PMATH 348.

PMATH 450 LEC 0.50

Course ID: 007674

Lebesgue Integration and Fourier Analysis

Lebesgue measure on the line, the Lebesgue integral, monotone and dominated convergence theorems, L_p -spaces: completeness and dense subspaces. Separable Hilbert space, orthonormal bases. Fourier analysis on the circle, Dirichlet kernel, Riemann-Lebesgue lemma, Fejer's theorem and convergence of Fourier series.

Prereq: PMATH 351 with a grade of at least of 60%

PMATH 451 LEC 0.50

Course ID: 003348

Measure and Integration

General measures, measurability, Caratheodory Extension theorem and construction of measures, integration theory, convergence theorems, L_p -spaces, absolute continuity, differentiation of monotone functions, Radon-Nikodym theorem, product measures, Fubini's theorem, signed measures, Urysohn's lemma, Riesz Representation theorems for classical Banach spaces.

Prereq: PMATH 450 with a grade of at least 60%

Also offered Online

PMATH 453 LEC 0.50

Course ID: 003349

Functional Analysis

Banach and Hilbert spaces, bounded linear maps, Hahn-Banach theorem, open mapping theorem, closed graph theorem, topologies, nets, Hausdorff spaces, Tietze extension theorem, dual spaces, weak topologies, Tychonoff's theorem, Banach-Alaoglu theorem, reflexive spaces.

Prereq: PMATH 450

PMATH 464 LEC 0.50

Course ID: 010733

Introduction to Algebraic Geometry

An introduction to algebraic geometry through the theory of algebraic curves. General Algebraic Geometry: affine and projective algebraic sets, Hilbert's Nullstellensatz, co-ordinate rings, polynomial maps, rational functions and local rings. Algebraic Curves: affine and projective plane curves, tangency and multiplicity, intersection numbers, Bezout's theorem and divisor class groups.

Prereq: PMATH 347.

Coreq: PMATH 348.

PMATH 465 LEC 0.50

Course ID: 003350

Geometry of Manifolds

Point-set topology; smooth manifolds, smooth maps and tangent vectors; the tangent bundle; vector fields, tensor fields and differential forms. Other topics may include: de Rham cohomology; Frobenius Theorem; Riemannian metrics, connections and curvature.

Prereq: PMATH 365

PMATH 467 LEC 0.50

Course ID: 007704

Algebraic Topology

Topological spaces and topological manifolds; quotient spaces; cut and paste constructions; classification of two-dimensional manifolds; fundamental group; homology groups. Additional topics may include: covering spaces; homotopy theory; selected applications to knots and combinatorial group theory.

Prereq: PMATH 347, 351.

PMATH 499 RDG 0.50

Course ID: 007706

Readings in Pure Mathematics

Reading course as announced by the department.

PORTUGUESE

Notes

Courses in Portuguese are offered through the Spanish and Latin American Studies Department.

PORT 100s

PORT 101 LAB,LEC 0.50

Course ID: 010099

Introduction to Portuguese 1

Intensive drill in the fundamentals of grammar, comprehension, and speaking. Some reading, translation, and composition. The language laboratory is used as an integral part of the course.

[Note: Open to students with no prior knowledge of the Portuguese language.]

Antireq: 4U Portuguese

PORT 102 LAB,LEC 0.50

Course ID: 010097

Introduction to Portuguese 2

A continuation of PORT 101.

Prereq: PORT 101.

Antireq: 4U Portuguese

POLITICAL SCIENCE

Notes

1. Courses normally meet three hours per week; however, each instructor determines the pattern of meetings for his/her courses.
2. Some of the courses listed are not offered in the current academic year. Precise information on course offerings and more detailed descriptions of the content of Political Science courses are available in the Department at the time students select their classes.

PSCI 100s

PSCI 100 DIS,LEC 0.50

Course ID: 014381

Introduction to Government

The comparative study of ideas, institutions, and interests central to politics and key policy issues in Canada and elsewhere.

PSCI 150 DIS,LEC 0.50

Course ID: 014382

Introduction to Global Politics

An introduction to the contemporary political factors underlying the distribution and governance of wealth and power across the globe.

PSCI 190 DIS,LEC 0.50

Course ID: 014383

Special Studies

From time to time, courses of special study may be added to the program at the first-year level.

PSCI 200s

PSCI 225 DIS,LEC 0.50

Course ID: 007738

Classics in Political Thought

Traces the development of political philosophy through an examination of Ancient Greek plays (e.g., Antigone, Medea) and foundational political texts (Plato, Aristotle) that set the stage for modern political thought (Machiavelli and after).

Prereq: One of PSCI 100, 101, 150

PSCI 226 DIS,LEC 0.50

Course ID: 007740

Modern Political Thought

An examination of some of the most influential texts in Western political theory during the 1500s-1800s, with an emphasis on social contract theory (Hobbes, Locke, Rousseau), personal liberty (Mill), and institutional critiques (Marx). Themes of political obligation, equality, freedom, and justice run throughout.

Prereq: One of PSCI 100, 101, 150, 225

PSCI 231 DIS,LEC 0.50

Course ID: 007744

Government and Business

An examination of government, business, and civil society relations with a focus on Canada in comparative context, including national and sub-national government policies relating to key debates in socio-economic development.

Prereq: Level at least 2A

PSCI 244 DIS,LEC 0.50

Course ID: 014267

Irrational and Rational Choices in Politics

This course examines a wide range of apparently random, puzzling, or even irrational choices in political life. For example, why do powerful dictators allow independent legislatures and parties to exist? Why are frontlines of civil wars spared from violence? Why do the same people sometimes choose language to define their ethnic identity, and choose religion at other times? This course provides a unified explanation for these diverse puzzles using a simple framework of rational choices by individuals to further their self-interests.

Prereq: One of PSCI 100, 101, 110, 150

PSCI 250 DIS,LEC 0.50

Course ID: 011344

The Comparative Politics of State and Nation

This core comparative politics course assesses various approaches in the study of politics within states. The emphasis is on political developments, institutions, and processes in various countries in the global South and advanced industrial worlds.

Prereq: One of PSCI 100, 101, 110, 150

PSCI 252 DIS,LEC 0.50

Course ID: 007724

Global South

An introduction to politics of development. Topics may include colonialism, economic growth, democracy, population, gender, education, environmental issues, working children, and health.

Prereq: PSCI 150 or INTST 101

PSCI 254 DIS,LEC 0.50

Course ID: 014384

The Political Documentary

Political documentaries are examined from the standpoint of contemporary political thought and practice, as well as the role they play in the public sphere. A range of documentary films made by government agencies, professional filmmakers, and activists will be critically assessed.

Prereq: Level at least 2A

PSCI 255 DIS,LEC 0.50

Course ID: 007747

Comparative Political Economy of Advanced Industrial Democracies

An introduction to the political economy of advanced industrial liberal democracies examining how the wealth of the "rich democracies" is made and how some is redistributed through democratic institutions by the actors who control these institutions.

Prereq: One of PSCI 100, 101, 110.

Antireq: PSCI 283 taught Winter 2007, 2008; Fall 2008, 2009, 2010 and 2011

PSCI 257 DIS,LEC 0.50

Course ID: 012170

Introduction to the Modern Middle East

This course examines the modern political history of the Middle East, with an emphasis on international affairs. It examines the colonization of the Middle East, the rise of national self-determination and nation-states, enduring Arab-Israeli conflicts, the Cold War, and the impact of U.S. foreign policy in shaping the modern Middle East.

Prereq: Level at least 2A

(Cross-listed with HIST 230)

PSCI 259 DIS,LEC 0.50

Course ID: 012187

Government and Politics of Asia

A comparative perspective on the government and politics of Asia.

Prereq: One of PSCI 100, 101, 110, 150

PSCI 260 DIS,LEC 0.50

Course ID: 007749

Canadian Government & Politics

An examination of Canada's federal system, parliamentary government, and national political processes, such as the party system, interest groups, the electoral system and voting behaviour.

Prereq: One of PSCI 100, 101, 110

(Cross-listed with LS 206)

PSCI 264 DIS,LEC 0.50

Course ID: 007752

American Government and Politics

An examination of the United States federal government and national political processes.

Prereq: Level at least 1B

PSCI 281 DIS,LEC 0.50

Course ID: 007756

World Politics

Billions of people live together in various degrees of disharmony in the anarchy - 'an', without, 'archos', governor - of world politics. The course considers the what, where, when and why of the patterns of power, of peace and war, of cooperation and conflict about the globe.

Prereq: PSCI 150 or INTST 101

PSCI 282 DIS,LEC 0.50

Course ID: 007757

Foreign Policy

An introduction to the study of a state's foreign policy as a two-level game played at the intersection of the domestic and international spheres.

Prereq: PSCI 150 or INTST 101

PSCI 283 DIS,LEC 0.50

Course ID: 012302

International Political Economy

An introduction to the politics of the world economy with special reference to the politics of international trade, multinational corporations, international monetary relations, global finance, comparative capitalisms, and regional economic integration.

Prereq: At least one PSCI or ECON course, or INTST 101

PSCI 299 LEC,SEM 0.50

Course ID: 014797

Political Science Beyond the Classroom

This course introduces students to experiential learning in political science. It develops writing, research, presentation, and interpersonal skills useful for connecting core concepts in political science to contemporary politics, policy, and governance.

Prereq: One of PSCI 100, PSCI 150; Political Science majors only

PSCI 300s**PSCI 300 LEC 0.50**

Course ID: 014224

Foundations of Political Economy

An examination of influential historical and contemporary works in the study of political economy. Core themes include the relationship between politics and business, states and markets, and power and wealth.

Prereq: PSCI 110 or 150; ECON 101 or 102; Level at least 3A

PSCI 302 LEC 0.50

Course ID: 015366

Local Government

An examination of the politics and administration of local government in Canada. Topics may include the relationship between municipalities and other levels of government, current governance challenges facing local officials, and the design and implementation of public policy within a complex local political environment.

Prereq: Level at least 2A

PSCI 303 LEC 0.50

Course ID: 015367

Environmental Policy and Politics

This course provides an introduction to major historical and contemporary debates in Canadian environmental policy and politics in comparative context. It emphasizes the divergent policy interests and political strategies influencing environmental outcomes.

Prereq: Level at least 2A

PSCI 314 LEC 0.50

Course ID: 007733

Quantitative Analysis

An introduction to the use of quantitative methods in Political Science. Only a rudimentary understanding of mathematics is required.

[Note: Formerly PSCI 214]

Prereq: Level at least 2A; Not open to Math students.

Antireq: ARTS 280, BIOL 361, ECON 221, ENVS 278, ISS/SDS 250A/B, 250R, KIN 222, 232, PSYCH 292, REC 371, SMF 230, SOC/LS 280, STAT 202, 204, 206, 211, 221, 231, 241, SWREN 205R

PSCI 315 LEC 0.50

Course ID: 007764

Research Design in Political Science

What makes political science political science? This course uses examples from various fields of political research to teach students fundamentals of research design in political science and contrasts these approaches with dominant approaches in other closely related disciplines.

Prereq: At least one course in PSCI; Level at least 2A

PSCI 324 LEC 0.50

Course ID: 007771

Issues in Contemporary Political Theory

Examines central questions and core texts in contemporary liberal democratic theory (20th century on), emphasizing freedom, equality, and theories of justice. Pluralism, individualism, rights and obligation are major themes. Theoretical analysis is grounded in current issues and problems such as poverty, racism, sexism, global inequalities, and environmental justice.

Prereq: Level at least 3A

PSCI 331 LEC 0.50

Course ID: 007774

Public Administration

An introduction to the principles and practices of public administration including a consideration of the fit between various forms of bureaucratic organization and democratic political institutions in Canada.

Prereq: Level at least 2A

PSCI 334 LEC 0.50

Course ID: 011638

Public Policy

An examination of the policy-making process in liberal democratic societies, and an evaluation of the tools employed by policy analysts to understand that process.

*Prereq: One of PSCI 250, 255, 264, LS 206/PSCI 260
(Cross-listed with SOC 334)*

PSCI 350 LEC,TUT 0.50

Course ID: 007789

Political Economy of Development

A critical examination of development problems in the global South, with the focus on North-South relations. Topics include trade, investment, aid, industrialization, agribusiness, development assistance, education, health, and food production.

*Prereq: One of PSCI 250, 252, 281.
Antireq: INDEV 200*

PSCI 351 LEC,SEM 0.50

Course ID: 007791

Power Sharing in Divided Societies

Examination of conflict within societies and various ways in which conflict is eased or worsened through the sharing of power. Emphasis will be on pluralism, corporatism, consociationalism, and federalism.

Prereq: Level at least 3A

PSCI 352 LEC 0.50

Course ID: 014386

Culture and Political Violence

An examination of structural, direct, and symbolic violence in everyday experiences as well as an exploration of ethnographic and cultural accounts of political violence 'from below'.

[Note: PSCI 281 or 351 recommended.]

Prereq: At least one 200-level PSCI course

PSCI 353 LEC 0.50

Course ID: 011637

Politics in Russia

A comparative examination of political processes, institutions, and reforms in Russia, with a focus on the successes and failures of democratization.

[Note: One of PSCI 244, 250, 252, 255, 259, 260, 264 strongly recommended]

Prereq: Level at least 2B

PSCI 355 LEC 0.50

Course ID: 009514

Russia and its Neighbours

An examination of the consequences of the collapse of the Soviet Union that focuses on the evolving relationships between Russia and its neighbours. [Formerly: PSCI 355B]

Prereq: Level at least 2B

PSCI 358 LEC 0.50

Course ID: 012183

Political Change in Greater China

An examination of the government and politics of Greater China, including mainland China, Taiwan, Hong Kong and Macau. Topics include their historical traditions, the transformation of political parties, state institutions, political leadership, the military, democracy movements, economic reforms and foreign relations.

Prereq: Level at least 3A

PSCI 359 LEC 0.50

Course ID: 015027

Politics of South Asia

This course examines how international and domestic politics interact in South Asia. It covers bilateral relations within South Asia and the involvement of external powers such as United States and China. The course also delves into the challenge of political development shaped by class, ethnicity, religion, and gender.

Prereq: Level at least 3A

PSCI 360 LEC 0.50

Course ID: 011768

Topics in Canadian Government and Politics

Topics vary from time to time: e.g. the federal system, parliamentary government to native self-government to ethnicity and multiculturalism.

Prereq: LS 206/PSCI 260

PSCI 362 LEC 0.50

Course ID: 014387

Cultural Politics and Indigenous Practices

This course examines cultural questions and methodological issues that have arisen in the context of research conducted in indigenous communities. It examines questions of colonialism, power, and voice in the context of indigenous struggles with the nation-state and around the globe.

Prereq: At least one 200-level PSCI course; Level at least 2B

PSCI 363 LEC 0.50

Course ID: 007797

Canadian Constitutional Law

An introduction to the nature and basic principles of constitutional law. Explores constitutional conventions, the distribution of powers in the Canadian federalism, Aboriginal and treaty rights, and the Charter of Rights and Freedoms.

Prereq: LS 101 or LS 206/ PSCI 260

(Cross-listed with LS 363)

PSCI 367 LEC 0.50

Course ID: 012063

Topics in American Government and Politics

An analysis of topics related to the American system of government and politics.

Prereq: PSCI 264

PSCI 369 DIS,LEC 0.50

Course ID: 012944

The Politics of Decolonization

This course examines the break-up of empires in the mid/late 20th century, and assesses how the colonial experience has shaped relations between and among former imperial polities to the present. Focus is given to questions of political identity in colonial and post-colonial societies, and how these identities shape current political challenges.

Prereq: Level at least 2A

(Cross-listed with HIST 369)

PSCI 370 LEC 0.50

Course ID: 011639

Women and Politics

An examination of patterns of women's participation in both Western and non-Western societies.

Prereq: At least one course in PSCI or WS; Level at least 2B

PSCI 373 LEC 0.50

Course ID: 011118

Political Parties, Elections, and Political Marketing

Examination of the role of political parties and electoral competition in established democracies. Focus is given to the practice of political marketing and its implications for democracy.

Prereq: One of PSCI 231, 250, 255, 264, LS 206/PSCI 260; Level at least 3A

PSCI 375 LEC 0.50

Course ID: 014268

Transnational Migration

This survey of transnational migration in the contemporary moment examines the reasons people have migrated voluntarily (e.g., as migrant workers) and involuntarily (e.g., as refugees); and how international and domestic law and policies affect, enable, and/or criminalize the movements of people across state borders.

Prereq: One of PSCI 250, 252, 255, 259, 264, 281, LS 206/PSCI 260; Level at least 3A

(Cross-listed with LS 365)

PSCI 382 LEC 0.50

Course ID: 007805

Politics of Canadian Foreign Policy

An examination of issues and the foreign policy-making process in Canada. Special attention is paid to the domestic context of foreign policy.

Prereq: LS 206/PSCI 260; PSCI 281 or 282

PSCI 385 LEC,SEM 0.50

Course ID: 014883

Chinese Foreign Policy since 1949

This course examines the major elements and evolution of Chinese foreign policy since 1949 and China's external relations in the context of rising Chinese power.

Prereq: Level at least 2A

(Cross-listed with EASIA 302R)

PSCI 387 LEC 0.50

Course ID: 010348

Globalization

An examination of the relationship between globalization and changing forms of political authority, with particular attention to contemporary debates concerning the erosion of the territorial nation-state in world politics.

Prereq: PSCI 150 or INTST 101; Level at least 2A

PSCI 389 LEC 0.50

Course ID: 012593

Global Governance

Global governance is governing beyond the state. An examination of diverse problems - global warming, international human rights, terrorism, property rights disputes, and health crises - which transcend borders and demand cooperative global solutions.

Prereq: Level at least 3A.

Antireq: PSCI 357 taken before winter 2010

(Cross-listed with LS 366)

PSCI 390 LEC 0.50

Course ID: 007806

Special Studies

From time to time courses of special study may be added to the program at the third-year level.

Prereq: A minimum of 0.50 unit of PSCI; Level at least 3A

PSCI 391 RDG 0.50

Course ID: 007807

Special Studies

From time to time courses of special study may be added to the program at the third-year level. Students wishing to take such courses should consult the Department's Undergraduate Officer.

[Note: This is a repeatable course, subject to different content; it may be completed a total of two times.]

Department Consent Required

PSCI 402 SEM 0.50

Course ID: 014225

Politics of International Trade

An examination of the political underpinnings of international trade. The material discussed is both theoretical and applied with attention to interest groups and institutional arrangements, including intergovernmental organizations, important to trade policy.

Prereq: PSCI 283

PSCI 403 SEM 0.50

Course ID: 014226

Topics in Politics and Business

Examination of selected topics of current interest to faculty and students.

[Note: This is a repeatable course, subject to different content; it may be completed a total of two times.]

Prereq: Level at least 4A Political Science students

PSCI 404 SEM 0.50

Course ID: 014527

Globalization, International Business, and Development

Examines the impact of international business on development in the context of economic globalization. Explores contending perspectives on how international business practices have affected economic, social, and political development in host countries, home countries, and the world in general.

Prereq: Two of PSCI 252, 283, 300, 350, 387, PSCI 389/LS366.

Antireq: PSCI 490, Section 001 taken Fall 2011 and Fall 2012

PSCI 405 SEM 0.50

Course ID: 014528

Chinese Political Economy

Introduction to the study of contemporary Chinese political economy. Explores various aspects of the deep economic, political, and social changes associated with China's transition from a command to a market economy since 1978.

Prereq: PSCI 259 or 358

PSCI 420 SEM 0.50

Course ID: 015098

Gender and Global Politics

Does looking at the world through the lens of gender change how we see the state, sovereignty, diplomacy, security, trade, migration, globalization, governance, and other foundational concepts in global politics? We review feminist theories of politics, with a particular focus on international relations and global governance; examine how gender shapes the roles and experiences of women and men in global politics; and discuss how to do feminist research.

Prereq: One of PSCI 281, 282, 283, WS 202.

Antireq: PSCI 490 (section 002) taken Winter 2015

PSCI 421 SEM 0.50

Course ID: 007813

Justice and Gender

Theories of justice are concerned with the distribution of the basic goods of society - money, power, status, leisure, and so on. The course considers how the gender system fares from the standpoint of liberal justice, and to what extent the promises of liberal justice can be used to overturn the unequal treatment of women.

Prereq: One of PSCI 225, 226, 370, LS 201; Level at least 4A

(Cross-listed with LS 464)

PSCI 423 SEM 0.50

Course ID: 007815

Democratic Theory and Practice

An examination of the justification and limitations of democratic government, as well as more practical applications of democratic theory to the workplace, judicial review, legal obligations, etc. The focus will be on problems of democratic theory and practice.

Prereq: PSCI 225 or 226; Level at least 4A

PSCI 426 LEC 0.50

Course ID: 007816

Selected Subjects in Political Philosophy

A selective treatment of basic themes in political philosophy in the modern and pre-modern times.

Prereq: PSCI 323 or 324; Level at least 4A

PSCI 428 LEC 0.50

Course ID: 007818

The State and Economic Life

An examination of current debates and competing ideological traditions about the relationship between the state and economic life.

Prereq: Four PSCI courses; Level at least 4A

PSCI 431 LEC 0.50

Course ID: 007819

Canadian Public Policy

An examination of major trends in Canadian public policy in selected issue areas with a primary focus on the federal level.

Prereq: LS 206/PSCI 260, PSCI 334; Level at least 4A

PSCI 432 LEC,TUT 0.50

Course ID: 005377

Global Environmental Governance

Examination of the ways in which world society is striving to address environmental challenges by means of 'global governance' - that is, international organizations and institutions intended to deal with these challenges. The history of international environmental politics will be reviewed, specific organizations and other actors involved in global environmental governance will be examined and the management of particular global environmental challenges investigated.

Prereq: Level at least 3A

(Cross-listed with ERS 404)

PSCI 433 SEM 0.50

Course ID: 007776

Topics in Canadian Public Administration

Selected issues in public administration with particular reference to recent developments in Canada.

[Note: Formerly PSCI 332]

Prereq: PSCI 331; Level at least 4A

PSCI 434 SEM 0.50

Course ID: 007822

Comparative Public Administration

A comparative survey of public administration in both developed and developing areas. The focus is on the rise of the administrative state in a variety of cultural and political contexts.

Prereq: Four PSCI courses; Level at least 4A

PSCI 435 SEM 0.50

Course ID: 014529

Comparative Public Policy

An examination of explanatory theories of public policy and selected public policy issues in comparative perspective.

Prereq: PSCI 334

PSCI 439 SEM 0.50

Course ID: 012359

Global Social Policy

This course examines three interrelated aspects of global social policy: the global social issues resulting from increased economic integration, the role of international governmental and non-governmental actors in fashioning cross-national responses to these issues, and the effects of global and regional economic and political integration on domestic social policy.

Prereq: One of PSYCH 238/338, AFM 280, MSCI 211, SCBUS 225; Level at least 3A.

Antireq: PACS 323/LS 319

PSCI 450 SEM 0.50

Course ID: 015028

Politics of Authoritarianism

What is the difference between non-democracies like China, hybrid regimes like Russia, one-party states like Singapore, patrimonial and personalist states in Africa, or military dictatorships in Latin America? This course examines how political power is structured in authoritarian regimes and how it shapes the relationship between state and society.

Prereq: PSCI 250

PSCI 451 SEM 0.50

Course ID: 007827

Comparative Political Systems: Eastern Europe

A comparative examination of political institutions and processes in the states of Eastern Europe.

Prereq: Level at least 4A

PSCI 452 SEM 0.50

Course ID: 012947

Comparative Political Parties

With a primary focus on advanced industrialized countries, this course examines the origin and function of parties, party organization, their social and economic basis, the party system and its evolution, radical left and right parties, and the decline or adaptation of parties.

Prereq: One of PSCI 250, 252, 255, 373; Level at least 4A.

Antireq: PSCI 490 taken Winter 2008

PSCI 454 SEM 0.50

Course ID: 007830

Topics in Politics in the Global South

Advanced study of topics pertaining to politics and development.

Prereq: Level at least 4A

PSCI 455 SEM 0.50

Course ID: 012949

Comparative Political Economy

Focusing especially on advanced industrialized countries, this course surveys the key topics in political economy including the influence of politics on social and economic policies in relation to welfare states, labour markets, training, corporate governance and technological innovation. The course also explores the social and economic consequences of politics such as poverty, inequality, growth and decline.

Prereq: Four PSCI courses; Level at least 4A

PSCI 456 SEM 0.50

Course ID: 007831

Ethnic Conflict and Conflict Resolution

This course examines the causes of ethnic conflict but focuses in particular on the strategies which states use to manage or resolve such conflicts. The review of state strategies is comprehensive in nature, and includes approaches which are morally unacceptable as well as approaches which many consider morally desirable.

Prereq: Four PSCI courses; Level at least 4A

PSCI 458 SEM 0.50

Course ID: 007832

Cultural Explanations of Politics

Critical assessments of selected explanations of political authority, political organization, political conflict and political violence in terms of cultural values.

Prereq: One of PSCI 250, 255, 281, 282; Level at least 4A

PSCI 460 SEM 0.50

Course ID: 014388

The Cultural Politics of Israel/Palestine

The cultural politics of the Israel/Palestine conflict, with an emphasis on understanding the complex narratives of violence, peace, and human rights that circulate across the region, as well as among those in diaspora and exile. The course focuses on the everyday life of those affected by the violence.

Prereq: PSCI 257 or 351; Level at least 4A

PSCI 461 SEM 0.50

Course ID: 007834

Canadian National Politics

Selected aspects of Canadian national politics.

Prereq: LS 206/PSCI 260; Level at least 4A

PSCI 462 SEM 0.50

Course ID: 013476

Government and Politics of Indigenous Peoples

An introduction to the history and development of government policy and regulations that have altered the political and social structures of aboriginal societies. We explore contemporary challenges to government policy and regulations, as reflected in the struggles for land, aboriginal rights, and self-government, as well as the development of a global identity.

Prereq: Level at least 4A

(Cross-listed with LS 462)

PSCI 463 SEM 0.50

Course ID: 014530

Rights and Public Policy

An examination of the role that rights and rights discourse plays in public policy development and policy change. Examines Canadian public policy in relation to the Charter of Rights and Freedoms and human rights legislation, as well as cases in comparative context.

Prereq: LS 101 or LS 206/ PSCI 260

(Cross-listed with LS 463)

PSCI 472 SEM 0.50

Course ID: 007837

Women and Public Policy

An examination of public policy from the perspective of women's experiences and needs. The course reviews policy developments in Canada and elsewhere, and reflects on the significance of feminist approaches to public policy.

PSCI 479 SEM 0.50

Course ID: 014531

International Political Economy of Asia

Explores patterns of economic development in Asia at the national level as well as the political and economic implications of growing interdependence in the region.

Prereq: PSCI 259 or 283

PSCI 480 SEM 0.50

Course ID: 014227

China and Global Governance

This course examines China's activity in global governance across a number of major issue areas: security, economy, human rights, the environment, and social policy. It considers the evolution of China's relations with the international system, Chinese perspectives on globalization, and how China's involvement in global governance has shaped its domestic institutions.

Prereq: Level at least 4A Political Science students

PSCI 481 SEM 0.50

Course ID: 007841

Interstate War

An examination of research on the causes and consequences of interstate warfare.

Prereq: Level at least 4A; PSCI 281 or 282

PSCI 482 SEM 0.50

Course ID: 012950

Critical Security Studies

This course reviews critical analytical models for the study of security and covers a range of issues which might be considered non-traditional including environmental security, public safety, cyber security, and counter-terrorism.

Prereq: PSCI 281 or 282; Level at least 4A

PSCI 485 SEM 0.50

Course ID: 007844

Selected Topics in International Political Economy

Contemporary perspectives and issues in international political economy, with particular attention to advanced industrial countries. Topics include political/economic cooperation, the politics of trade, and the politics of adjustment.

Prereq: PSCI 283 or 387; Level at least 4A

PSCI 486 LEC 0.50

Course ID: 010240

Special Topics in International Diplomacy

This course will deal with contemporary perspectives and issues in diplomacy. Topics include public diplomacy, the use of technological innovation such as cyber-diplomacy, the widening of the definition of diplomats, multilateral diplomacy, and 'niche' diplomacy.

Prereq: One of PSCI 281, 282, 283; Level at least 4A

PSCI 487 SEM 0.50

Course ID: 012951

International Relations Theory

This course examines the major schools of international relations theory with attention paid to both positivist and post-positivist approaches.

Prereq: PSCI 281 or 282; Level at least 4A

PSCI 488 LEC 0.50

Course ID: 013955

Global Food and Agricultural Politics

This course examines the global food and agriculture system. Specific themes to be covered include political and governance issues related to the Green Revolution, global food corporations, agricultural trade liberalization, food aid, international agricultural assistance, the global agro-chemical industry, and agricultural bio-technology.

Prereq: Level at least 3B.

Antireq: ERS 489/PSCI 489/GEOG 429

(Cross-listed with ERS 462, GEOG 462)

PSCI 490 LEC 0.50

Course ID: 007847

Special Subjects

From time to time courses of special study may be added to the program at the fourth-year level.

[Note: This is a repeatable course, subject to different content; it may be completed a total of ten times.]

Prereq: A minimum of 0.50 unit of PSCI; Level at least 4A

PSCI 491 SEM 0.50

Course ID: 007848

Special Subjects

From time to time courses of special study may be added to the program at the fourth-year level.

[Note: This is a repeatable course, subject to different content; it may be completed a total of ten times.]

Prereq: A minimum of 0.50 unit of PSCI; Level at least 4A

PSCI 492 RDG 0.50

Course ID: 007849

Special Subjects

From time to time courses of special study may be added to the program at the fourth-year level. Students wishing to add such courses should consult the Department's Undergraduate Officer.

[Note: This is a repeatable course, subject to different content; it may be completed a total of two times.]

Department Consent Required

PSCI 493 FLD 0.50

Course ID: 015368

Field Course

A combination of academic study and field experience in topics of political science.

[Note: This course is offered on a CR/NCR basis. This is a repeatable course, subject to different content; it may be completed a total of two times. Additional fees required.]

Instructor Consent Required

Prereq: Level at least 3B

PSCI 497A PRA 0.25

Course ID: 014872

Study Abroad Experience

While participating in a study abroad experience, students complete reflections on their experience and what they are learning.

[Note: Students enrolled in this course must also be registered in a university-sanctioned exchange or study abroad program. A numeric grade for PSCI 497A will be submitted only after the completion of PSCI 497B.]

Department Consent Required

Prereq: PSCI 299; Level at least 2B Political Science majors

PSCI 497B SEM 0.25

Course ID: 014873

Study Abroad Experience

After completing a study abroad experience, students complete a project that integrates what they learned while studying abroad with contemporary politics, policy, and governance. Students also participate in a seminar in which they complete assignments and share their experiences with other students.

[Note: Students enrolled in this course must have completed a university-sanctioned exchange or study abroad program while registered in PSCI 497A.]

Department Consent Required

Prereq: PSCI 497A; Level at least 2B Political Science majors.

Antireq: PSCI 498A, 498B, 498C

PSCI 498A SEM 0.50

Course ID: 014794

Current Issues in Political Science

Students in this course attend talks or conferences, monitor the media, and do independent research to investigate how a broad concept in political science plays out in contemporary politics, policy, and governance. Students also participate in a seminar in which they complete assignments and share their experiences with other students.

Department Consent Required

Prereq: PSCI 299; Level at least 2B Political Science majors.

Antireq: PSCI 497A, 497B, 498B, 498C

PSCI 498B PRA,SEM 0.50

Course ID: 014795

Research Apprenticeship Experience

Research apprenticeship in which students assist a professor with a research project. Students also participate in a seminar in which they complete assignments, share their experiences with other students, and complete a final project related to their research apprenticeship.

Department Consent Required

Prereq: PSCI 299; Level at least 2B Political Science majors.

Antireq: PSCI 497A, 497B, 498A, 498C

PSCI 498C PRA,SEM 0.50

Course ID: 014808

Civic Engagement Experience

Students participate in a civic engagement experience and reflect on how concepts in political science help to illuminate it. Students also participate in a seminar in which they complete guided reflections, share their experiences with other students, and complete a final project related to their civic engagement experience.

Department Consent Required

Prereq: PSCI 299; Level at least 2B Political Science majors.

Antireq: PSCI 497A, 497B, 498A, 498B

PSCI 499A ESS,SEM 0.50

Course ID: 007859

Special Honours Essay

Honours Political Science students wishing to undertake a senior honours essay in their fourth year should consult the Department's Undergraduate Officer.

[Note: A numeric grade for PSCI 499A will be submitted only after the completion of PSCI 499B.]

Department Consent Required

Prereq: PSCI 299; Level at least 3B Political Science majors. Political Science average at least 75%

PSCI 499B ESS,SEM 0.50

Course ID: 007860

Special Honours Essay

Honours Political Science students wishing to undertake a senior honours essay in their fourth year should consult the Department's Undergraduate Officer.

Department Consent Required

Prereq: PSCI 499A

PSYCHOLOGY

Notes

1. For more accurate information regarding the availability of psychology courses for the coming year, please refer to the [Psychology undergraduate website](#)
2. Psychology courses offered at Renison University College are designated by the letter "R" following the course number. Priority enrolment in those courses is given to Social Development Studies students.

PSYCH 100s

PSYCH 101 LEC 0.50

Course ID: 007865

Introductory Psychology

A general survey course designed to provide the student with an understanding of the basic concepts and techniques of modern psychology as a behavioural science.

[Note: PSYCH 101 offered on-campus, at St. Jerome's University, and Online; PSYCH 101R offered at Renison University College.]

Antireq: PSYCH 121R

(Cross-listed with PSYCH 101R)

Also offered Online

PSYCH 101R LEC 0.50

Course ID: 007865

Introductory Psychology

A general survey course designed to provide the student with an understanding of the basic concepts and techniques of modern

psychology as a behavioural science.

[Note: PSYCH 101 offered on-campus, at St. Jerome's University, and Online; PSYCH 101R offered at Renison University College.]

Antireq: PSYCH 121R

(Cross-listed with PSYCH 101)

Also offered Online

PSYCH 200s

PSYCH 207 LEC 0.50

Course ID: 007889

Cognitive Processes

An examination and evaluation of selected topics dealing with human information processing such as attention, memory, pattern recognition, consciousness, language, dyslexia, decision making, and problem solving.

Prereq: PSYCH 101/101R or 121R

Also offered Online

PSYCH 211 LEC 0.50

Course ID: 007894

Developmental Psychology

A course designed to introduce the student to current research and theory concerning children's social, cognitive, and physical development from infancy through childhood to early adolescence.

Prereq: PSYCH 101/101R or 121R

Also offered Online

PSYCH 212 LEC 0.50

Course ID: 007895

Educational Psychology

A consideration of the main variables affecting learning in the classroom with special focus upon the conditions essential to efficient learning.

[Note: PSYCH 212 offered at St. Jerome's; PSYCH 212R offered at Renison.]

Prereq: PSYCH 101/101R or 121R

(Cross-listed with PSYCH 212R)

PSYCH 212R LEC 0.50

Course ID: 007895

Educational Psychology

A consideration of the main variables affecting learning in the classroom with special focus upon the conditions essential to efficient learning.

[Note: PSYCH 212 offered at St. Jerome's; PSYCH 212R offered at Renison.]

Prereq: PSYCH 101/101R or 121R

(Cross-listed with PSYCH 212)

PSYCH 213R LEC 0.50

Course ID: 007896

Exceptional Children

Educational issues associated with cognitive, emotional, sensory, and physical differences and challenges.

[Note: Formerly PSYCH 213]

Prereq: PSYCH 101/101R or 121R

Also offered Online

PSYCH 218 LEC 0.50

Course ID: 006428

Psychology of Death and Dying

Variations in the meaning and significance of death and dying will be considered from a psychological perspective, with particular attention to the contexts (e.g., cultural, familial, life-span developmental) in which these variations occur.

Prereq: PSYCH 101/101R or 121R; Level at least 2A

(Cross-listed with GERON 218, HLTH 218)

PSYCH 226R LEC 0.50

Course ID: 013890

Positive Psychology

This course surveys theories and studies related to human strength and positive human functioning, with a focus on the psychological aspects of a fulfilling life. Topics include optimism, creativity, humour, resilience, wisdom, empathy, love, friendship, achievement, and happiness.

Prereq: PSYCH 101/101R or 121R

PSYCH 230 LEC 0.50

Course ID: 010100

Psychology and Law

Psychological principles drawn from a variety of subdisciplines (e.g., social, clinical, cognitive) will be surveyed in terms of their relevance and application to the legal system. Topics may include jury selection and decision-making, eyewitness testimony, insanity defense, competency assessment, risk assessment, and attitudes toward law and the legal process.

Prereq: PSYCH 101/101R or 121R

(Cross-listed with LS 272)

Offered at St. Jerome's University

PSYCH 231 LEC 0.50

Course ID: 007913

The Psychology of Religious Experience

Approaches of traditional psychological theories toward phenomena of religious experience, mysticism, and prayer are examined. The psychological process of creating and naming 'gods' is considered as well as comparisons among altered states of consciousness including some forms of prayer.

Prereq: PSYCH 101/101R or 121R

PSYCH 232 LEC 0.50

Course ID: 007915

Psychology of Evil

Psychological perspectives concerning definitions, causes, and consequences of institutional and personal evil, as well as symbols and interpretations of evil in both religious and secular contexts, will be considered.

Prereq: PSYCH 101/101R or 121R; Level at least 2A

PSYCH 235 LEC 0.50

Course ID: 007917

Psychological Perspectives on Gender and Sex

The course focuses on the existence of and bases for sex and gender differences with emphasis on biological, psychological and cultural issues.

Prereq: PSYCH 101/101R or 121R

PSYCH 236 LEC 0.50

Course ID: 007918

A Psychological Analysis of Human Sexuality

This course will examine psychological and social psychological theories and empirical investigations of human sexuality.

Prereq: PSYCH 101/101R or 121R.

Antireq: SMF 204

PSYCH 238 DIS,LEC 0.50

Course ID: 007967

Organizational Psychology

Survey of organizational, group, and individual processes involved in work motivation, group dynamics, leadership, organizational climate and organizational culture.

[Note: Formerly PSYCH 338]

Prereq: PSYCH 101/101R or 121R.

Antireq: PSYCH 338, AFM 280, MSCI 211, BUS 288W/388W, SCBUS 225

PSYCH 253 LEC 0.50

Course ID: 007904

Social Psychology

An introduction to the scientific study of social behaviour and social influences on behaviour. Theories and research on such topics as attitude change and persuasion, stereotypes and prejudice, conformity and obedience to authority, altruism, conflict, attraction and love may be introduced.

[Note: PSYCH 253 - offered on campus and Online; PSYCH 253R - offered at Renison University College]

Prereq: PSYCH 101/101R or 121R.

Antireq: PSYCH 220R

(Cross-listed with PSYCH 253R)

Also offered Online

PSYCH 253R LEC 0.50

Course ID: 007904

Social Psychology

An introduction to the scientific study of social behaviour and social influences on behaviour. Theories and research on such topics as attitude change and persuasion, stereotypes and prejudice, conformity and obedience to authority, altruism, conflict, attraction and love may be introduced.

[Note: PSYCH 253 - offered on campus and Online; PSYCH 253R - offered at Renison University College]

Prereq: PSYCH 101/101R or 121R.

Antireq: PSYCH 220R

(Cross-listed with PSYCH 253)

Also offered Online

PSYCH 256 LEC 0.50

Course ID: 007293

Introduction to Cognitive Science

Cognitive science is the interdisciplinary study of mind and intelligence. This course will draw on philosophy, psychology, artificial intelligence, linguistics, neuroscience, and anthropology to address central questions about the nature of thinking. Topics discussed will include mental representation, computational models of mind, and consciousness.

(Cross-listed with PHIL 256)

Also offered Online

PSYCH 257 LEC 0.50

Course ID: 007928

Psychopathology

This course offers an introduction to understanding, assessing, and treating mental illness from a psychological perspective. Course material will focus on various categories of abnormal behaviour, including personality, anxiety, and mood disorders, schizophrenia, and substance abuse. Clinical methods of assessment, diagnosis, and intervention will also be considered.

[Note: PSYCH 257 - offered on campus and at St. Jerome's University; PSYCH 257R - offered at Renison University College.]

Prereq: PSYCH 101/101R or 121R.

Antireq: PSYCH 323R

(Cross-listed with PSYCH 257R)

PSYCH 257R LEC 0.50

Course ID: 007928

Psychopathology

This course offers an introduction to understanding, assessing, and treating mental illness from a psychological perspective. Course material will focus on various categories of abnormal behaviour, including personality, anxiety, and mood disorders, schizophrenia, and substance abuse. Clinical methods of assessment, diagnosis, and intervention will also be considered.

[Note: PSYCH 257 - offered on campus and at St. Jerome's University; PSYCH 257R - offered at Renison University College.]

Prereq: PSYCH 101/101R or 121R.

Antireq: PSYCH 323R

(Cross-listed with PSYCH 257)

PSYCH 261 LEC 0.50

Course ID: 007931

Physiological Psychology

Introduction to brain, basic physiological processes, and their roles in behaviour. Topics may include: sensing and perceiving; neural bases of action; motivation; learning and memory; and consciousness. Both experimental and clinical data are considered.

Prereq: PSYCH 101/101R or 121R

Also offered Online

PSYCH 264 PRA 0.50

Course ID: 011664

Research Apprenticeship

Students are introduced to the research process by participating in an unpaid apprenticeship of 96 hours in a faculty member's research lab in the Psychology Department. Apprenticeship hours will be completed before the end of the lecture period for the term of enrolment. Application forms are available on the Psychology undergraduate website. Grading is on a credit/no credit basis. Paid or volunteer positions obtained outside the context of this course are not eligible for credit in this course. [Offered: F,W,S.]

Department Consent Required

Prereq: PSYCH 291; Honours Psychology students.

Antireq: PSYCH 464

PSYCH 291 DIS,LAB,LEC 0.50

Course ID: 007934

Basic Research Methods

This course introduces the methods used to observe, quantify, summarize, and describe behaviour in empirical psychological science. It focuses on research design and the interpretation of results. [Offered: F]

Prereq: PSYCH 101/101R or 121R; Level at least 2A; Psychology majors.

Coreq: MATH 103 if no 4U Math.

Antireq: HLTH 333, ISS/SDS 251R, KIN 232, 330, REC 270, SWREN 251R

PSYCH 292 LEC,TUT 0.50

Course ID: 007935

Basic Data Analysis

An introduction to the logic and methods of descriptive and inferential statistics with emphasis on application in Psychology. Topics covered include measures of central tendency and variability, distributions, the normal distribution, z-scores, hypothesis testing, probability, chi-square tests, t-tests, power, and correlation and regression. [Offered: W]

Prereq: PSYCH 291; Psychology majors; 1 of MATH 103 or 4U Math.

Antireq: ARTS 280, ECON 221, ENVS 278, ISS 250A/B, ISS/SDS 250R, KIN 222, 232, PSCI 214/314, REC 371, SMF 230, SOC/LS 280, STAT 202, 204, 206, 211, 221, 231, 241, SWREN 250A/B/R

Also offered Online

PSYCH 300s

PSYCH 306 DIS,LEC 0.50

Course ID: 007938

Perception

What we perceive through our senses makes up much of our conscious experience. This course examines how visual and auditory perception arises and includes topics such as how we become aware of colour, form, space, brightness, loudness, and pitch, and how this information guides behaviour. Other senses may be covered.

Prereq: PSYCH 207 or 261; Level at least 2B

PSYCH 307 LEC 0.50

Course ID: 007939

Human Neuropsychology

An introduction to current human experimental neuropsychology. The course will review evidence for brain-behaviour interactions obtained from studies of human brain damage and from investigations of the normal brain. Topics such as the representation of language, hemispheric specialization, memory, spatial ability, dyslexia, movement disorders and affective disorders will be considered.

Prereq: One of PSYCH 207, 261, KIN 356; Level at least 2B

PSYCH 308 LEC 0.50

Course ID: 007940

Psychology of Reading

An introduction to the psychology of reading with emphasis on 1) how adult readers recognize words, 2) various accounts of acquired dyslexias consequent to brain damage, 3) computational models of word recognition, and 4) the role of attention and eye movements in reading.

Prereq: PSYCH 207

PSYCH 312 LEC 0.50

Course ID: 007943

Learning Disabilities

A critical examination of the concept of learning disability and of current issues in the assessment and remediation of learning problems.

[Note: PSYCH 312 offered Online; PSYCH 312R offered at Renison.]

Prereq: One of PSYCH 207, 211, 212/212R, 213/213R; Level at least 2B

(Cross-listed with PSYCH 312R)

Also offered Online

PSYCH 312R LEC 0.50

Course ID: 007943

Learning Disabilities

A critical examination of the concept of learning disability and of current issues in the assessment and remediation of learning problems.

[Note: PSYCH 312 offered Online; PSYCH 312R offered at Renison.]

Prereq: One of PSYCH 207, 211, 212/212R, 213/213R; Level at least 2B

(Cross-listed with PSYCH 312)

Also offered Online

PSYCH 314 LEC 0.50

Course ID: 007944

Cognitive Development

This course introduces research in the areas of debate in cognitive development pertaining to children in infancy and early childhood and drawn from a variety of disciplines including developmental psychology, psycholinguistics, and comparative psychology. Different methodologies and mechanisms of cognitive change are also covered.

Prereq: PSYCH 207 and 211; Level at least 2B

PSYCH 315 LEC 0.50

Course ID: 007945

Psychology of Adolescence and Emerging Adulthood

A study of the psychological processes in the second and third decades of human development. Consideration is given to such areas as identity formation and intellectual, emotional, and social growth. Current concepts, issues, and research are stressed.

Prereq: PSYCH 211

Offered at St. Jerome's University

PSYCH 316 LEC 0.50

Course ID: 014878

Pragmatic Language Development

This course is an in-depth introduction to pragmatic language development with a focus on children's conversational and narrative ability. Typical and atypical pragmatic language development is examined from a longitudinal, social-cognitive, and multi-cultural perspective and with respect to longer-term outcomes such as social competence, friendship, and success in school.

Prereq: PSYCH 211; Level at least 3A

PSYCH 317 LEC 0.50

Course ID: 007947

Child Psychopathology

An examination of children's psychological disorders from several major perspectives with an emphasis on current research findings. Theoretical and clinical issues are considered.

Prereq: PSYCH 211

Also offered at St. Jerome's University

PSYCH 318 LEC 0.50

Course ID: 007948

Psychosexual Organization

A detailed examination of concepts related to the formation of gender identity and psychosexual orientation. The nature-nurture debate will be explored as well as gay and lesbian identity and consciousness throughout the life cycle.

Prereq: PSYCH 211 or 236

Offered at St. Jerome's University

PSYCH 319 LEC 0.50

Course ID: 011396

Problem Behaviour in the Classroom

This course will address theories related to problem behaviours in the classroom; the incidence and etiology of conduct problems and behavioural disorders; and the learning outcomes of children with such disorders. Special emphasis is given to research and theory related to the promotion of academic success.

Prereq: PSYCH 211, 212/212R

Offered at St. Jerome's University

PSYCH 320 LEC 0.50

Course ID: 011305

Language Development

Examines early language development including how children learn about sounds, words, higher-level sentence structure, and how to communicate effectively. Explores factors within the child and aspects of the environment that make language acquisition possible, as well as special populations of learners who provide additional insight into the acquisition process.

Prereq: PSYCH 211 or 207

PSYCH 330 LEC 0.50

Course ID: 010042

Criminal Profiling

Foundational assumptions for, and basic approaches to, criminal profiling will be considered, along with a survey of relevant techniques in the context of numerous case studies. Limitations and alternatives to profiling will also be addressed.

Prereq: PSYCH 230/LS 272

(Cross-listed with LS 372)

Offered at St. Jerome's University

PSYCH 334R LEC 0.50

Course ID: 007962

Theories of Individual Counselling Psychology

An introduction to the methods, theories, and problems in individual counselling psychology.

Prereq: PSYCH 101/101R or 121R; Level at least 2A.

Antireq: PSYCH 334

PSYCH 335 LEC 0.50

Course ID: 014223

Developmental Neuropsychology

Developmental neuropsychology is a field in which brain-behaviour relationships are examined in the context of typical and atypical development. This course focuses on the structural development of the brain, the emergence of functional brain systems, and the neuropsychological underpinnings of childhood brain disorders such as phenylketonuria, autism, epilepsy, and stroke. Emphasis is placed on the integration of theoretical perspectives and empirical research in neuropsychology with clinical practice.

Prereq: PSYCH 207 or 211; PSYCH 261 or KIN 301.

Antireq: PSYCH 363 taken Spring 2012

PSYCH 336 LEC 0.50

Course ID: 007965

Introduction to Clinical Psychology

This course is designed to survey major aspects of clinical psychology such as historical background, assessment and intervention models, current trends and future directions in clinical practice.

Prereq: PSYCH 257/257R or 323R

PSYCH 339 LEC 0.50

Course ID: 007968

Personnel Psychology

The application of psychology to human resource issues in Canadian organizations. Topics will include defining and measuring job performance, job analysis, performance appraisal, recruitment, personnel selection, and training. Procedures which meet technical, professional, and legal standards will be examined.

Prereq: PSYCH 101/101R or 121R, and one of PSYCH 291 or Level at least 3A.

Antireq: BUS 354W/454W, BUS 408W/498KW

PSYCH 340 DIS,LEC,OLN 0.50

Course ID: 011708

Training and Development

This course covers systematic approaches and models for training and development; needs assessment; curriculum design; instructional approaches, including use of learning technology; relevant aspects of learning and cognitive theories; and evaluation.

Prereq: PSYCH 101/101R or 121R.

Antireq: BUS 474W

PSYCH 342 DIS,LEC,TUT 0.50

Course ID: 014501

The Psychology of Groups and Teams

The psychology of groups and teams will address psychological processes particular to any social group situation, for example creative design teams, decision making groups, sports teams, group counselling, university clubs, and community groups. Topics include social identification and cohesion, group dynamics (e.g., social loafing, social influence, temporal dynamics, conflict management, etc.), communication in groups, creativity and brainstorming in groups, team leadership, team learning, and measuring team performance. In addition to lectures there will be discussion groups for team experiential exercises.

Prereq: PSYCH 101/101R or 121R; Level at least 2B

PSYCH 349R LEC,SEM 0.50

Course ID: 011388

Cross-Cultural Psychology

This course focuses on human psychology (behaviours, cognition, emotion, motivation, and personality) across cultures, with the aim of raising awareness and understanding of human commonality and diversity. It examines theoretical, methodological, and ethical issues in cross-cultural psychology in light of the current literature.

[Note: SWREN 349R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: PSYCH 220R or 253/253R.

Antireq: PSYCH 222R, 352

(Cross-listed with SWREN 349R)

PSYCH 350 LEC 0.50

Course ID: 013526

Political Psychology

What can psychological science contribute to our understanding of political behaviour? To answer this question we will review psychological theory and research on such topics as voter decision-making, political ideologies, issue framing and public opinion, activism in social movements, barriers to conflict resolution, leadership, multiculturalism, political extremism and collective violence.

Prereq: PSYCH 101/101R or 121R; Level at least 3A

PSYCH 352 LEC 0.50

Course ID: 010124

Culture and Psychology

Special emphasis will be given to questions of how some cultural patterns get established, and how they are maintained once they are established. Topics may include aggression, individualism and collectivism, perspectives on the self, and methodological concerns.

Prereq: PSYCH 253/253R or 220R; Level at least 2B.

Antireq: PSYCH 222R/349R, SWREN 349R

PSYCH 353 LEC 0.50

Course ID: 007972

Social Cognition

This course examines how people make sense of their social world: how they perceive, represent, interpret, and remember information about themselves and about other individuals and groups. Topics include representation, recall, and use of social knowledge, controllability of thought processes, effects of feelings and desires, stereotype activation and use, and cultural influences.

Prereq: PSYCH 253/253R or 220R

PSYCH 354 LEC 0.50

Course ID: 007906

Interpersonal Relations

A psychological analysis of social interaction and the dynamics of close relationships.

[Note: PSYCH 354 - offered on campus and at St. Jerome's University; PSYCH 354R - offered at Renison University College and Online.]

Prereq: PSYCH 253/253R or 220R.

Antireq: PSYCH 221R or SMF 306

(Cross-listed with PSYCH 354R)

Also offered Online

PSYCH 354R LEC 0.50

Course ID: 007906

Interpersonal Relations

A psychological analysis of social interaction and the dynamics of close relationships.

[Note: PSYCH 354 - offered on campus and at St. Jerome's University; PSYCH 354R - offered at Renison University College and Online.]

Prereq: PSYCH 253/253R or 220R.

Antireq: PSYCH 221R or SMF 306

(Cross-listed with PSYCH 354)

Also offered Online

PSYCH 355 LEC 0.50

Course ID: 014503

Intergroup Relations

This course reviews social psychological theory and research on intergroup relations: how groups of people and people from different groups interact. It examines stereotyping, prejudice, and discrimination (e.g., racism, sexism, ageism, weight, or sexual prejudice) from both majority and minority perspectives. It also discusses implications for promoting intergroup trust, reducing inequality, and resolving real-world conflict.

Prereq: PSYCH 253/253R or 220R; Level at least 2B

PSYCH 356 LEC 0.50

Course ID: 011585

Personality

This course addresses the science of measuring and explaining patterned individual differences in behaviour, including temperaments and traits; values, goals, and personal strivings; and meaning systems and self-narratives. Topics include behavioural, physiological, genetics, and cultural studies of personality; continuity and change in personality over the lifespan; and personality disorders.

[Note: PSYCH 356 offered on campus; PSYCH 356R offered at Renison University College and Online.]

Prereq: PSYCH 101/101R or 121R; Level at least 3A.

Antireq: PSYCH 355 (taken Winter 2003 or earlier) or 322R

(Cross-listed with PSYCH 356R)

PSYCH 356R LEC 0.50

Course ID: 011585

Personality

This course addresses the science of measuring and explaining patterned individual differences in behaviour, including temperaments and traits; values, goals, and personal strivings; and meaning systems and self-narratives. Topics include behavioural, physiological, genetics, and cultural studies of personality; continuity and change in personality over the lifespan; and personality disorders.

[Note: PSYCH 356 offered on campus; PSYCH 356R offered at Renison University College and Online.]

Prereq: PSYCH 101/101R or 121R; Level at least 3A.

Antireq: PSYCH 355 (taken Winter 2003 or earlier) or 322R

(Cross-listed with PSYCH 356)

PSYCH 357 LEC 0.50

Course ID: 015540

Psychology of Good

What does it mean to "be good"? How does one "do good"? What makes "doing good" easier or harder? This course examines (1) the biological and psychosocial foundations of prosocial behaviour and (2) associated facilitators and obstacles at both interpersonal and organizational levels. Topics may include empathy, social responsibility, volunteerism, community intervention, activism, and heroism.

Prereq: PSYCH 101/101R

Offered at St. Jerome's University

PSYCH 361 LEC 0.50

Course ID: 007977

Evolutionary Psychology

The objective of the course is to consider human and animal behaviour from a Darwinian evolutionary perspective. Topics will include habitat selection and predator avoidance, sexual selection and mating systems, social behaviour, aggression, and evolutionary perspectives in perception and cognition.

Prereq: One of PSYCH 207, 220R, 253/253R, 261

PSYCH 363 LEC 0.50

Course ID: 010159

Special Subjects

These courses will be offered at different times as announced by the Department.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

PSYCH 372 LEC 0.50

Course ID: 014512

Environmental Psychology

This course is intended to increase the awareness and understanding of the impact of the environment on human behaviour and experience. Topics to be discussed include territoriality and crowding, environment cognition, the psychology of public spaces, the influence of digital and social media on environment perception, and the impact of urban design on mental health. The course will include both lectures and interactive activities.

Prereq: PSYCH 101/101R or 121R; Level at least 2B

PSYCH 375R LEC 0.50

Course ID: 012190

Studies in Psychology

This course will deal with selected topics in psychology. Subjects will be dependent upon the research and/or instructional interests of faculty.

[Note: Students wishing to take such courses should consult with the Social Development Studies undergraduate advisor. This is a repeatable course, subject to different content; it may be completed a total of three times.]

Department Consent Required

Offered at Renison University College

PSYCH 380 LEC 0.50

Course ID: 012961

History of Psychology

This course surveys major developments and personalities in the field of psychology, starting with Wundt's founding of the world's first laboratory for experimental psychology in 1879. By comparing the important movements of structuralism, functionalism, behaviourism and gestaltism, the course evaluates the ideas that continue to provide the basis for modern research and practice in psychology. It will be of interest to those wanting a broader perspective on the field of scientific psychology or the history of science, or those planning a career in psychology.

Prereq: PSYCH 101/101R or 121R; Level at least 2B.

Antireq: PSYCH 363 taken Winter 2008

PSYCH 389 LAB,SEM 0.50

Course ID: 015166

Social Science Advanced Research Methods Topics

Topics explore social science research methods in Psychology. Consult departmental listings for upcoming topics, which may include naturalistic observation, factorial experiment design, behavioural coding, survey/questionnaire construction, interviewing, and/or linguistic analysis. Activities may include research proposals, group and/or individual projects (e.g., lab experience, data collection), research reports, critiques of published/proposed research, and student presentations. [Offered: F]

Prereq: PSYCH 211, 257/257R; PSYCH 238/338 or 253/253R; Level at least 3A Honours BA Psychology Research Intensive Specialization or Honours BSc Psychology or Makeup Psychology.

Coreq: PSYCH 391.

Antireq: PSYCH 393, 395, 397, 399

PSYCH 390 LAB,SEM 0.50

Course ID: 015167

Natural Science Advanced Research Methods Topics

Topics explore natural science research methods in Psychology. Consult departmental listings for upcoming topics, which may include methods for studying psychophysiology, neuroanatomy, and/or cognitive processes (e.g., perception, attention, memory, information-processing, decision-making). Activities may include research proposals, group and/or individual projects (e.g., lab experience, data collection), research reports, critiques of published/proposed research, and student

presentations. [Offered: W and/or S]

Prereq: PSYCH 207, 211, 261; Level at least 3A Honours BA Psychology Research Intensive Specialization or Honours BSc Psychology or Make-Up Psychology.

Coreq: PSYCH 391.

Antireq: PSYCH 392, 394, 396, 398

PSYCH 391 LAB,LEC,TUT 0.50

Course ID: 007998

Advanced Data Analysis

Aimed at developing an understanding of the use and interpretation of statistics in complex research designs, this course emphasizes analysis of variance and multiple comparison techniques to interpret the results of multi-factor experiments. The importance of power in factorial designs is discussed. The course includes a computer component that ties the use of a statistical package to the topics discussed in lectures. [Offered: F, W]

Prereq: PSYCH 291, 292; Level at least 3A Honours Psychology or Make-up Psychology; Psychology average at least 74%.

Antireq: STAT 322, 332, 430

PSYCH 392 LAB,SEM 0.50

Course ID: 013001

Research in Human Cognitive Neuroscience

Students learn how to measure psychophysiological responses to the stimuli in our world (e.g., familiar faces, emotional scenes, video games, etc.). Students get hands-on training in acquiring and analyzing different types of psychophysiological data such as skin conductance responses and heart rate changes over short and long periods. [Offered: W and/or S]

Prereq: PSYCH 261; Level at least 3A Honours Psychology or Make-up Psychology students; Psychology average at least 74%.

Coreq: PSYCH 391.

Antireq: PSYCH 390, 394, 396, 398; Psychology Research Intensive Specialization

PSYCH 393 LAB,SEM 0.50

Course ID: 008000

Research in Developmental Psychology

Current research methods and procedures employed in developmental research are covered. Activities may include research proposals, group and/or individual projects (e.g., 'hands on' lab experience and data collection), research reports, critiques of published and proposed research, individual and/or group presentations. [Offered F]

Prereq: PSYCH 211; Level at least 3A Honours Psychology or Make-up Psychology students; Psychology average at least 74%.

Coreq: PSYCH 391.

Antireq: PSYCH 389, 395, 397, 399; Psychology Research Intensive Specialization

PSYCH 394 LAB,SEM 0.50

Course ID: 008001

Research in Cognition and Perception

Current topics in the study of cognitive and perceptual processes including research methods and procedures are covered. Activities may include research proposals, group and/or individual projects (e.g., 'hands on' lab experience and data collection), research reports, critiques of published and proposed research, individual and/or group presentations. [Offered: W and/or S]

Prereq: PSYCH 207; Level at least 3A Honours Psychology or Make-up Psychology students; Psychology average at least 74%.

Coreq: PSYCH 391.

Antireq: PSYCH 390, 392 (taken Spring 2009 or later), 396, 398; Psychology Research Intensive Specialization

PSYCH 395 LAB,SEM 0.50

Course ID: 008002

Research in Social Psychology

Current research methods and procedures employed in social psychology research are covered. Activities may include research proposals, group and/or individual projects (e.g., 'hands on' lab experience and data collection), research reports, critiques of published and proposed research, individual and/or group presentations. [Offered F]

Prereq: PSYCH 253/253R or 220R; Level at least 3A Honours Psychology or Make-up Psychology students; Psychology average at least 74%.

Coreq: PSYCH 391.

Antireq: PSYCH 389, 393, 397, 399; Psychology Research Intensive Specialization

PSYCH 396 LAB,SEM 0.50

Course ID: 008003

Research in Behavioural Neuroscience

Students learn about research in behavioural neuroscience in a hands-on, laboratory atmosphere with an emphasis on comparative and evolutionary approaches to understanding brain-behaviour relations. Projects include neuroanatomical methods and observation of behaviour using a variety of analytic methods. [Offered: W and/or S]

Prereq: PSYCH 261; Level at least 3A Honours Psychology or Make-up Psychology students; Psychology average at least 74%.

Coreq: PSYCH 391.

Antireq: PSYCH 390, 392 (taken Spring 2009 or later), 394, 398; Psychology Research Intensive Specialization

PSYCH 397 LAB,SEM 0.50

Course ID: 008004

Research in Personality and Clinical Psychology

Current research methods and procedures employed in personality and/or clinical psychology research are covered. Activities may include research proposals, group and/or individual projects (e.g., 'hands on' lab experience and data collection), research reports, critiques of published and proposed research, individual and/or group presentations. [Offered F]

Prereq: PSYCH 257/257R or 323R; Level at least 3A Honours Psychology or Make-up Psychology students; Psychology average at least 74%.

Coreq: PSYCH 391.

Antireq: PSYCH 389, 393, 395, 399; Psychology Research Intensive Specialization

PSYCH 398 LAB,SEM 0.50

Course ID: 008005

Research in Memory

Current topics in the study of memory including research methods and procedures are covered. Activities may include research proposals, group and/or individual projects (e.g., 'hands on' lab experience and data collection), research reports, critiques of published and proposed research, individual and/or group presentations. [Offered: W and/or S]

Prereq: PSYCH 207 or 261; Level at least 3A Honours Psychology or Make-Up Psychology students; Psychology average at least 74%.

Coreq: PSYCH 391.

Antireq: PSYCH 390, 392 (taken Spring 2009 or later), 394, 396; Psychology Research Intensive Specialization

PSYCH 398R RDG 0.50

Course ID: 008006

Independent Study

An independent in-depth study of a selected area of concern to the student within the discipline of psychology. Available to individuals or small groups of third- or fourth-year Social Development Studies majors and arranged with one of the faculty members from the program.

[Note: Normally, a student may take only two of the Independent Studies courses, SDS 398R, 399R; PSYCH 398R, 399R; SOCWK 398R, 399R; SOC 398R, 399R.]

Department Consent Required

Prereq: Social Development Studies students

Offered at Renison University College

PSYCH 399 LAB,SEM 0.50

Course ID: 011678

Research in Industrial/Organizational Psychology

Current research methods and procedures employed in industrial/organizational psychology are covered. Activities may include research proposals, group and/or individual projects (e.g., 'hands on' lab experience and data collection), research reports, critiques of published and proposed research, individual and/or group presentations. [Offered F]

Prereq: One of PSYCH 220R, 238/338,253/253R,339,AFM 280,MSCI 211; Level at least 3A Honours PSYCH or Make-Up PSYCH students; Psych average at least 74%.

Coreq: PSYCH 391.

Antireq: PSYCH 389,393,395,397; Psychology Research Intensive Specialization

PSYCH 399R RDG 0.50

Course ID: 008007

Independent Study

An independent in-depth study of a selected area of concern to the student within the discipline of psychology. Available to individuals or small groups of third- or fourth-year Social Development Studies majors and arranged with one of the faculty members from the program.

[Note: Normally, a student may take only two of the Independent Studies courses, SDS 398R, 399R; PSYCH 398R, 399R; SOCWK 398R, 399R; SOC 398R, 399R.]

Department Consent Required

Prereq: Social Development Studies students

Offered at Renison University College

PSYCH 400s

PSYCH 420 LAB,SEM 0.50

Course ID: 013342

An Introduction to Computational Neuroscience Methods

This course gives students with either a limited computational or psychology background a gentle introduction to computational neuroscience. The course involves a series of lectures and computational exercises and concludes with an in-class presentation. Programming exercises can be completed with either Excel or a computer language of the student's choice.

Prereq: Level at least 3A Honours Psychology or permission of instructor; Psychology average at least 74%

PSYCH 439 DIS,SEM 0.50

Course ID: 012754

Negotiation in the Workplace: Theory and Practice

This course addresses planning, motivation, communication, information exchange, influence, relationships, emotion, and reaching objectives in a diverse array of interdependent decision making contexts. Topics include distributive and integrative negotiations, coalitions, negotiating on teams, dispute resolution, and multi-party negotiations. Course format is experiential learning and attendance is required.

[Note: In addition to the textbook, there will be a material fee for negotiation cases.]

Prereq: One of PSYCH 238/338, AFM 280, MSCI 211, SCBUS 225; Level at least 3A.

Antireq: PACS 323/LS 319

PSYCH 444R SEM 0.50

Course ID: 015059

Psychological Interventions

This course reviews research showing how brief, non-invasive, low-cost, social psychological treatments can have small but significant benefits months and years later. Topics include school-based interventions, health interventions, psychological well-being interventions, prejudice-reduction interventions, when and why interventions can fail, and the theories behind how interventions work.

Prereq: PSYCH 253/253R or 220R; SDS/ISS 250R or PSYCH 292; SDS/ISS 251R or PSYCH 291; Level at least 3A.

Antireq: PSYCH 449R prior to Winter 2016; PSYCH 450R taught Winter 2012

Also offered Online

PSYCH 447 SEM 0.50

Course ID: 012715

Seminar in Cognitive Science

An interdisciplinary discussion of central issues concerned with mind and intelligence, such as representation, meaning, inference and consciousness.

Prereq: PHIL/PSYCH 256

(Cross-listed with PHIL 447)

PSYCH 448R SEM 0.50

Course ID: 014379

Close Relationships

This course focuses on the life cycle of close adult relationships, ranging from the stages of initial attraction and development of an attachment, to growth and maintenance of the relationship, to conflict and dissolution. Seminars discuss contemporary theory and research with an emphasis on understanding the basic processes involved in intimate relationships.

Prereq: PSYCH 253/253R or 220R; SDS/ISS 250R or PSYCH 292; SDS/ISS 251R or PSYCH 291; Level at least 3A.

Antireq: PSYCH 450R taken in W'10, W'13; PSYCH 455 taken in F'05, W'07, W'09, F'11 (sec 001), F'13 (sec 001), W'15; PSYCH 459

PSYCH 450R SEM 0.50

Course ID: 013096

Senior Seminar in Special Topics

Senior seminars may include weekly readings, individual and/or group projects, class presentations and discussions, research proposals, essays/literature reviews, assignments, midterms, and final exams. Consult departmental listings for topics and prerequisites for the current year.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Prereq: 1.0 unit of PSYCH; Level at least 3A

PSYCH 451 SEM 0.50

Course ID: 015015

Honours Seminar - Child and Adolescent Psychopathology

This seminar addresses issues in child/adolescent psychopathology such as mood/anxiety disorders, conduct disorder, psychosis, eating disorders, Tourette's Syndrome, and severe behavioural problems. Emphasis is on theories and research concerning social-emotional functioning, diagnosis, therapy, and socio-cultural contexts. The course also considers challenges and barriers encountered when raising and teaching children/adolescents with a mental illness.

Prereq: PSYCH 317; Honours Psychology or Make-Up Psychology only; Psychology average at least 74%.

Coreq: PSYCH 391.

Antireq: PSYCH 463 taken Fall 2012, Winter 2014 (section 002), Fall 2014

PSYCH 453 SEM 0.50

Course ID: 008019

Honours Seminar in Developmental Psychology

Topics reflect current issues in developmental psychology. Consult the departmental listings for the upcoming topics. Activities may include oral presentations, class discussions, individual and/or group projects, and written assignments.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: PSYCH 211; Level at least 3A Honours Psychology or Make-up Psychology students; Psychology average at least 74%.

Coreq: PSYCH 391

PSYCH 454 SEM 0.50

Course ID: 008027

Honours Seminar in Educational Psychology

Topics reflect current issues in educational psychology. Consult the departmental listings for the upcoming topics. Activities may include oral presentations, class discussions, individual and/or group projects, and written assignments.

Prereq: PSYCH 212/212R; Level at least 3A Honours Psychology or Make-Up Psychology students; Psychology average at least 74%.

Coreq: PSYCH 391

Offered at St. Jerome's University

PSYCH 455 SEM 0.50

Course ID: 008035

Honours Seminar in Social Psychology

Topics reflect current issues in social psychology. Consult the departmental listings for the upcoming topics. Activities may include oral presentations, class discussions, individual and/or group projects, and written assignments.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: PSYCH 253/253R or 220R; Level at least 3A Honours Psychology or Make-Up Psychology students; Psychology average at least 74%.

Coreq: PSYCH 391

PSYCH 457 SEM 0.50

Course ID: 008049

Honours Seminar in Personality and Clinical Psychology

Topics reflect current issues in personality and clinical psychology. Consult the departmental listings for the upcoming topics. Activities may include oral presentations, class discussions, individual and/or group projects, and written assignments.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: PSYCH 257/257R or 323R; Level at least 3A Honours Psychology or Make-up Psychology students; Psychology average at least 74%.

Coreq: PSYCH 391

PSYCH 458 SEM 0.50

Course ID: 008060

Honours Seminar in Cognition

Topics reflect current issues in cognitive psychology. Consult the departmental listings for the upcoming topics. Activities may include oral presentations, class discussions, individual and/or group projects, and written assignments.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: PSYCH 207; Level at least 3A Honours Psychology or Make-up Psychology students; Psychology average at least 74%.

Coreq: PSYCH 391

PSYCH 459 SEM 0.50

Course ID: 015062

Honours Seminar - Close Relationships

This course covers social psychological theories of close relationships with emphasis on reading and discussion of original empirical articles. Topics may include attraction, partner selection, trust and power, attachment, communications, conflict, intimacy, and relationship maintenance and dissolution. Student roles include presenting articles, leading discussions, and submitting a written research proposal.

Prereq: PSYCH 354/354R or (PSYCH 253/253R and SMF 306); Honours Psychology or Make-Up Psychology; Psych average at least 74%.

Coreq: PSYCH 391.

Antireq: PSYCH 448R; PSYCH 450R taken W'10 or W'13; PSYCH 455 taken F'11 (sec 001), F'13 (sec 001), W'15

Also offered at St. Jerome's University

PSYCH 461 SEM 0.50

Course ID: 008065

Honours Seminar in Cognitive Neuroscience

Topics reflect the research interests of faculty members, for example, cognitive neuropsychology, visual neuroscience, and hemispheric specialization. Consult the departmental listings for the upcoming topics. Activities may include oral presentations, class discussions, individual and/or group projects, and written assignments.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: PSYCH 261; Level at least 3A Honours Psychology or Make-up Psychology students; Psychology average at least 74%.

Coreq: PSYCH 391

PSYCH 462 SEM 0.50

Course ID: 008073

Honours Seminar in Industrial/Organizational Psychology

Consult the departmental listings for the upcoming topics. Content may involve personnel (e.g., employee selection and appraisal) and/or organizational topics (groups/teams, justice, leadership, motivation, organizational culture or organizational change). Activities may include oral presentations, class discussions, individual and/or group projects, and written assignments.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: One of PSYCH 238/338, AFM 280, MSCI 211; Level at least 3A Honours Psychology or Make-up Psychology students; Psychology average at least 74%.

Coreq: PSYCH 391

PSYCH 463 SEM 0.50

Course ID: 010160

Honours Seminar in Special Topics

Honours seminars may include weekly readings, individual and/or group projects, class discussions, research proposals, one or two essays/literature reviews, weekly assignments, one or two midterms, and final exams. Consult departmental listings for topics and topic-specific prerequisites for the current year.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Department Consent Required

Prereq: Level at least 3A Honours Psychology or Make-up Psychology students; Psychology average at least 74%.

Coreq: PSYCH 391

PSYCH 464 PRA 0.50

Course ID: 008094

Advanced Research Apprenticeship

This course involves an unpaid apprenticeship of 96 hours in a faculty member's research lab in the Department of Psychology. Apprenticeship hours will be completed before the end of the lecture period for the term of enrolment. Students will be assigned duties that will enable them to advance their understanding of the research process. Course application forms are available on the Psychology undergraduate website. Grading is on a credit/no credit basis. Paid or volunteer positions that are obtained outside the context of this course are not eligible for credit in this course. [Offered: F,W,S]

Department Consent Required

Prereq: PSYCH 391; one of PSYCH 389, 390, 392, 393, 394, 395, 396, 397, 398, 399, 483 or 484; Honours Psychology or Make-up Psychology students.

PSYCH 465 LAB,PRA,SEM 0.50

Course ID: 008096

Applied Apprenticeship

For Psychology majors interested in a career in applied psychology. The course involves an unpaid apprenticeship in an industrial, medical, government, or other applied setting combined with regular seminar meetings. The apprenticeship will require a volunteer commitment of 60 hours during the lecture period. The course is offered on a credit/no credit basis. Paid or volunteer positions that are obtained outside the context of this course are not eligible for credit in this course. Course application forms are available at the Psychology undergraduate website. [Offered: W]

Department Consent Required

Prereq: PSYCH 291 and 292; Level at least 3A Psychology Majors; Psychology average at least 75%.

Antireq: PSYCH 467

PSYCH 466 PRA,SEM 0.50

Course ID: 008097

Emergent Literacy

Emergent literacy refers to the knowledge and skills children acquire from birth on through the preschool years that are important to the development of literacy (reading and writing). Students will learn about emergent literacy via a once-weekly seminar component and a once-weekly unpaid practicum placement at a local elementary public school where students will have the opportunity to read one-on-one with children who are at the beginning stages of reading. The practicum component will involve a commitment of up to 30 hours during the formal lecture period. Students wishing to enter the course must obtain a police check prior to the second week of classes. Transportation to the apprenticeship/volunteer setting is the student's responsibility. Please review the course application form for information on safety for students on unpaid work placement and insurance responsibilities. Course application forms and further details are available on the Psychology undergraduate website. Paid or volunteer positions that are obtained outside the context of this course are not eligible for credit in this course.

Department Consent Required

Prereq: PSYCH 211, 212/212R, 291, 292; Level at least 3A Honours Psychology or Four-Year General Psychology students; Psychology average of at least 75%

PSYCH 467 PRA,SEM 0.50

Course ID: 012756

Human Resources Apprenticeship

For Psychology majors and Human Resources Management students interested in a career in Human Resources. The course involves an unpaid apprenticeship in a human resources setting combined with regular seminar meetings. The apprenticeship will require a volunteer commitment of 60 hours during the lecture period. The course is offered on a credit/no credit basis. Paid or volunteer positions that are obtained outside the context of this course are not eligible for credit in this course. Course application forms are available at the Psychology undergraduate website. [Offered: W]

Department Consent Required

Prereq: HRM 200; one of PSYCH 238/338, 339, 340; one of HRM 301, 303, 305, 307; Psychology Majors and Human Resources Management students; HRM average at least 70%.

Antireq: PSYCH 465

PSYCH 470 LEC 0.50

Course ID: 015168

Special Topics in Applied Psychology

Topics cover practical applications of theory and research in one or more of the six areas of psychology. Consult departmental listings for upcoming topics. Topics may include applications of psychology to health, well-being, law, education, policy analysis, management, marketing, regulation, systems design, community organizing, conflict resolution, and/or communications.

Prereq: PSYCH 211, 257/257R, 291, 292; PSYCH 207 or 261; PSYCH 238/338 or 253/253R; Level at least 3A Psychology majors or Make-Up Psychology.

PSYCH 480 RDG 0.50

Course ID: 008098

Directed Studies - Elective

The student will conduct an extensive literature review and write a major essay/critique of the literature under the supervision of a faculty member selected by the student. The course application form must include a detailed course plan including the method of evaluation.

[Note: Normally students will take no more than 3 of PSYCH 480-486. Offered: F,W,S]

Department Consent Required

Prereq: Psychology majors; Level at least 3A; Psychology average at least 75%

PSYCH 481 RDG 0.50

Course ID: 011169

Directed Studies - Natural Science Advanced Psych

The student will conduct an extensive literature review under the supervision of a faculty member. Course requirements will include writing a major essay/critique of a topic in a natural science area of psychology. The course application form must include a detailed course plan including the method of evaluation.

[Note: Normally students will take no more than 3 of PSYCH 480-486. Offered: F,W,S]

Department Consent Required

Prereq: Psychology majors; Level at least 3A; Psychology average at least 75%

PSYCH 482 RDG 0.50

Course ID: 011170

Directed Studies - Social Science Advanced Psych

The student will conduct an extensive literature review under the supervision of a faculty member. Course requirements will include writing a major essay/critique of a topic in a social science area of psychology. The course application form must include a detailed course plan including the method of evaluation.

[Note: Normally students will take no more than 3 of PSYCH 480-486. Offered: F,W,S]

Department Consent Required

Prereq: Psychology majors; Level at least 3A; Psychology average at least 75%

PSYCH 483 PRJ 0.50

Course ID: 011171

Directed Studies - Natural Science Research

The student conducts an empirical research project in a natural science area of psychology under the supervision of a faculty member. Course requirements include writing a report of the research carried out. The course application form must include a detailed course plan including the method of evaluation.

[Note: Normally students will take no more than 3 of PSYCH 480-486. Offered: F,W,S]

Department Consent Required

Prereq: Level at least 3A Honours Psychology or Make-up Psychology students; Psychology average at least 75%.

Coreq: PSYCH 391

PSYCH 484 PRJ 0.50

Course ID: 011172

Directed Studies - Social Science Research

The student conducts a research project in a social science area of psychology under the supervision of a faculty member. Course requirements include writing a report of the research carried out. The course application form must include a detailed course plan including the method of evaluation.

[Note: Normally students will take no more than 3 of PSYCH 480-486. Offered: F,W,S]

Department Consent Required

Prereq: Level at least 3A Honours Psychology or Make-up Psychology students; Psychology average at least 75%.

Coreq: PSYCH 391

PSYCH 485 RDG,SEM 0.50

Course ID: 011173

Directed Studies - Seminar

The student conducts an extensive literature review under the supervision of a faculty member. Course requirements include writing a major essay/critique of the literature, and doing an oral presentation. The course application form must include a detailed course plan including the method of evaluation.

[Note: Normally students will take no more than 3 of PSYCH 480-486. Offered: F,W,S]

Department Consent Required

Prereq: Level at least 3A Honours Psychology or Make-up Psychology students; Psychology average at least 75%.

Coreq: PSYCH 391

PSYCH 486 RDG 0.50

Course ID: 012281

Directed Studies - Advanced Statistics

The student conducts an extensive study of advanced statistical techniques under the supervision of a faculty member. Course requirements normally include assessment of competency through examination. The course application form must include a detailed course plan including the method of evaluation.

[Note: Normally students will take no more than three of PSYCH 480-486. Offered: F, W]

Department Consent Required

Prereq: PSYCH 391; Level at least 3A Honours Psychology or Make-up Psychology students; Psychology average at least 75%

PSYCH 490R ESS 0.50

Course ID: 013100

Special Studies

An independent, in-depth study, based on empirical research and/or extensive reading in psychology under the direction of individual instructors in psychology at Renison University College. Available to individuals or small groups of fourth-year Social Development Studies majors and arranged with one of the faculty members from the plan. The project must be approved by the academic supervisor of the course prior to registration.

[Note: Normally, a student may only take two of the following: PSYCH 490R, SOC 490R, SOCWK 490R, SDS/ISS 490R, SDS/ISS 499A and SDS/ISS 499B.]

Department Consent Required

Prereq: Level at least 3A

PSYCH 492 LAB,LEC 0.50

Course ID: 010123

Psychological Measurement: Foundations of Research and Practice

Students learn how to develop reliable and valid measures of psychological constructs (e.g., self-esteem, mind wandering), and study and apply advanced analytic procedures (e.g., regression, factor analysis). This course is foundational for graduate studies in all six areas of psychology, and for applied jobs in business, clinical, and educational settings.

Prereq: PSYCH 391; Honours Psychology or Make-up Psychology students; Psychology average at least 74%

PSYCH 493 LAB,PRJ,SEM 0.50

Course ID: 015310

Data Analysis and Graphing in R

The course aims to make students effective, autonomous users of R, a statistics software program with graphical applications and utility in many careers. Students learn to code syntax, analyze, and graph data using R. Each student conducts an R-based data analysis project of particular interest to them.

Prereq: PSYCH 391; Level at least 3A Honours Psychology or Make-up Psychology students; Psychology average at least 74%

PSYCH 499A DIS,PRJ 0.50

Course ID: 008105

Honours Thesis - Part 1

Under supervision of a faculty member students normally will review literature, design a study, present an oral research proposal, collect data, and write a scholarly report of the project. Students may choose to begin PSYCH 499 in their 3B or 4A term.

[Note: No more than two of PSYCH 499A/499B/499C may be taken in one term. A grade for PSYCH 499A and 499B will be submitted only after completion of 499C. Further details are available in the Honours Thesis Handbook. Offered: F,W,S]

Prereq: PSYCH 391; one of PSYCH 389, 390, 392, 393, 394, 395, 396, 397, 398, 399, 483, 484; Honours Psychology or Make-up Psychology students; cumulative Psychology average of 82%

PSYCH 499B PRJ,SEM 0.50

Course ID: 008106

Honours Thesis - Part 2

Continuation of PSYCH 499A

Prereq: Honours Psychology or Make-Up Psychology students with a cumulative average of 75% in Psychology .

Coreq: PSYCH 499A

PSYCH 499C PRJ 0.50

Course ID: 008107

Honours Thesis - Part 3

Continuation of PSYCH 499A/B.

Department Consent Required

Prereq: PSYCH 499A; Honours Psychology or Make-Up Psychology students with a cumulative average of 75% in Psychology.

Coreq: PSYCH 499B

RECREATION AND LEISURE STUDIES

Notes

Course offerings are subject to minimum enrolment requirements and availability of instructors.

REC 100s

REC 100 LEC 0.50

Course ID: 008108

Introduction to the Study of Recreation and Leisure

An overview of the broad field of recreation and leisure emphasizing the understanding of various leisure phenomena. As such, it provides the student with an introductory understanding of the nature and scope of leisure, leisure behaviour and affiliated recreation activity.

Also offered Online

REC 101 LEC,TUT 0.50

Course ID: 008109

Introduction to Recreation and Leisure Services

Using a wide variety of leisure service agencies as examples, this course introduces students to the nature and scope of leisure provision. Topics include program components, the classification and management of resources, professionalism, and current managerial trends and future developments.

REC 105 LEC 0.50

Course ID: 015254

Interdisciplinary Approaches to Leisure

This course examines the intersection of disciplines and methodologies that are the foundation of leisure studies. The major principles of each discipline and how they inform our understanding of leisure will be discussed. Some of the disciplinary foundations considered may include economics, geography, history, philosophy, planning, psychology, sociology, and the arts.

Prereq: REC 100

REC 120 LEC 0.50

Course ID: 008118

Program Management and Evaluation

The scope of recreation program design and delivery is examined with particular emphasis on needs assessment, planning, implementation, and evaluation. This course emphasizes the application of the various management principles required for service delivery. A field trip fee estimated at \$125 per student may be required.

Prereq: REC 100; 101. Recreation and Leisure Studies students.

Antireq: REC 120/220

REC 151 LEC 0.50

Course ID: 014320

Foundations of Therapeutic Recreation Practice

This course is designed to examine models, theories, tools, and techniques required in the design, facilitation, and evaluation of therapeutic recreation services for individuals and groups.

Prereq: REC 100; Department of Recreation and Leisure Studies students

REC 172 LEC 0.50

Course ID: 015109

Special Topics in Leisure Studies 1

One or more term courses will be offered from time to time as announced by the Recreation and Leisure Studies Department. Subjects will be dependent upon special research and/or instructional interests of faculty.

Department Consent Required

REC 200s

REC 200 LEC 0.50

Course ID: 008110

Play, Creativity and Child Development

A critical analysis of definitions, concepts and assumptions of classical, recent and modern theories of play with implications for programming, planning and evaluating children's play.

Prereq: PSYCH 101/101R or 121R

REC 201 LEC 0.50

Course ID: 015110

Diversity and Leisure

This course focuses on what diversity means in leisure studies and explores why diversity matters by introducing issues related to inclusivity, privilege, power, marginalization, and oppression. Areas of exploration may include but are not limited to age, class and poverty, (dis)ability, non-human interactions, race and ethnicity, sexual and gender identities, and status.

Prereq: REC 100, 101

REC 202 DIS,LEC 0.50

Course ID: 006230

History of Western Sport

This course considers the historical impact of Western sport. It traces the history from individual play through amateurism to professionalism, big business, and media. It examines sport's social role within local, national, and international communities, and its relationship to class, gender, leisure, race, and politics.

(Cross-listed with HIST 205)

Also offered Online

REC 203 LEC 0.50

Course ID: 008112

Sociology of Sport

This course examines sport in modern societies and the distinctive features of Canadian sport. Attention is directed to the relationship between sport and other institutions, including the economy and political system. Contemporary issues, including racial and gender inequality and controversies over violence and drugs are also considered.

Prereq: SOC 101/101R or 120R

(Cross-listed with SOC 210)

REC 213 LEC 0.50

Course ID: 015111

Principles of High Performance Organizations in Recreation and Sport

This course introduces students to the building blocks of high performance organizations. Principles such as social responsibility and innovation will guide the discussions. Specific emphasis will be given to leadership, critical thinking, and the development of problem solving skills to address societal and business challenges across multiple sectors.

Prereq: REC 101, Recreation and Sport Business students

REC 215 LEC 0.50

Course ID: 008117

Marketing Recreation and Sport Services

Exploration of marketing concepts and methods available to public, commercial and private leisure service organizations. Topics include: the marketing philosophy, market research, market segmentation, and marketing mix strategies related to programming, distributing, pricing and promoting leisure services.

Prereq: REC 101

REC 218 SEM 0.50

Course ID: 015112

Social Entrepreneurship for Change

This course examines social entrepreneurship as a means for improving individual and community well-being. Focus will be placed on learning and implementing tools which businesses, citizens, and consumers can use to address social issues. Students will complete the course with an understanding of their personal responsibility and role as community/ global citizen which will aid them in their career development. Particular emphasis may be placed on the role of social entrepreneurship in addressing issues related to social justice, inclusion, and sustainable management practices.

Prereq: REC 100, REC 101; Level at least 2A Department of Recreation and Leisure Studies students

REC 230 LEC,SEM 0.50

Course ID: 008119

Outdoor Recreation Resources Management

The course examines human-nature relationships in leisure and tourism contexts from an interdisciplinary perspective. It integrates experiential learning with theoretical and critical inquiry to understand and analyze values, attitudes, cultures, programming, impacts, management, and contemporary issues and trends.

REC 251 LEC 0.50

Course ID: 008122

Therapeutic Recreation: Developmental and Emotional Disabilities

This course is designed to explore the etiology of disability and the role of therapeutic recreation in the lives of people with developmental and emotional disabilities.

Prereq: REC 100; Department of Recreation and Leisure Studies students

Only offered Online

REC 252 LEC 0.50

Course ID: 008123

Therapeutic Recreation: Physical Disabilities

This course is designed to explore the etiology of disability and the role of therapeutic recreation in the lives of people with physical disabilities.

Prereq: REC 100; Department of Recreation and Leisure Studies students

REC 253 PRA 0.50

Course ID: 012743

Practicum in Therapeutic Recreation

This course involves an unpaid practical experience for students in Honours Therapeutic Recreation. The placement supervisor must be approved by the academic supervisor prior to registering for the course. The practicum will require 105 hours interspersed over 1 academic term (15 weeks). The course will be offered on a credit/no credit basis.

Department Consent Required

Prereq: REC 151, 251, 252; Therapeutic Recreation students only

REC 270 LEC,SEM 0.50

Course ID: 008125

Research Design Applicable to Leisure Studies

An introduction to the methods and techniques of research as applied to leisure studies and services. General consideration will be given to the technical issues involved in various stages of research with emphasis on the logic underlying the research process.

Prereq: Second year or higher AHS students.

REC 272 LEC 0.50

Course ID: 015113

Special Topics in Leisure Studies 2

One or more term courses will be offered from time to time as announced by the Recreation and Leisure Studies Department. Subjects will be dependent upon special research and/or instructional interests of faculty.

Department Consent Required

REC 280 LEC 0.50

Course ID: 008128

Introduction to Tourism

The scope and nature of tourism as a contemporary leisure experience is examined along with economic, political and social ramifications, research strategies employed and implications for the future.

Also offered Online

REC 300s

REC 306 LEC 0.50

Course ID: 012750

Contemporary Health Issues for Women

This course draws on a range of feminist theories and frameworks to examine the interconnections between women and health in local, national, and international contexts. Topics may include the medicalization of women's health; reproductive experiences, choices, technologies and rights; health care systems and institutions; health policy; and the links with leisure, recreation, and health. Intersections of gender with race, ethnicity, religion, class, sexuality, and aging will also be addressed.

Prereq: WS 101 or 102; Level at least 3A

(Cross-listed with WS 306)

REC 311 LEC 0.50

Course ID: 013882

Event Management

Students will gain a broad understanding of event management from a theoretical and applied perspective with an emphasis on best practices and current trends utilizing case studies throughout. Students will gain an understanding of the breadth of the event "industry" and the various impacts of special events. The course includes instruction in the core areas of event planning, logistics, risk management, human resources, sponsorship and financial management, event marketing, and evaluation techniques.

Prereq: Level at least 3A

REC 312 PRA 0.50

Course ID: 013954

Practicum in Recreation, Sport, and Tourism

REC 312 involves an unpaid placement in an organization related to recreation, sport, business or tourism. Placement opportunities will be facilitated by the course instructor, in partnership with the supervising organization. The placement will require 105 hours interspersed over one academic term (15 weeks). The completion of these hours will be determined by the placement supervisor, in consultation with the student. The course will be offered on a credit/no credit basis. Department consent is required for enrolment.

Department Consent Required

Prereq: REC 120 or REC 220; Level at least 3A Department of Recreation and Leisure Studies students

REC 313 LEC 0.50

Course ID: 015114

Mobilizing Resources for Recreation and Sport Delivery

This course focuses on mobilizing resources in high impact public and not-for-profit sector organizations. Topics may include developing strategic partnerships, securing financing, sponsorships, grants and donations, enabling co-production, harnessing social capital, support from volunteers, and alternative forms of service delivery.

Prereq: Level at least 3A Recreation and Sport Business students

REC 351 LEC 0.50

Course ID: 013581

Therapeutic Recreation Facilitation Techniques

This course is designed to examine the scope of modalities and facilitation techniques used by therapeutic recreation professions in the facilitation of therapeutic recreation interventions for individuals and groups in a variety of therapeutic recreation settings. The University of Waterloo policy on Class Attendance during the first week of class (<http://ugradcalendar.uwaterloo.ca/page/Acad-Regs-Class-Attendance>) will be strictly enforced.

Prereq: Level at least 3A Therapeutic Recreation students only

REC 356 LEC 0.50

Course ID: 008172

Leisure and Community

This course covers concepts, theories, models, and issues relevant to understanding relationships between leisure and community. Areas of discussion may include the roles of leisure as a context for community building and development, critical understandings of relationships between community and leisure, as well as approaches to community building through leisure. Opportunities for experiential and collaborative learning will form major components of the course and a volunteer placement may be required. Attendance at the first class is required.

Prereq: Level at least 3A

REC 357 LEC 0.50

Course ID: 014697

Theories and Evidence for Therapeutic Recreation Practice

This course is designed to examine theories, concepts, and evidence informing the design and facilitation of therapeutic recreation practice.

Prereq: REC 151, REC 251, REC 252; Therapeutic Recreation students

REC 361 LEC,SEM 0.50

Course ID: 008173

Aging and Leisure

This course is designed to familiarize the student with the characteristics of the aging population, particularly as related to recreation, leisure, and lifestyle. It focuses both on the theoretical aspects of aging and their implications for leisure and on the practical aspects of recreation and leisure program development, delivery, and facilitation for all older adults.

Prereq: Level at least 3A

REC 362 LEC 0.50

Course ID: 006438

Sociology of Aging

An introduction to individual and population aging. Topics discussed include: aging from a historical and comparative perspective; aging in subcultures; aging and the social structure; aging and social processes; aging and the environment; work and retirement; and aging and leisure patterns.

Prereq: SOC 101/101R or AHS 107

(Cross-listed with GERON 352, HLTH 352, KIN 352, SOC 352)

REC 371 LAB,LEC 0.50

Course ID: 008188

Quantitative Approaches to Leisure Research

An exploration of quantitative research approaches, including descriptive and inferential statistics, and interpretation of data. Students conduct statistical analyses to understand social, cultural and environmental issues.

Prereq: REC 270; Level at least 3A; Not open to Math students

REC 372 LEC 0.50

Course ID: 015115

Special Topics in Leisure Studies 3

One or more term courses will be offered from time to time as announced by the Recreation and Leisure Studies Department. Subjects will be dependent upon special research and/or instructional interests of faculty.

Department Consent Required

Prereq: Level at least 3A

REC 373 LEC 0.50

Course ID: 015116

Qualitative Approaches to Leisure Research

An exploration of qualitative methodologies used in the fields of leisure. Philosophies, theoretical orientations, and ethical considerations will be emphasized as students discuss and participate in various approaches to research design, data collection, analysis, and representation.

Prereq: REC 270

REC 375 LEC 2.50

Course ID: 010028

International Exchange

Study in Recreation topics by International Exchange.

Department Consent Required

REC 380 LEC 0.50

Course ID: 008194

Tourism Analysis

This course utilizes a variety of methodological approaches in the analysis of tourism management, development, and planning. Approaches may include problem-based learning, experiential education, case studies, qualitative and quantitative data analysis. Students will address contemporary issues related to tourism such as community engagement, health and well-being, sustainability, and economic development.

Prereq: One of REC 371, ENVS 178, 278; Level at least 3A Recreation and Leisure Studies and Faculty of Environment majors only

REC 383 LEC 0.50

Course ID: 005912

Perspectives on International Tourism

The character, problems of, and prospects of tourism are examined through consideration of tourism in a variety of countries and regions, both developed and developing. Topics include the nature and significance of tourism; economic, environmental and social impacts of tourism; and costs and benefits of tourism to destination areas.

Prereq: One of GEOG 233, REC 280, PLAN 362

(Cross-listed with GEOG 323)

REC 400s**REC 401 SEM 0.50**

Course ID: 012215

Advanced Seminar on the Socio-Cultural and Behavioural Dimensions of Leisure

This course is designed for senior students who are interested in the social sciences as a way of understanding factors that influence leisure behaviour and the role of leisure in the lives of individuals and their communities and social institutions. Students will have an opportunity to expand their understanding of leisure issues and problems facing society, thereby building on previous course work, personal experience and media. The small group setting of the seminar will provide students with the opportunity to explore their leisure research interests.

Prereq: Level at least 4A Department of Recreation and Leisure Studies students

REC 405 LEC 0.50

Course ID: 011560

Leisure and Well-being

This course examines relationships between various aspects of leisure and well-being from a holistic perspective. Both positive and negative implications of leisure and recreational pursuits for well-being are considered for individuals, communities, and environments.

Prereq: Level at least 4A

REC 408 SEM 0.50

Course ID: 008200

Gender and Leisure

This seminar course focuses on recent theoretical and empirical research on the relationships between gender and leisure. Topics will include analysis of men's and women's leisure experiences, attitudes, constraints, challenges, and behaviours. Gendered aspects of leisure will be explored in a variety of social and cultural contexts, including families, informal and social settings, organized leisure, and the media.

Prereq: Level at least 3A

(Cross-listed with WS 308)

REC 413 SEM 0.50

Course ID: 008203

Advanced Seminar in Recreation and Sport Business

This capstone course allows students to reflect upon and integrate insights and skills they have gathered during their studies. Specifically, students will draw upon knowledge gained in previous courses and relevant work experience to identify and address complex managerial challenges. These challenges may be social and/or organizational in scope, and approaches used may be multi-sectorial in nature. Students will develop plans and measures that confront those challenges in innovative ways that best achieve stated goals and objectives.

Prereq: REC 213, REC 313

REC 420 LEC 0.50

Course ID: 008207

Advanced Program Evaluation in Leisure Services

Students will acquire knowledge and skills to plan and conduct evaluations of leisure services and programs. The course will cover pre-evaluation, needs assessment, goals and outcomes, evaluation designs, process and outcome evaluation, report preparation, evaluation politics, and ethics.

Prereq: REC 270, 371, 373; Level at least 3A

REC 422 LEC 0.50

Course ID: 012120

Urban Recreation

This course examines the employment of recreation, sport, and tourism to transform, enliven, and/or alter community spaces. In doing so, it explores the potential of (re)shaping, (re)territorializing, and (re)making the built environment with the intent of interpreting, narrating, and imagining places to inscribe them with meaning and value. With an emphasis on principles of transformative placemaking, students are encouraged to envision meaningful alterations of places to better meet the needs of communities.

Prereq: Level at least 3A

REC 425 LEC,SEM 0.50

Course ID: 008208

Heritage Planning Workshop

The role of cultural heritage in the community context is examined. Varying forms of heritage preservation, its function and organization are covered. This course may include a field component.

[Note: Field trip fee will not exceed \$25+HST.]

Prereq: Level at least 3A

(Cross-listed with PLAN 414)

REC 433 FLD 1.00

Course ID: 005299

Ecotourism and Communities

A field course typically based out of the Waterloo Summit Centre for the Environment in Huntsville, Ontario. The course focuses on the philosophical, socio-cultural, health, and ecological dimensions of ecotourism, and the skills and practices necessary for planning and managing ecotourism for community development and well-being. The course will involve one or more overnight excursions to ecotourism destinations in the Muskoka or Haliburton region.

[Note: Field trip fee: \$500.00+HST to \$1500.00+HST]

Department Consent Required

Prereq: REC 230

(Cross-listed with ENVS 433)

REC 450 PRA 1.00

Course ID: 008216

Internship for Therapeutic Recreation

This internship course requires that a student engage in a period of practical Therapeutic Recreation (TR) work at an approved site under the supervision of a qualified Therapeutic Recreation professional and an academic supervisor. During this practical experience, the student will research and analyze issues and complete required assignments related to TR practice. Normally, a full-time, consecutive, 15 week therapeutic recreation internship with a minimum of 560 hours is required. Those students in an approved co-op work term will have REC 450A waived and replaced with a REC elective.

Department Consent Required

Prereq: REC 253, 351, 357; Level at least 4A Therapeutic Recreation students.

REC 455 LEC,SEM 0.50

Course ID: 008217

Advanced Seminar in Therapeutic Recreation

This course is designed to facilitate an in-depth exploration and analysis of philosophical issues and interdisciplinary theories to discuss how they relate to therapeutic recreation practice and research.

Prereq: REC 253, 351, 357 (or REC 350); Level at least 4A Therapeutic Recreation students

REC 471A PRJ 0.50

Course ID: 008220

Honours Thesis

An independent research project on an approved topic supervised by a faculty member. REC 471A includes an approved design and completion of the first segment of the paper. REC 471A requires the completion of REC 471B. REC 471B requires the completion of the project begun in REC 471A. This course will be offered on a credit/no credit basis.

Department Consent Required

Prereq: REC 270, 371, REC 373; Fourth year Honours students in the Department of Recreation and Leisure Studies

REC 471B PRJ 0.50

Course ID: 008221

Honours Thesis

An independent research project on an approved topic supervised by a faculty member. REC 471A includes an approved design and completion of the first segment of the paper. REC 471B requires the completion of the project begun in REC 471A.

Department Consent Required

Prereq: REC 471A

REC 472 LEC 0.50

Course ID: 011561

Special Topics in Recreation and Leisure Studies 4

One or more term courses will be offered from time to time as announced by the Recreation and Leisure Studies Department. Subjects will be dependent upon special research and/or instructional interests of faculty.

Department Consent Required

Prereq: Level at least 3A

REC 475 RDG 0.50

Course ID: 009509

Directed Study in Special Topics

For the student who desires to pursue a particular topic in depth through guided independent research. A faculty member must approve a student's project prior to enrolment.

Department Consent Required

REC 480 SEM 0.50

Course ID: 008235

Advanced Seminar in Tourism Development

This seminar-type course provides students an opportunity to situate their past learning and work experience with broader contemporary and critical issues associated with tourism development, sustainability, society, and both individual and community well-being.

Prereq: REC 280, 380; Level at least 4A Recreation and Leisure Studies and Faculty of Environment majors students

RUSSIAN AND EAST EUROPEAN STUDIES

Notes

1. Courses in Russian and East European Studies are offered through the Department of Germanic and Slavic Studies.
2. REES and CI courses count towards the new Minor in Cultural Identities (CI); for further information, please ask the Germanic and Slavic Studies undergraduate advisor.
3. Please also see CROAT and RUSS course offerings for interest in Slavic languages.

REES 100s

REES 100 LEC 0.50

Course ID: 013878

Legendary Past: Russian Myths and Heroes

An introduction to myths in Ancient Rus' (Russia). This course traces the evolution of major themes, including heroism, and sets Russian myths in the context of the world's mythology.

[Note: Taught in English.]

REES 180 LEC,TUT 0.50

Course ID: 013630

German and Russian Literary Masterpieces

An examination of major Russian and German literary works that have influenced world literature.

[Note: Taught in English.]

(Cross-listed with GER 180)

REES 200s

REES 220 LEC,TUT 0.50

Course ID: 013653

Once Upon a Fairy Tale: Fairy Tales, Then and Now

This course studies fairy tales in the broader context of the history of childhood and practices of education and socialization. The course will concentrate on the German and Russian context and in particular on the work of the Brothers Grimm and Alexander Afanasyev, and will also consider fairy tales drawn from a number of different national traditions and historical periods.

[Note: Taught in English.]

(Cross-listed with GER 220)

REES 230 LEC 0.50

Course ID: 012445

The Devil

An examination of the Devil and demonic figures in the Russian and Slavic cultural traditions based on examples drawn from literature, music, the visual arts, and film. Connections to a larger Western cultural context are also explored.

[Note: Taught in English.]

REES 260 LEC 0.50

Course ID: 012446

Special Topics

Selected topics in Russian and East European Studies chosen by the instructor in consultation with the department. The topics chosen introduce students to important issues in eastern European culture.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

REES 261 LEC 0.50

Course ID: 013008

Languages and Society I

This course examines the role that languages play in multilingual societies from a linguistic perspective. It focuses on topics such as dialects, language contact and change, bilingualism, language choice, and language and identity.

[Note: Taught in English.]

(Cross-listed with ENGL 220A, GER 261)

REES 262 LEC 0.50

Course ID: 013009

Languages and Society II

This course examines the role that languages play in multilingual societies from a social and cultural perspective. It focuses on topics such as plurilingualism and multilingualism, language maintenance and loss, language planning and politics, multilingual and heritage language education.

[Note: Taught in English.]

(Cross-listed with ENGL 220B, GER 262)

REES 271 LEC 0.50

Course ID: 008446

Russian Thought and Culture

An introduction to Russian culture from the tenth to the nineteenth century through the close study of selected works of literature and art.

[Note: Formerly RUSS 271. Taught in English.]

Also offered Online

REES 272 LEC 0.50

Course ID: 008447

Russian Thought and Culture

An introduction to Russian culture from the nineteenth century to the present day through the close study of selected works of literature, art, film, and music.

[Note: Formerly RUSS 272. Taught in English.]

Also offered Online

REES 273 LEC 0.50

Course ID: 004353

Croatian Culture and Literature

This course presents the evolution of Croatian culture from the beginnings to 1835. Particular emphasis is placed on developments in literature; however, other significant manifestations of Croatian civilization (art, architecture, music) are also examined.

[Note: Formerly CROAT 371. Taught in English.]

Also offered Online

REES 274 LEC 0.50

Course ID: 004355

Croatian Culture and Literature

This course presents the evolution of Croatian culture from 1835 to the present. Particular emphasis is placed on developments in literature; however, other significant manifestations of Croatian civilization (art, architecture, music) are also examined. Integral to this course are the cultural aspects of Croatian settlements in Canada.

[Note: Formerly CROAT 372. Taught in English.]

REES 300s**REES 310 LEC 0.50**

Course ID: 012444

Russian Folklore

This course examines the cultural background of East Slavic mythology. Elements of the Russian fairy tale and Bylina (Epic Song) - such as a hero's or a heroine's journeys to the Other World, goddess worship, and the fearsome beings (for example the Baba-Yaga, the Zmei and Koshchei) - are analyzed.

[Note: Formerly REES 220. Taught in English. This course will have a Slavic language component for students in REES academic plans.]

REES 341 LEC 0.50

Course ID: 008456

Russian Drama before 1905

A study of the origins and development of Russian drama up to 1905. Reading and critical analysis of major works in various genres with emphasis on authors of the 19th century.

[Note: Taught in English. This course will have a Slavic language component for students in REES academic plans.]

Antireq: RUSS 341

REES 342 LEC 0.50

Course ID: 008457

Russian Drama after 1905

A study of the origins and development of Russian drama after 1905. Reading and critical analysis of major works in various genres with emphasis on authors of the 20th century.

[Note: Taught in English. This course will have a Slavic language component for students in REES academic plans.]

Antireq: RUSS 342

REES 360 LEC 0.50

Course ID: 012448

Special Topics

Selected topics in Russian and East European Studies chosen by the instructor in consultation with the department. The topics chosen introduce students to important issues in eastern European culture.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times. This course will have a Slavic language component for students in REES academic plans.]

Prereq: Level at least 2A

REES 364 LAB,LEC 0.50

Course ID: 013636

German and Russian Film Pioneers

An examination of early German and Russian cinema, and the way these two film industries influenced each other. Influential theories of film from the period will also be studied.

[Note: Taught in English.]

Prereq: Level at least 2A

(Cross-listed with FINE 364, GER 364)

REES 385 LEC,TUT 0.50

Course ID: 013650

Culture Behind the Iron Curtain

An examination of the culture of the Soviet Union, the German Democratic Republic, and other states that experimented with socialism in the 20th century. Representations of Marxist-Leninist and Stalinist ideologies in literature, cinema, and the arts; the role of the state in directing cultural expression; and resistance to totalitarian control of culture are examined. Western representations of the Cold War are also studied.

[Note: Taught in English. GER 385 will have a German language component for students in German academic plans. REES 385 will have a Russian language component for students in Russian and East European academic plans.]

(Cross-listed with GER 385)

REES 400s

REES 420 SEM 0.50

Course ID: 012634

Topics in Language Pedagogy

Topics in the instruction of German and other foreign/second languages.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times. Taught in English.]

(Cross-listed with GER 420)

REES 460 LEC 0.50

Course ID: 012451

Special Topics

Selected topics in Russian and East European Studies chosen by the instructor in consultation with the department. The topics chosen introduce students to important issues in eastern European culture.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times. This course will have a Slavic language component for students in REES academic plans.]

Prereq: Level at least 3A

REES 495 RDG 0.50

Course ID: 008480

Reading Course in Approved Topics

Study in selected topics under direction of instructor.

[Note: Formerly RUSS 496. This course will have a Slavic language component for students in REES academic plans.]

Department Consent Required

RELIGIOUS STUDIES

Notes

The Area of Religious Studies to which the course belongs is indicated by a note following the course description. Explanation is provided in the Arts Academic Plan section.

RS 100s

RS 100 LEC 0.50

Course ID: 008280

Religions of Asia

An introduction to religious traditions of Asia, including Hinduism, Buddhism, and East Asian traditions. Further topics may include Sikhism, Jainism, and Shinto.

[Note: This course fulfils an Area 1A requirement for Religious Studies majors.]

Also offered Online

RS 110 LEC 0.50

Course ID: 008281

Religions of the West

Encounter with Judaism, Christianity, and Islam: the characteristics and interaction of the three major religious traditions originating in the Middle East that have shaped the image of the Western World.

[Note: This course fulfils an Area 1B requirement for Religious Studies majors.]

Also offered Online

RS 111 LEC 0.50

Course ID: 010108

Relationships in the Bible (Old Testament)

Students will be introduced to the Hebrew Bible by way of selected readings which deal with a particular aspect of the human predicament. The focus will be on exploring relationships via narrative passages in the Old Testament and particularly in the Book of Genesis. The following relationships will be discussed: (a) Spousal (b) Human/God (c) Parent/child (d) Siblings (e) Gender issues in narratives of rape, incest, seduction and dominance.

[Note: Knowledge of Hebrew is not required. This course fulfils an Area 1B or Area 2A requirement for Religious Studies majors but not both.]

(Cross-listed with JS 120)

RS 112 LEC 0.50

Course ID: 010109

Power and Corruption in the Bible (Old Testament)

This course will deal with the period of the Prophets, e.g., Joshua, Kings, and Samuel. It will examine the uses and abuses of power analyzing the historical narratives and study the conflict between Saul and David, the political as well as the moral rise and fall of David.

[Note: Knowledge of Hebrew is not required. This course fulfils an Area 1B or Area 2A requirement for Religious Studies majors but not both.]

(Cross-listed with JS 130)

RS 114 LEC 0.50

Course ID: 014871

Jews and Jewishness

This course examines the central elements that make up contemporary Jewish identity/identities, traditional and otherwise, with particular focus on the North American Jewish experience and the nature of Jewish modernity. It explores historical, literary, religious, and social issues that have contributed to the formation of these identities.

(Cross-listed with JS 114)

Only offered Online

RS 115R LEC 0.50

Course ID: 015016

Sex, Politics, and Religion in the U.S. and Canada

What are the three topics that should not be talked about in polite company? Sex, politics, and religion. Breaking the taboo, this course examines religious practices and conflicts around sexuality and sexual behaviour in the United States and Canada, and how they have manifested in political contests and public policy.

[Note: This course fulfils an Area 1B requirement for Religious Studies majors].

RS 121 LEC 0.50

Course ID: 010215

Evil

How do the religions of the world define evil? How do they suggest it can be overcome? Classical and modern writers from Judaism, Christianity, Buddhism, and Hinduism will be considered.

[Note: This course fulfils an Area 1C requirement for Religious Studies majors.]

Also offered Online

RS 123 LEC 0.50

Course ID: 015272

Monsters and Magic in Japanese Popular Culture

An examination of the roles played by monsters, magic, and supernatural creatures in Japanese popular culture, with attention to their treatment in Buddhism, Shinto, Daoism, and folk practices. Topics include modern-day creations such as Godzilla and Pokemon and traditional beings such as deities, ghosts, angry spirits, goblins, and shapeshifters.

[Note: This course fulfils an Area 1A requirement for Religious Studies majors.]

(Cross-listed with EASIA 120R)

Offered at Renison University College

RS 125 LEC 0.50

Course ID: 013308

What is Religion?

Using examples drawn from world religions, new religious movements, indigenous religious traditions, and popular culture, this course introduces students to religion as a human and social phenomenon.

[Note: This course fulfils an Area 1C requirement for Religious Studies majors.]

RS 130 LEC 0.50

Course ID: 012721

Big Ideas of the Bible

The Bible is the most translated and most read document in human history. This course explores central biblical ideas, from creation to the end of time, violence to redemption, and political intrigue to family ties, and examines their impact on Judaism, Christianity, and Western Culture.

[Note: This course fulfils an Area 2A requirement for Religious Studies majors.]

(Cross-listed with JS 131)

RS 131 LEC 0.50

Course ID: 008290

Classical Hebrew 1

Biblical Hebrew for beginners. A study of the alphabet, and some of the basic vocabulary and grammar of the language.

[Note: This course fulfils an Area 1B or Area 2A requirement for Religious Studies majors but not both. Taught at Laurier as NE 111.]

Antireq: JS 101A, 101B

(Cross-listed with JS 105A)

RS 132 LEC 0.50

Course ID: 008291

Classical Hebrew 2

A continuation of RS 131/JS 105A. Most of the rules of grammar will be covered in this course and students will begin to read texts in the original language.

[Note: This course fulfils an Area 1B or Area 2A requirement for Religious Studies majors but not both. Taught at Laurier as NE 112.]

Prereq: JS 105A/RS 131

(Cross-listed with JS 105B)

RS 133 LEC 0.50

Course ID: 008292

New Testament Greek 1

An introduction to Greek grammar with appropriate grammatical exercises and development of vocabulary.

[Note: This course fulfils an Area 2A requirement for Religious Studies majors.]

Antireq: GRK 101

(Cross-listed with GRK 133)

Also offered Online

RS 134 LEC 0.50

Course ID: 008293

New Testament Greek 2

The completion of the study of Greek grammar and syntax with appropriate exercises and translation of various texts of the Greek New Testament.

[Note: This course fulfils an Area 2A requirement for Religious Studies majors.]

Prereq: GRK 101 or GRK/RS 133

(Cross-listed with GRK 134)

Also offered Online

RS 150 LEC 0.50

Course ID: 008283

Christian Ethics

An introduction to Christian ethical theory and practice and their implications for personal and social living. Case studies will investigate sexual morality, business and medical ethics, environmental issues, violence and non-violence, and family life.

[Note: This course fulfils an Area 2C requirement for Religious Studies majors.]

RS 151 LEC 0.50

Course ID: 008286

Roman Catholicism

An introduction to the significance of Catholic beliefs, values, and practices for our time. Topics include spirituality, ethics, the meaning of the sacraments, prayer, sin and salvation, questions of authority, tradition, and change, and the role of women.

[Note: This course fulfils an Area 2C requirement for Religious Studies majors.]

RS 152 LEC 0.50

Course ID: 008287

Introduction to Christian Theology

Introduction to the classical themes of Christian theology (revelation, God, creation, sin, Jesus Christ, salvation, church, etc.) and their interrelationship, critical reflection on these beliefs, and examination of debates about the meaning of Christian beliefs in contemporary contexts.

[Note: This course fulfils an Area 2C requirement for Religious Studies majors.]

RS 170 DIS,LEC 0.50

Course ID: 011863

Religion and Popular Culture

An examination of the role that religion and myth play in popular culture, including television, cinema, music, fashion, and sport.

[Note: This course fulfils an Area 3B requirement for Religious Studies majors.]

Offered at St. Jerome's University

Also offered Online

RS 180 LEC 0.50

Course ID: 008288

Love and Friendship

A study of the significance of love and friendship in classical and contemporary religious writers. We will consider questions such as, 'Why are friendship and love important for human living?' and 'Is friendship with God a possibility?'

[Note: This course fulfils an Area 3C requirement for Religious Studies majors.]

Also offered Online

RS 200s**RS 201 LEC 0.50**

Course ID: 004872

Religions of East Asia

An examination of the leading religious and philosophical ideas that have shaped the cultures and histories of East Asia: China, Korea, and Japan. Folk, Shamanic, Confucian, Daoist, Shinto, and Buddhist traditions are examined.

[Note: This course fulfils an Area 1A requirement for Religious Studies majors.]

(Cross-listed with EASIA 205R)

RS 202 LEC 0.50

Course ID: 010217

Sikhism

An exploration of the origins and development of Sikhism, the Guru institution, scripture, ritual, and gender from an historical and contemporary perspective. Issues facing Sikhs in Canada and other countries will also be examined.

[Note: This course fulfils an Area 1A requirement for Religious Studies majors.]

RS 203 LEC 0.50

Course ID: 008304

Hinduism

A study of the development of religious thought in India from the Vedic Period to the present. The course will combine an historical survey with a study of representative texts from the religious, philosophical, social, and political thought of the Hindus.

[Note: This course fulfils an Area 1A requirement for Religious Studies majors.]

RS 204 LEC 0.50

Course ID: 008305

Buddhism

An introduction to the unifying beliefs and philosophical presuppositions of the Buddhist world-view, and an overview of the diverse forms of Buddhism in South and South-East Asia, Tibet, China, and Japan.

[Note: This course fulfils an Area 1A requirement for Religious Studies majors.]

RS 205 LEC 0.50

Course ID: 008306

Buddhism in Tibet

The history of Buddhism's expansion into Tibet, its doctrines and practices, including the institution of the Dalai Lama and the 'Tibetan Book of the Dead', and the practice of Buddhism outside Tibet since 1959.

[Note: This course fulfils an Area 1A requirement for Religious Studies majors.]

Prereq: RS 100

RS 206 LEC 0.50

Course ID: 012997

Japanese Religions

An examination of religious phenomena in the history of Japan, including their impact on art, literature, philosophy, and politics. Buddhism, Shinto, Confucianism, folk beliefs, new religious movements, and other traditions are explored.

[Note: This course fulfils an Area 1A requirement for Religious Studies majors.]

Prereq: Level at least 2A

(Cross-listed with EASIA 206R)

RS 210 LEC 0.50

Course ID: 008308

Judaism

An introduction to the religious tradition of the Jews, in terms of beliefs, practices, ideals, and institutions from the beginning to the present time.

[Note: This course fulfils an Area 1B requirement for Religious Studies majors.]

(Cross-listed with JS 217)

RS 211 LEC 0.50

Course ID: 011635

Jewish Responses to the Holocaust

The catastrophe and devastation of the Holocaust and the radical nature of its evil demanded responses within contemporary Jewish thought, identity, and experience. This course will explore philosophical, theological (Jewish law, rabbinic), literary (novels, poetry, memoirs, plays), and artistic (museums, memorials) attempts to deal with the issues the Holocaust raises.

[Note: This course fulfils an Area 1B requirement for Religious Studies majors.]

(Cross-listed with JS 203)

RS 212 LEC 0.50

Course ID: 010110

Great Texts in the Jewish Tradition

This course will trace the development of biblical exegesis in the Jewish tradition. Interpretive methods and approaches to problems in the text such as redundancy, contradiction, and gaps will be surveyed, commencing with the Bible itself, through the classical period of the Talmud and concentrating on major medieval commentators. (The biblical episode of the 'Binding of Isaac' will be used as a paradigm to illustrate various approaches to the text.)

[Note: Knowledge of Hebrew is not required. This course fulfils an Area 1B requirement for Religious Studies majors.]

(Cross-listed with JS 125)

RS 213 LEC 0.50

Course ID: 012171

Kabbalah: Jewish Mysticism

This course will survey the roots, history, and symbolism of the Jewish mystical tradition known as Kabbalah. Students will be introduced to the major texts, charismatic mystical masters, and schools of Kabbalah, beginning with the ancient Rabbis through to contemporary exponents such as Hasidim and messianic groups. Particular attention will be focused on the Zohar (Book of Splendour) and popular appeals to the mystical tradition.

[Note: Knowledge of Hebrew is not required. This course fulfils an Area 1B requirement for Religious Studies majors.]

(Cross-listed with JS 211)

RS 214 LEC 0.50

Course ID: 010111

Jewish Philosophy

The course will explore the thought of various Jewish scholars throughout history on issues that were vital to their faith. The texts studied will be representative of the philosophical and rabbinic traditions on such matters as the nature of God, the problem of evil, creation, miracles, prophecy, and providence.

[Note: Knowledge of Hebrew is not required. This course fulfils an Area 1B requirement for Religious Studies majors.]

(Cross-listed with JS 210)

RS 215 LEC 0.50

Course ID: 011983

Special Topics

One or more special courses will be offered at different times. Consult the Department for current offerings.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

(Cross-listed with JS 250)

RS 216 LEC 0.50

Course ID: 008307

Islam

An introduction to the Islamic faith and practice, with a review of the development, achievements, and impact of the Muslim community from Muhammad the Prophet to the present day.

[Note: This course fulfils an Area 1B requirement for Religious Studies majors.]

RS 219 LEC 0.50

Course ID: 008310

Religion in America

The course examines religion in the American context regarding issues like secularization, the nature and the influence of sects (e.g., Mormonism, Pentecostalism), Protestant revivalism and televangelism, and the impact of non-Christian traditions (e.g., Buddhism, Islam).

[Note: This course fulfils an Area 1B requirement for Religious Studies majors.]

RS 220 LEC 0.50

Course ID: 011866

World Religions and Politics

How have religions influenced and been influenced by politics? How do the world's major religions understand political institutions and theories? Important writers from the world religions will be placed in dialogue with classical and modern thinkers.

[Note: This course fulfils an Area 1C requirement for Religious Studies majors.]

Offered at St. Jerome's University

RS 225 LEC 0.50

Course ID: 009532

Sacred Beauty: Religion and the Arts

An exploration of the spiritual dimension through the medium of art, sacred and secular. Aspects of the quest for meaning in world religions, expressed variously in the visual arts, architecture, music, and the cinema will be considered.

[Note: Formerly RS 122. This course fulfils an Area 1C requirement for Religious Studies majors.]

Antireq: RS 122

RS 227 LEC 0.50

Course ID: 013000

Buddhism in North America

This course examines the history and development of Buddhism in North America. Topics such as the adaptation of traditional Buddhism to North American culture and its development as a Western religion will be examined.

[Note: This course fulfils an Area 1C for Religious Studies majors.]

RS 229R LEC 0.50

Course ID: 015542

Christianity and Social Change in Canada

How has Christianity been a force for both oppression and liberation in Canada's history? This course examines the involvement of Christianity in such Canadian matters as racism, colonization, and the creation of the social welfare state.

[Note: This course fulfils an Area 3B requirement for Religious Studies majors.]

Offered at Renison University College

RS 230 LEC 0.50

Course ID: 014248

Visions of Israel in Judaism: From Biblical to Modern Times

This course surveys the significance of the land of Israel in Judaism from historical, textual, and religious perspectives. Topics covered include the politics of Ancient Israel, the concept of Israel in prayer and the rabbinic and medieval Jewish imagination, portrayals of Israel in Christian and Muslim texts, and the origins, visions, and challenges of Zionism and the modern State of Israel.

[Note: This course fulfils an Area 1B requirement for Religious Studies majors]

(Cross-listed with JS 215)

Only offered Online

RS 232 LEC 0.50

Course ID: 008297

The Hebrew Prophets

A study of the biblical prophets with special attention to their religious experience, social critique, visions of the future, and the writings that bear their names.

[Note: This course fulfils an Area 1B or Area 2A requirement for Religious Studies majors, but not both.]

(Cross-listed with JS 205)

RS 233 LEC 0.50

Course ID: 008363

Intermediate New Testament Greek

Readings in the New Testament, in the Septuagint, Papyri and the Apostolic Fathers. Advanced grammar and syntax arising from the readings.

[Note: This course fulfils an Area 2A requirement for Religious Studies majors.]

Prereq: RS 134

(Cross-listed with GRK 233)

Also offered Online

RS 235 LEC 0.50

Course ID: 008298

Jesus: Life and Legacy

The life and death of Jesus of Nazareth, as experienced and interpreted by his followers and recorded in the New Testament and other ancient literature. Attention is given to Jesus' identity as a Jew in the Roman Empire in the first century, his teachings and actions, and his ongoing significance throughout history.

[Note: This course fulfils an Area 2A requirement for Religious Studies majors.]

Also offered Online

RS 236 LEC 0.50

Course ID: 008301

Paul: Life and Letters

The career and thought of the apostle Paul, at once a Jew, a Graeco-Roman, and a Christ believer, living within the Roman Empire. Attention is given to issues such as spirit, Jewish Law, grace, freedom and slavery, Christ, church, politics, gender and sexuality.

[Note: This course fulfils an Area 2A requirement for Religious Studies majors.]

(Cross-listed with JS 236)

Also offered Online

RS 237 LEC 0.50

Course ID: 012724

Insiders and Outsiders in the Bible

This course explores the tension between insiders and outsiders in the Bible, examining the rationale for and implications of issues such as purity, holy war, the chosen people, and the Gentiles.

[Note: This course fulfils an Area 2A requirement for Religious Studies majors.]

(Cross-listed with JS 237)

RS 240 DIS,LEC 0.50

Course ID: 008318

History of Christianity

The development of Christianity in its Roman Catholic, Eastern Orthodox, and Protestant traditions from the time of Christ to the present.

[Note: This course fulfils an Area 2B requirement for Religious Studies majors.]

(Cross-listed with HIST 235)

RS 242R LEC 0.50

Course ID: 015497

Religious Diversity and Social Development

Religious traditions and beliefs contribute both positively and negatively to social development. This course explores the interrelationship of religious diversity, multiculturalism, and attitudes towards social issues.

(Cross-listed with SDS 242R)

Offered at Renison University College

RS 245 DIS,LEC 0.50

Course ID: 008323

The Catholic Church in Canada

An examination of the role played by the Church in the social, political, and economic life of Canada from 1867 to the present.

[Note: This course fulfils an Area 2B requirement for Religious Studies majors.]

(Cross-listed with HIST 234)

Offered at St. Jerome's University

RS 250 LEC 0.50

Course ID: 008319

History of Christian Thought

An analysis of the major theological developments in the Christian traditions from the apostolic era to the present.

[Note: This course fulfils an Area 2C requirement for Religious Studies majors.]

RS 251 LEC 0.50

Course ID: 008315

Catholic Social Thought

This course will explore the origins, development, and contemporary challenges to Catholic social thought. The main focus will be on the critical and global influences of the past 100 years.

[Note: This course fulfils an Area 2C requirement for Religious Studies majors.]

RS 252 LEC 0.50

Course ID: 010218

Religious Responses to Political Oppression

An examination of the Christian responses to regimes of political oppression in the 20th century. Topics include the Nazi Holocaust, Latin American liberation theologies, and Apartheid.

[Note: This course fulfils an Area 2C requirement for Religious Studies majors.]

RS 254 LEC 0.50

Course ID: 008324

Christian Sexual Ethics

Historical and contemporary Christian approaches to ethical questions about human sexuality and relationships. Topics include marriage, celibacy, single life, homosexuality, HIV/AIDS, sexual violence, gender roles, abortion, reproductive technologies, and sexuality and spirituality.

[Note: This course fulfils an Area 2C requirement for Religious Studies majors.]

RS 256 LEC 0.50

Course ID: 008329

Christian Approaches to Peacemaking

Current Christian approaches to peacemaking in areas of conflict: war and militarism, crime, poverty, racism, and gender relations. Attention will be given to various biblical, theological, and historical bases for these approaches.

[Note: This course fulfils an Area 2C requirement for Religious Studies majors.]

Prereq: Level at least 2A

(Cross-listed with PACS 320)

RS 257 LEC 0.50

Course ID: 012201

Eastern Christianity: Being God and Human

Specific topics include sin, deification, divinity, human transformation, church structure, and the nature of community.

[Note: This course fulfils an Area 2C requirement for Religious Studies majors.]

RS 258 LEC 0.50

Course ID: 008296

God

An examination of ideas about God in Western thought from religious, philosophical, cultural, scientific, and political perspectives.

[Note: This course fulfils an Area 2C requirement for Religious Studies majors.]

RS 259R LEC 0.50

Course ID: 015543

Gender, Sexuality, and Christianity

What do the churches say about sex and gender? This course examines how matters of the body have affected Christian spirituality, particularly in the lives of women and LGBTQ persons.

[Note: This course fulfils an Area 3C requirement for Religious Studies majors.]

Offered at Renison University College

RS 260 LEC 0.50

Course ID: 008295

How to Study Religion

An exploration of the nature of religion through: 1) the history of the study of religion, 2) exposure to varying methods and ways of approaching religious phenomena, and 3) consideration of accounts of religious experience.

[Note: This course fulfils an Area 3A requirement for Religious Studies majors.]

Also offered Online

RS 261 LEC 0.50

Course ID: 007281

Introduction to the Philosophy of Religion

A critical discussion of basic religious concepts. Among the topics covered will be faith, miracles, religious experience, immortality, arguments for the existence of God, and challenges to religious belief.

[Note: This course fulfils an Area 3A requirement for Religious Studies majors.]

(Cross-listed with PHIL 237)

RS 262 LEC 0.50

Course ID: 008309

Religion in Sociological Perspective

An examination of the nature of religious experience, the elements of religious group life, the ways in which religions are a source of social stability and peace as well as of social change and conflict.

[Note: This course fulfils an Area 3A requirement for Religious Studies majors.]

Prereq: SOC 101/101R or 120R

(Cross-listed with SOC 260)

RS 265R LEC 0.50

Course ID: 015554

Religion Online

How do people find spirituality on the Internet? This course examines how believers and seekers practice religion online and use the Internet to promote religious belief. The course considers the emergence of online religions, as well as prospects for the future of faith and spirituality online.

[Note: This course fulfils an Area 3C requirement for Religious Studies majors.]

Only offered Online

RS 266 LEC 0.50

Course ID: 015265

Death and Dying

Death is more than a physical event. It also has legal, social, cultural, psychological, and religious significance. This course examines views about dying, death, and death rituals in several Western and Eastern religions, as well as in some indigenous spiritualities.

[Note: The course fulfils an Area 1C requirement for Religious Studies majors.]

RS 270R LEC 0.50

Course ID: 005468

Religion in Popular Film

This course examines how religion has been a central concern and inspiration for filmmakers and how popular films have informed and shaped our understanding of religion.

[Note: Film Studies Course. This course fulfils an Area 3B requirement for Religious Studies majors.]

(Cross-listed with FINE 252)

Also offered Online

RS 271R LEC 0.50

Course ID: 005469

Special Topics in Religion and Film

Each semester, this course focuses on a specific genre or theme to explore the complex relationship between cinema and religion. Topics may include science fiction, fantasy, horror, comedy, and documentary films.

[Note: Film Studies course. This course fulfills an Area 3B requirement for Religious Studies majors. This course is repeatable up to five times, subject to different content.]

(Cross-listed with FINE 253)

RS 272 LEC 0.50

Course ID: 011636

The Holocaust and Film

An examination of the Holocaust as portrayed in feature films and documentaries. Do cinematic attempts capture the horror of the Holocaust faithfully, or trivialize it? The background to anti-semitism, use of religious imagery in propaganda films, and what counts as "success" or "failure" in cinematic representations are discussed.

[Note: This course fulfills an Area 3B requirement for Religious Studies majors.]

(Cross-listed with JS 233)

RS 273 LEC 0.50

Course ID: 010219

Religion and the Media

An examination of the coverage of religion in print journalism, news broadcasting, and radio and television documentaries. Topics include secular versus confessional coverage, the politics of religious reportage, televangelism, cults, and current ethical issues.

[Note: This course fulfills an Area 3B requirement for Religious Studies majors.]

RS 275 LEC 0.50

Course ID: 014245

Religion and Japanese Film

The course examines how religious beliefs and values in Japan are explored in the medium of film.

[Note: This course fulfills an Area 3B requirement for Religious Studies majors.]

Antireq: FINE 253/RS 271 taken in Winter 2010, 2012

(Cross-listed with EASIA 275R)

RS 280 LEC 0.50

Course ID: 008312

Cults and New Religious Movements

This course examines various cults and new religious movements (e.g., Scientology, Krishna Consciousness, Neo-paganism) and places them within the context of our sociological knowledge of their emergence, who joins and why, and other issues.

[Note: This course fulfills an Area 3C requirement for Religious Studies majors.]

(Cross-listed with SOC 262)

RS 281 LEC 0.50

Course ID: 008311

Millennialism & Violence

An examination of the nature and causes of episodes of mass violence inspired by apocalyptic beliefs. This course will use historical and contemporary case studies and theoretical discussions of the social and psychological factors precipitating violence.

[Note: This course fulfills an Area 3C requirement for Religious Studies majors.]

Prereq: RS 280 or SOC 262

(Cross-listed with SOC 258)

RS 282 LEC 0.50

Course ID: 008313

Christian Fundamentalism

A social scientific and historical examination of Christian fundamentalism in Canada and the United States. Topics include right-wing politics and religion, ideology, culture and identity, sexual morality, gender, and race.

[Note: This course fulfils an Area 3C requirement for Religious Studies majors.]

RS 283 LEC 0.50

Course ID: 008328

Current Ethical Issues

An examination of specific current individual and social problems such as human sexuality, social justice, urban decay, and human rights, in the light of Christian moral consciousness.

[Note: This course fulfils an Area 3C requirement for Religious Studies majors.]

RS 284 LEC 0.50

Course ID: 008331

Women and the Great Religions

Through a review of the teachings of the great religious traditions about women, this course aims to arrive at a global view of the situation of women "in the world of religion". On the basis of the evidence gathered, it will attempt an estimation of the role of religion as an intimate and important influence on human development.

[Note: This course fulfils an Area 3C requirement for Religious Studies majors.]

(Cross-listed with WS 261)

RS 285 LEC 0.50

Course ID: 010224

The Sacred Earth: Religion and Ecology

An examination of the past and present effects of Christianity and other world religions on human treatment of the natural world. Historical background, recent debates, and contemporary approaches to the ethical issues will be investigated.

[Note: This course fulfils an Area 3C requirement for Religious Studies majors.]

(Cross-listed with ERS 294)

RS 286 LEC 0.50

Course ID: 008357

Spirit in Motion: Secular and Religious Spiritualities Today

Exploring changes in spirituality in modern society. Topics include the impact of eastern religions, new cults and sects, healing, psychology, ecological spirituality, women and spirituality, and the spiritual practices of aboriginal peoples on traditional concepts of spirituality.

[Note: This course fulfils an Area 3C requirement for Religious Studies majors.]

Also offered Online

RS 291 LEC 0.50

Course ID: 010239

Special Topics

Consult Department for current offerings.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

RS 300s

RS 301R SEM 0.50

Course ID: 015510

Engaged Buddhism

This course examines Buddhist - including mindfulness - engagement with contemporary social issues, such as peacemaking, environmentalism, political reform, race and gender concerns, and LGBTQ rights.

Prereq: Level at least 2A

RS 302R SEM 0.50

Course ID: 015509

Buddhism in East Asia Today

This course examines modern developments in the Buddhism of China, Japan, and Korea. Topics such as war, urbanization, capitalism, colonialism, Christianity, Communism, the Internet, and nostalgia are explored for their impact on Buddhism.

Prereq: Level at least 2A

(Cross-listed with EASIA 305R)

RS 312 LEC 0.50

Course ID: 015123

Muslim Lives and Practices Worldwide

This course examines the diversity of Muslim lives and practices worldwide. Selected case studies raise issues such as gender, authority, stereotypes, fundamentalism, and secularism.

[Note: This course fulfils an Area 1C requirement for Religious Studies majors.]

RS 315 LEC 0.50

Course ID: 004290

Greek and Roman Religion

An examination of the religious beliefs and cult practices of the classical world. Topics include prayer and sacrifice; divination and oracles; temples, priests and festivals; mystery cults and their relation to Christianity.

[Note: This course fulfils an Area 1B requirement for Religious Studies majors.]

Prereq: One of CLAS 100, 104, 201, 202

(Cross-listed with CLAS 325)

RS 316 LEC,SEM 0.50

Course ID: 015351

Religion & War: The Language and Imagery of War within Islam, Christianity, and Judaism

This course explores the phenomena of militant words and images within Islam, Christianity, and Judaism. Considered in conversation with one another, these Abrahamic traditions challenge students to consider the interconnectedness of these communities, histories, and textual traditions.

[Note: This course fulfils an Area 1C requirement for Religious Studies majors.]

Prereq: SI 121R or RS 216; Level at least 2A

(Cross-listed with SI 316R)

RS 318 LEC 0.50

Course ID: 010156

Canadian Native Religious Traditions

An examination of the ritual and oral traditions of a specific pre-modern group of native peoples to discern their attempts to integrate themselves and their environment.

[Note: This course fulfils an Area 1B requirement for Religious Studies majors. Taught at Laurier as RE 318]

RS 319 LEC 0.50

Course ID: 011607

Religion in Canada

Religion in Canada past and present. Topics include Canada's Christian origins, religion and nationalism in English and French Canada, secularization, religious tolerance and multiculturalism, Christian antisemitism, Buddhism, Hinduism, and the Sikh communities, and new religious movements.

[Note: This course fulfils an Area 1B requirement for Religious Studies majors.]

Prereq: Level at least 3A

RS 325 SEM 0.50

Course ID: 012739

Sex and the World Religions

This course examines deeply rooted attitudes in the major world religions toward sexual identity, practices, and gender. Examining sacred scriptures and codes of conduct from the world religions, as well as fictional writings and films, this course enables students to explore various social and religious traditions.

[Note: This course fulfils an Area 1C requirement for Religious Studies majors.]

Prereq: Level at least 3A

(Cross-listed with WS 320)

RS 327 LEC 0.50

Course ID: 015266

The Body, Dress, and Religion

From clothing to hairstyles to tattoos, dress can express beliefs, aspects of identity, and power. This course examines dress in a variety of religions from ancient Greece to the modern era. The course includes attention to the look and feel of dress on the body, conflicts that can arise over dress and religion, as well as the role of dress in the formation and maintenance of religious communities.

[Note: The course fulfils an Area 3B requirement for Religious Studies majors.]

Prereq: Level at least 2A

(Cross-listed with CLAS 326)

RS 330 LEC 0.50

Course ID: 010223

Selected Topics in Biblical Studies

Consult Department for current offerings.

RS 335 LEC 0.50

Course ID: 015511

The Violence of the Bible

Why has the Bible inspired so much violence? This course explores how the Bible has been used to justify, and to oppose, violence in historical and contemporary contexts. It will address topics such as the crusades, slavery, the "conquest" of the Americas, apartheid in South Africa, the residential school system in Canada, gender violence, and the environmental crisis.

[Note: This course fulfils an Area 3C for Religious Studies majors.]

Prereq: Level at least 2A.

Antireq: RS 391 taken Winter 2016

RS 337 LEC 0.50

Course ID: 008398

The Bible and Peace

An examination of diverse biblical views of peace in relation to war, justice, and salvation with attention to their relevance for the contemporary quest for peace.

[Note: This course fulfils an Area 2A requirement for Religious Studies majors.]

Prereq: RS 130/JS 131 or RS 256/PACS 320

RS 338 LEC 0.50

Course ID: 012720

Seeking Wisdom in the Bible

This course explores the theme of wisdom in the Bible and related literature in the period from ancient Israel to the first century CE. It examines the varied cultural influences on biblical wisdom traditions.

[Note: This course fulfils an Area 2A requirement for Religious Studies majors.]

Prereq: One of RS 130/JS 131, RS 235, RS/JS 236

(Cross-listed with JS 338)

RS 342 DIS,LEC 0.50

Course ID: 008378

Heresy and Religious Crises in Late Medieval Europe

An exploration of the impact of social crises on late medieval religious modes of expression. Topics will include the Great Famine, the Black Death, the Avignon Papacy and Western Schism, the development of heretical movements, and the eventual disintegration of European religious unity.

[Note: This course fulfils the Area 2B requirement for Religious Studies majors.]

Prereq: Level at least 2A

(Cross-listed with HIST 304, MEDVL 304)

RS 343 DIS,LEC 0.50

Course ID: 006380

Reformation History

A study of the major 16th-century reformers, and their intellectual background in humanism and late medieval scholasticism. Special attention will be given to the Lutheran and Reformed traditions, and their ideological, social, and political expressions.

[Note: This course fulfils an Area 2B requirement for RS majors.]

(Cross-listed with HIST 379)

RS 344 DIS,LEC 0.50

Course ID: 008377

The Radical Reformation

A study of 16th century Anabaptism - a religious Reformation movement dissenting from both Protestantism and Roman Catholicism - its origins, its social, political, and theological content; and its relationship to such independent dissenters as Sebastian Franck.

[Note: This course fulfils the Area 2B requirement for Religious Studies majors.]

Prereq: Level at least 2A

(Cross-listed with HIST 348)

RS 348 LEC 0.50

Course ID: 008384

Vatican II

An analysis of the context and rich documentary tradition of the second Vatican Council, the course will explore, in particular, the global dynamics of these teachings.

[Note: This course fulfils an Area 2B requirement for Religious Studies majors.]

Prereq: RS 151

RS 351 LEC 0.50

Course ID: 008391

Contemporary Christian Thought

An examination of how Christian beliefs and practices have been reinterpreted by representative Christian theologians to address the challenges of the 20th and 21st centuries.

[Note: This course fulfils an Area 2C requirement for Religious Studies majors.]

Prereq: Level at least 2A

RS 353 LEC 0.50

Course ID: 008399

War and Peace in Christian Theology

Christian teachings on war and peace from the early church to the present, including crusade, just war, and pacifist traditions, focusing especially on the 20th century discussion around realism, just revolution, nuclear pacifism, and non-violent resistance.

[Note: This course fulfils an Area 2C requirement for Religious Studies majors.]

Prereq: Level at least 2A

(Cross-listed with PACS 330)

RS 354 LEC 0.50

Course ID: 008412

Shapers of the Roman Catholic Tradition

An examination of some influential Christian thinkers who have played a critical role in Roman Catholic theology such as Augustine, Hildegard of Bingen, Julian of Norwich, Aquinas, Newman, Rahner, Ruether, Schussler Fiorenza, Lonergan.

[Note: This course fulfils an Area 2C requirement for Religious Studies majors.]

Prereq: One of RS 151, RS 240/HIST 235, RS 250

RS 355 LEC 0.50

Course ID: 008381

Christian Feminist Thought

Christian feminist thought challenges traditional Christian teaching at every level. This course will explore in particular the challenges to traditional disciplines of theology and spirituality.

[Note: This course fulfils an Area 2C requirement for Religious Studies majors.]

Prereq: Level at least 2A

RS 357 LEC 0.50

Course ID: 007051

The Christian Hymn

The origins of the Christian hymn and its development up to the present. The course considers the hymn as theological, poetic, musical, cultural, and spiritual expression, and the use of hymns in a variety of worship settings.

[Note: This course fulfils an Area 2C requirement for Religious Studies majors.]

(Cross-listed with CMW 363, MUSIC 363)

RS 358 LEC 0.50

Course ID: 007052

Worship and its Music

The nature of worship and the role of music within worship in historical, theological, and cultural perspective. Field trips to services of various traditions.

[Note: This course fulfils an Area 2C requirement for Religious Studies majors.]

(Cross-listed with CMW 364, MUSIC 364)

RS 361 LEC 0.50

Course ID: 003440

Anthropology of Religion

This course examines how religion has been studied as an object of anthropological inquiry. Topics may include ritual, magic, witchcraft, symbolism, cosmology, the relation between beliefs and practices, as well as the mutual influences of religion, politics, nationalism, and socioeconomic change.

(Cross-listed with ANTH 311)

RS 370 LEC 0.50

Course ID: 014005

Atheism, Skepticism, and Free Thought

This course considers the social history of atheism, skepticism, and free thought in the context of religious debate in the West. It covers the period from the 19th century to the present.

[Note: This course fulfils an Area 3B requirement for Religious Studies majors.]

Prereq: Level at least 2A

RS 375 LEC 0.50

Course ID: 012205

Icons in Eastern Christianity: Windows to Heaven

In the Christian East, icons are seen as theology in colour. They are known as "windows to heaven". Icons both reflect and help form Christian teaching. This course investigates the development of iconography, how icons are understood within the tradition, and how other approaches to the aesthetic can inform a contemporary understanding of iconography.

[Note: This course fulfils an Area 3B requirement for Religious Studies majors.]

Prereq: One of RS 110, 240, 250, 257, HIST 235

RS 380 LEC 0.50

Course ID: 012189

Religion and Peacebuilding

This course investigates the roles of religion and spirituality in peacemaking, exploring both obstacles and opportunities facing religious peace builders. Cases involving representatives of major world religions (Christianity, Islam, Judaism, Hinduism, and Buddhism) will provide a basis for comparing practices of faith-based advocacy for social justice, reconciliation, and coexistence.

[Note: This course fulfils an Area 3C requirement for Religious Studies majors.]

Prereq: Level at least 2A or Peace and Conflict Studies Diploma students

(Cross-listed with PACS 326)

RS 382 LEC 0.50

Course ID: 010222

Bioethics and Religious Values

This course will study issues such as sexual ethics, eugenics, euthanasia, suicide, genetic screening, organ transplants, organ and embryo banking, as they stand in relation to traditional religious values.

[Note: This course fulfils an Area 3C requirement for Religious Studies majors.]

Prereq: RS 283

RS 383 LEC 0.50

Course ID: 008332

Justice, Peace, and Development

An examination of communities, movements, and theologies which express a Christian hope for justice, peace, and development in the encounter with injustice, oppression, and poverty.

[Note: This course fulfils an Area 3C requirement for Religious Studies majors.]

Prereq: RS 283

RS 391 LEC 0.50

Course ID: 010229

Special Topics

See Department for current offerings.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

RS 395 LEC 0.50

Course ID: 010226

Study-Travel Seminar in Religion

Consult Department for current offerings.

RS 398 RDG 0.50

Course ID: 008417

Directed Readings in Special Subjects

Readings in selected topics chosen in discussion with instructor.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Department Consent Required

RS 400s**RS 420R SEM 0.50**

Course ID: 006509

Critical Encounter with Human Nature

This course explores human nature, issues fundamental to human life, and theories which have developed around these issues. The approach is interdisciplinary and intercultural/interreligious with emphasis on such themes as self knowledge, community, loneliness and anxiety, free will and purpose in human life, and the nature of human happiness.

Prereq: Level at least 3A.

Antireq: ISS 320R/420R

(Cross-listed with SDS 420R)

RS 462 SEM 0.50

Course ID: 010232

Sociology of Religion

This course examines key substantive, theoretical, and methodological issues of the sociology of religion through the detailed study of important classical and contemporary works in the field.

[Note: This course fulfils an Area 3A requirement for Religious Studies majors.]

Prereq: Level at least 4A Religious Studies majors

(Cross-listed with SOC 402)

RS 491 LEC 0.50

Course ID: 010231

Special Topics

Consult the Department for Special Topics.

RS 495 RDG 2.50

Course ID: 010729

Study Term Abroad

Consult the Department for current offerings.

Instructor Consent Required

RS 498 RDG 0.50

Course ID: 012735

Directed Readings in Special Subjects

Readings in selected topics chosen in discussion with instructor.

Department Consent Required

Prereq: Level at least 3A

RS 499 SEM 0.50

Course ID: 012736

Senior Seminar

This seminar examines contemporary methods and theories in the study of religion and how they may be used to address specific themes in religious studies.

Department Consent Required

Prereq: Level at least 4A Honours Religious Studies

R U S S I A N**Notes**

1. Courses in Russian are offered through the Department of Germanic and Slavic Studies.
2. RUSS and CI courses count towards the new Minor in Cultural Identities (CI); for further information, please ask the Germanic and Slavic Studies undergraduate advisor.
3. Please also see CROAT and REES course offerings for interest in Slavic languages, linguistics, culture, history, literature, and film.

RUSS 100s**RUSS 101 LAB,LEC 0.50**

Course ID: 008434

Elementary Russian I

A study of Russian grammar and composition with emphasis on oral practice and pronunciation.

[Note: RUSS 101 is not open to students with native, near-native or similar advanced ability.]

RUSS 102 LAB,LEC 0.50

Course ID: 008436

Elementary Russian II

A continuation of RUSS 101.

[Note: RUSS 102 is not open to students with native, near-native or similar advanced ability.]

Prereq: RUSS 101 or 101B

RUSS 200s

RUSS 201 LAB,LEC 0.50

Course ID: 008442

Intermediate Russian I

This Russian language course is open to students with either a basic level of proficiency or a cultural/familial tie to the language. It includes a review of more advanced grammatical structures, practice in reading, composition, and conversation. Students will enhance their language skills, speech etiquette, and sociocultural awareness of the Russian-speaking world through authentic text and multimedia resources.

Prereq: RUSS 102

RUSS 202 LAB,LEC 0.50

Course ID: 008443

Intermediate Russian II

A continuation of RUSS 201. This specialized Russian language course is designed for students with an interest in the fields of science, technology, and business. The focus is on specialized terminology and its usage in professional contexts.

Prereq: RUSS 201 or 251

RUSS 203 LAB,LEC 0.50

Course ID: 013880

Integrative Language Studies I

This course develops competence in Russian through the use of authentic materials, with an emphasis on vocabulary building and consolidation of core grammar.

Coreq: RUSS 201

RUSS 204 LAB,LEC 0.50

Course ID: 013879

Russian for Heritage Speakers

This course is designed for students of Russian speaking background (native or near-native) who have not received formal language training. The course focuses on reading, writing, and a comprehensive study of Russian grammar. It also develops stylistically appropriate language skills (e.g., academic language).

Department Consent Required

RUSS 300s

RUSS 301 LAB,LEC 0.50

Course ID: 008458

Advanced Russian I

A continuation of RUSS 201/202. Vocabulary building, especially the comprehension of literary language, is stressed.

[Note: Formerly RUSS 351.]

Prereq: RUSS 202 or 252

RUSS 302 LAB,LEC 0.50

Course ID: 008459

Advanced Russian II

A continuation of RUSS 301.

[Note: Formerly RUSS 352.]

Prereq: RUSS 301 or 351

RUSS 303 LAB,LEC 0.50

Course ID: 013881

Integrative Language Studies II

This course advances competence in Russian through the use of authentic materials, with an emphasis on vocabulary building and advanced-level writing skills.

Prereq: RUSS 203 or 204

SCIENCE AND BUSINESS**Notes**

1. All SCBUS labelled courses **do not** count as Science courses.

SCBUS 100s**SCBUS 122 DIS,LAB,LEC 0.50**

Course ID: 012255

Management of Business Organizations

This course deals with the essential activities that comprise the management of business organizations: planning, organization, leadership and control. It includes case studies, project management, team/group dynamics and strategies, the importance of diversity/globalization, human resource management and a comparison of traditional and entrepreneurial leadership and management. [Offered: W]

Prereq: AFM 131/ARBUS 101; Honours Science and Business

SCBUS 123 DIS,LAB,LEC 0.50

Course ID: 008507

Workshop 1: Science and Business

This workshop addresses aspects of technology development and related marketing aspects. Information retrieval strategies and organization are addressed, as is scientific business analysis and planning, competitive analysis and product development. Results are presented orally and in writing. Students are given opportunities to work effectively in teams to tackle projects such as the Company Research Project and Marketing Plans for scientific or technical products or firms. [Offered: F]

Prereq: First year Science and Business and Biotechnology/Economics students

SCBUS 200s**SCBUS 223 LAB,LEC 0.50**

Course ID: 008512

Workshop 2: Strategies Behind Technological Innovation

This workshop focuses on the strategic management of technology, innovation and research and development in scientific team-based settings. Business principles, including patents behind select science/technology

products will be analyzed. [Offered: F]

Prereq: SCBUS 123; Honours Science and Business and Biotechnology/Economics students only

SCBUS 225 DIS,LEC 0.50

Course ID: 012665

Organizational Behaviour in Scientific and Technical Workplaces

This workshop provides a basic understanding of how organizations work and how people interact within organizations in order to achieve human, organizational, and social objectives. Topics include case studies, lectures and discussions on organizational structure and models, organizational theory, organizational culture, motivation, diversity, negotiation, communication, leadership and management and how these principles are applied in start-ups or scientific and technical environments. The major project focuses on an aspect of organizational behavior in a scientific or technical firm or application and is presented in writing and orally.

Prereq: Honours Science and Business, Biotechnology/Chartered Accountancy and Biotechnology/Economics students only.

Antireq: MSCI 211, PSYCH 238/338, BUS 288W

SCBUS 300s

SCBUS 323 LAB,LEC 0.50

Course ID: 008526

Workshop 3: Technology Development

A senior honours project focusing on technology innovation, assessment of the current utility of a technology, scale-up of the technology, projected return on investment and hurdles (production, regulatory, market competition, intellectual property protection). The major class project focuses on the development of a business plan for a product that could be commercialized. Applications, implications, cost benefit analysis, feasibility, etc. are included. [Offered: F]

Prereq: SCBUS 123, 223; Honours Science and Business and Biotechnology/Economics students only

SCBUS 400s

SCBUS 423 LAB,LEC 0.50

Course ID: 010041

Workshop 4: Strategic Management of Science and Business

Current real-world issues and problems in the strategic management of start-ups and scientific/technology companies are addressed, based on the use of publicly available information including research findings. Working in groups, students will address the topics to be pursued, including both scientific and business/economic aspects. Assignments result in a written strategic plan, which is formally presented to the class. [Offered: F]

Prereq: SCBUS 123, 223, 323; Honours Science and Business and Biotechnology/Economics students only

SCBUS 424 LAB,LEC 0.50

Course ID: 012256

Workshop 5: Special Topics in Science and Business

This capstone-project workshop addresses the formulation of firm-wide strategic plans (e.g., business cases, marketing plans, strategic plans) for science and technology based start-ups and traditional firms. It provides a framework for developing and implementing business strategies and the related documentation that fits a firm's environment, human resources, markets, managerial styles and organization. This course involves significant group work under the supervision of a Science and Business instructor. A written report and seminar presentation are required. A special capstone project is also required. [Offered: W]

Department Consent Required
Prereq: SCBUS 122, 123, 223, 323 and 423

SCBUS 425 LAB,LEC 0.50

Course ID: 012257

Workshop 6: Challenges in Globalizing Science and Technology

This workshop addresses the implications for Canadian science and technology based firms of competing in the global competitive environment. [Offered: W]

Prereq: Level at least 3A Science and Business students

COMMUNICATION IN SCIENCE

SCCOM 100s

SCCOM 100 LEC 0.50

Course ID: 015594

Communication in the Sciences

In this course, students will enhance oral and written communication competencies in contexts relevant to the life sciences or physical sciences.

Prereq: for BSc Science students only

SCIENCE

Notes

1. Most SCI labelled courses are offered by the Departments of Biology, Chemistry, Earth Sciences, and Physics, as determined by course content. They are of a general nature, and are intended to be taken as electives by students in any faculty.
2. Normally, no more than three SCI labelled units may be applied towards any Science degree Academic Plan.

SCI 00s

SCI 10 SEM 0.00

Course ID: 015278

Communication Skills for Science

The course is designed to develop communication skills to prepare international Science students for assignments, group work, oral presentations, and technical writing. The course combines Science specific content and approaches to problem solving with specific learning objectives for written and spoken communication. Activities may include a field trip, a tour of department laboratories, and group work for an oral presentation. The course is taught by a department member, a writing instructor, and numerous peer mentors. The course focuses on providing individual feedback, self-improvement, and increasing student competence and confidence. [Offered F]

Prereq: Science students; Not open to students in 4th year.

Antireq: EARTH 10

SCI 200s

SCI 200 LEC 0.50

Course ID: 013620

Energy - Its Development, Use and Issues

A survey course which deals with energy resources, their conversion into energy products and their use in today's industrial societies. In light of the Energy Technology Perspectives (ETP) Model, energy supply demand, and conservation constraints, the use of non-renewable fossil and nuclear fuels, biofuels and other renewable fuels (wind, hydraulic, solar) will be reviewed and technical and social issues arising from their use explored. This course should prepare students to analyze and deal with the many contradictory energy usage claims and decide for themselves the best course of energy use. (Offered: F)

SCI 201 LEC 0.50

Course ID: 014123

Global Warming and Climate Change

This course will survey a broad spectrum of topics relating to global climate change, with an emphasis on the scientific approaches to address this issue. Topics covered will include natural and anthropogenic causes of climate change, monitoring methods, current and low emission alternatives of energy production. The scientific, economic, public and political aspects of implementation of carbon capture and storage technology and other geo-engineering options to mitigate climate change will also be discussed. [Offered: W]

Antireq: EARTH 358

SCI 206 LEC 0.50

Course ID: 010135

The Physics of How Things Work

A practical introduction to everyday technology, this course will look at the physics behind common devices used in consumer products and industry. Examples include air conditioners, microwave ovens, household wiring, nuclear reactors, and medical imaging. [Offered: F]

SCI 207 LEC,TUT 0.50

Course ID: 014923

Physics, the Universe, and Everything

How does the universe work? How can it even exist? What is the ultimate nature of reality? This course explores big picture questions that connect humanity to the nature of the physical world. Beginning with introduction to Einstein's ideas and the quantum nature of the universe, this course considers how physicists tackle some of the mysteries (e.g., existence itself) and challenges (e.g., the world's energy problem) in science today.

[Note: No mathematics or other specialized knowledge is required; students from non-science faculties are encouraged to attend. Offered: W]

Prereq: Level at least 2A

SCI 227 LEC,SEM 0.50

Course ID: 013362

Chemistry in Society: Yesterday, Today and Tomorrow

This course surveys the impact of chemistry on our lives and explores the role of chemists and the chemical sciences in addressing the past and especially the present and future needs of society. Topics will vary from year to year, but will be drawn from the following critical areas: food, energy, materials, health, and the environment. [Offered: W]

Prereq: Grade 12 Chemistry

SCI 237 LEC 0.50

Course ID: 008513

Exploring the Universe

A survey course in astronomy (primarily intended for students in Applied Health Sciences, Arts and Environment). The solar system, stars, the Milky Way, galaxies and the Universe.

[Note: Cannot be taken for credit by Engineering, Mathematics, or Science students. Offered: F]

Prereq: Not open to Engineering, Mathematics and Science students.

Antireq: PHYS 175, SCI 238

SCI 238 LEC 0.50

Course ID: 008514

Introductory Astronomy

A survey course in astronomy intended for Mathematics, Engineering and Science students. The solar system, the Sun and planets, stars, the Milky Way, galaxies and cosmology.

[Note: Students with a strong background in Physics and Mathematics should consider PHYS 175 instead of SCI 238. Offered: W,S; also offered online: F]

Antireq: PHYS 175, SCI 237

Also offered Online

SCI 240 LEC 0.50

Course ID: 015360

Science of Forensics and Criminalistics

An introduction to the scientific methods and techniques for gathering physical evidence from crime scenes and the investigation of objects and sites associated with other kinds of illegal and criminal activity such as fraud, forgery, and gross negligence. This course examines the features and characteristics of minerals, rocks, fossils, gemstones, sand and soils and considers applications in forensic science and criminalistics. Other topics such as the geology of art, forensic anthropology and environmental forensics are included. [Offered: W]

SCI 250 LEC 0.50

Course ID: 008515

Environmental Geology

An introduction to geological concepts; the influence of geological factors on the natural environment; Earth processes and natural hazards; Earth resources, including water, energy and mineral resources; waste disposal and pollution; global climatic and environmental change. [Offered: W]

SCI 255 LEC 0.50

Course ID: 006156

The Biology of Aging

An introductory study of the biological processes of aging at the molecular, cellular and systemic levels. Topics include an examination of the theories of aging, methods used to study the aging process, the role of diseases and chronological changes in the organism during senescence.[Offered: S]

(Cross-listed with GERON 255)

Only offered Online

SCI 267 LEC 0.50

Course ID: 008523

Introduction to the Philosophy of Science

This course considers fundamental questions concerning the nature of science. Consideration is given to such topics as scientific methodology, scientific revolutions, natural laws, and the debate about whether scientific theories represent reality, or just our perceptions of reality.

(Cross-listed with PHIL 258)

SCI 300s

SCI 395 LEC 2.50

Course ID: 010366

Science Study Abroad Program

Waterloo students studying abroad for academic transfer credits under a Science Exchange Program during the Fall term.

Department Consent Required

SCI 396 LEC 2.50

Course ID: 010367

Science Study Abroad Program

Waterloo students studying abroad for academic transfer credits under a Science Exchange Program during the Winter term.

Department Consent Required

SCI 397 LEC 2.50

Course ID: 010368

Science Study Abroad Program

Waterloo students studying abroad for academic transfer credits under a Science Exchange Program during the Spring term.

Department Consent Required

SOCIAL DEVELOPMENT STUDIES

SDS 100s

SDS 131R LEC 0.50

Course ID: 006501

Social Ideas, Social Policy and Political Practice

An introduction to some of the major social and political ideas of Western civilization. Attention is given to the influence and applicability of these ideas to social policy and political practice in contemporary Canada.

[Note: Formerly ISS 131R]

Also offered Online

SDS 150R LEC 0.50

Course ID: 006502

Lifespan Processes

An examination of the significant psychosocial events during the lifespan with consideration of the impact of crises. Topics may include attachment, loss, stress, identity crisis, role change, mid-life transition.

[Note: Formerly ISS 150R]

Also offered Online

SDS 200s

SDS 205R LEC 0.50

Course ID: 013734

History of Education in Canada

This course considers the development of education as an institution within Canadian society and provides an understanding of significant educational issues and policies from a historical perspective.

Prereq: SDS/ISS 131R.

Antireq: ISS 205R

(Cross-listed with HIST 225)

SDS 210R LEC 0.50

Course ID: 014137

Children's Rights in Canada

This course examines children's rights from a moral and comparative legal perspective. Students explore the welfare and developmental interests of children, the corresponding duties of parents, custodians, educators, and social workers, and the nature and scope of public educational authority in the common law jurisdictions of Canada.

(Cross-listed with LS 273)

Also offered Online

SDS 215R LEC 0.50

Course ID: 013735

Education and Social Development from a Global Perspective

This course explores education and social development from a critical global perspective. Students learn the connections between educational practices and global conditions by focusing on themes such as citizenship, human rights, peace, and environment.

[Note: Formerly ISS 215R]

Prereq: SDS/ISS 131R

SDS 220R LEC 0.50

Course ID: 006503

Changing Concepts of Childhood

Childhood has changed as a social and cultural concept. This course will trace these changes, examining sociological, psychological, cross-cultural, historical and political factors. Art and literature will also be used to reflect attitudes about childhood.

[Note: Formerly ISS 220R]

Antireq: HIST 255

Also offered Online

SDS 231R LEC 0.50

Course ID: 013893

Introduction to Social Policy Processes

This course examines the policy-making process in Canada at the municipal, provincial, and federal levels to give students a sense of the players and their roles. It examines how policy agendas are set and the role of power and interest groups in the policy-making process; it also examines the various types of policies and the implementation process.

[Note: Formerly ISS 231R]

SDS 240R LEC 0.50

Course ID: 006504

Art and Society

Social issues and themes explored through the arts. Topics include art and social change, war and peace, propaganda, art of conscience, and the response of artists to poverty, hunger and catastrophic events. Specific applications include art as cross-cultural awareness and art as therapy.

[Note: Formerly ISS 240R]

Prereq: Minimum 1.0 unit from ANTH, PSYCH, SDS/ISS, SOC, SOCWK

SDS 242R LEC 0.50

Course ID: 015497

Religious Diversity and Social Development

Religious traditions and beliefs contribute both positively and negatively to social development. This course explores the interrelationship of religious diversity, multiculturalism, and attitudes towards social issues.

(Cross-listed with RS 242R)

Offered at Renison University College

SDS 250R LEC 0.50

Course ID: 006507

Social Statistics

This introductory level statistics course will emphasize the collection, manipulation, descriptive presentation, and statistical analysis of social research data.

[Note: SWREN 250R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: Min. 1.0 unit from ANTH, SDS/ISS, PSYCH, SOC, SOCWK; Level at least 2A; Not open to Math.

Antireq: ARTS 280, ECON 221, ENVS 278, ISS 250A/B, ISS 250R, KIN 222, LS/SOC 280, PSYCH 292, REC 371, SMF 230, STAT 202, 206, 231.

(Cross-listed with SWREN 250R)

Also offered Online

SDS 251R LEC 0.50

Course ID: 006508

Social Research

Introduction to the philosophy and methodology of applied social science research including treatment of the problems and strategies of research design and execution.

[Note: SWREN 251R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: SDS/ISS 250R. Not open to students in the Faculty of Mathematics.

Antireq: ISS 251R, KIN 330, LS/SOC 221, LS/SOC 321, PSYCH 291, REC 270, SMF 220.

(Cross-listed with SWREN 251R)

Also offered Online

SDS 260R LEC 0.50

Course ID: 015514

Ecology, Society, and Justice: Social Development and the Environment

This course introduces theory and concepts of social ecology, an interdisciplinary approach to understanding the interrelationship of social and environmental well-being. Students critically examine the implications of environment and environmentalism for human society, as well as explore ideas for community action and social institutions that reflect a social-ecological ethic.

Prereq: One of SDS 131R, PSCI 150, SOC 101R/101, EARTH 122, ERS 110, ENVS 105; Level at least 2B

SDS 288R LEC 0.50

Course ID: 015559

International Organizations

This course introduces students to major international organizations, focusing on intergovernmental organizations. The course explores the following major issues relating to international organizations: their origins, their functions, their impact in various policy areas, and their role in international cooperation on addressing various global issues.

Offered at Renison University College

SDS 300s

SDS 311R LEC 0.50

Course ID: 011378

Public Policy and Native Peoples in Canada

This course examines the evolution, logic, processes, and impacts of government policies developed specifically for Native peoples, with particular attention to government policy as both a cause of and a response to social problems within Native communities.

[Note: SWREN 311R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: Level at least 2B.

Antireq: ISS 311R

(Cross-listed with LS 373, SWREN 311R)

SDS 312R LEC 0.50

Course ID: 011979

Homelessness & Public Policy

This course provides students with a basic overview of homelessness in modern society. Its goal is to familiarize students with the human, social, political and economic aspects of homelessness. Throughout, the emphasis will be on understanding homelessness from a public policy framework - its incidence and prevalence, etiology, consequences, and strategies for its prevention and amelioration.

[Note: SWREN 312R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: Level at least 2B.

Antireq: ISS 312R

(Cross-listed with SWREN 312R)

SDS 322R LEC 0.50

Course ID: 015274

Community Engagement and Social Development

This course highlights the importance of community engagement for individual, community, and societal well-being and introduces theory and methods related to social inclusion and participation in community. Through case examples and hands-on experience, this course explores approaches to research and professional practice designed to stimulate social development through community engagement.

Prereq: Level at least 3A.

Antireq: ISS 450R taken Spring 2010, Winter 2011 (section 002), Spring 2012; SDS 450R taken Spring 2013, Winter 2014

SDS 331R LEC 0.50

Course ID: 013894

Social Inequality, Social Justice, and Public Policy

This course examines the hidden causes of inequality and associated social injustices. It provides a snapshot of main issues associated with modern society and the evidence that ties them to persistent inequality and

injustice. The course reviews not only the major types of inequality but also social and public policy responses to them.

[Note: Formerly ISS 331R. SWREN 331R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: Level at least 2A

(Cross-listed with SWREN 331R)

Also offered Online

SDS 350R LEC 0.50

Course ID: 006510

Adult Life Crises and Events

A study of normal events occurring during the adult years, why they happen and how we cope with them. Relying on research, popular literature, and life experiences, students examine social change, the future, adult development and adjustment.

[Note: Formerly ISS 350D]

Prereq: SDS/ISS 150R

Also offered Online

SDS 351R SEM 0.50

Course ID: 013736

Qualitative Research in Social Development Studies

This course introduces students to a variety of qualitative approaches to social development studies, including ethnography, narrative inquiry, participatory action research, and case study research. While undertaking short research projects, students will engage in scholarly debates regarding knowledge, ethics, power, and rigour in the analysis and production of qualitative evidence.

[Note: Formerly ISS 351R]

Prereq: SDS/ISS 251R.

Antireq: LS/SOC 322

SDS 353R LEC 0.50

Course ID: 011390

The Evolution of Family Law in Canadian Society

This course examines the evolution of family law in indigenous, francophone, anglophone, and other communities in Canada. Taking an interdisciplinary approach, the course not only explores the demographic, economic, social, and political contexts in which family law developed but also assesses its significance for Canadian society.

(Cross-listed with LS 374)

SDS 354R LEC 0.50

Course ID: 006513

Values and the Contemporary Family

An exploration of how religious, economic, political and other social institutions shape values in our society, and what impact society's changing values are having upon marriage and the family.

[Note: Formerly ISS 350H]

Prereq: Minimum 1.0 unit from ANTH, PSYCH, SDS/ISS, SOC, SOCWK

SDS 355R LEC 0.50

Course ID: 013891

Resilience and Social Support

This course is a survey of resilience and social support grounded in interdisciplinary study. Students explore how factors such as gender, age, culture, physical and mental health, personality, cognition, severity, and

social/interpersonal systems of support affect stress, coping, and resilience.

[Note: Formerly ISS 355R]

SDS 357R LEC 0.50

Course ID: 008769

Family Violence

An application of the principles and models of medical, psychogenic, and sociogenic adjustment to an understanding of family violence. The treatment of victims of family violence, the prevention of such violence, and social policies affecting family welfare are considered.

Prereq: SOCWK 120R

(Cross-listed with SOCWK 357R)

Also offered Online

SDS 358R LEC,SEM 0.50

Course ID: 008767

Child Maltreatment: Identification and Prevention

The objectives of this course are to provide an understanding of the dimensions and causes of child maltreatment, to develop skills identifying cases of this social problem, and to explore current methods of management and treatment of persons involved in child maltreatment situations.

Prereq: SOCWK 120R

(Cross-listed with SOCWK 355R)

Also offered Online

SDS 367R LEC 0.50

Course ID: 015498

Aging and Social Development

This course examines aging from the perspective of human and social development. On individual, group, family, community, and systemic levels, it analyzes interventions for enhancing the well-being of the elderly, emphasizing the roles of social justice and civic engagement in Canadian society.

Prereq: Level at least 2A

Offered at Renison University College

SDS 370R FLD,LEC 0.50

Course ID: 012746

International Learning Experience

This course examines sociocultural realities of a country other than Canada through on site experience and academic study.

[Note: Field trip fee will be required. Formerly ISS 370R]

Prereq: Level at least 2A; Minimum of 1.0 unit from ANTH, PSCI, PSYCH, SDS/ISS, SOC, SOCWK

SDS 375R LEC 0.50

Course ID: 012191

Studies in Interdisciplinary Social Science

This course will deal with selected topics in interdisciplinary social science. Subjects will be dependent upon the research and/or instructional interests of faculty.

[Note: Students wishing to take such courses should consult with the Social Development Studies undergraduate advisor. Formerly ISS 375R. This is a repeatable course, subject to different content; it may be completed a total of three times.]

Department Consent Required

SDS 388R LEC 0.50

Course ID: 014138

Globalization and Social Development

This course explores the rise of globalization, its impact on economics, politics, society and culture, and its implications for national development and social policies.

Prereq: Level at least 2A

SDS 398R RDG 0.50

Course ID: 006514

Independent Study

Interdisciplinary focus, in greater depth than is available in other courses, on a selected area of concern to the student. Available to individuals or small groups of third- or fourth-year Social Development Studies students and arranged with one of the program's faculty members.

[Note: Normally, a student may take only two of the Independent Studies courses, PSYCH 398R, 399R; SDS 398R [Formerly ISS 398R], 399R; SOC 398R, 399R; SOCWK 398R, 399R.

Department Consent Required

SDS 399R RDG 0.50

Course ID: 006515

Independent Study

Interdisciplinary focus, in greater depth than is available in other courses, on a selected area of concern to the student. Available to individuals or small groups of third- or fourth-year Social Development Studies students and arranged with one of the program's faculty members.

[Note: Normally, a student may take only two of the Independent Studies courses, PSYCH 398R, 399R; SDS 398R, 399R [Formerly ISS 399R]; SOC 398R, 399R; SOCWK 398R, 399R.

Department Consent Required

SDS 400s**SDS 400R SEM 0.50**

Course ID: 013331

Comparative Social Policy

This course introduces students to the main methodological approaches in comparative policy analysis. It is designed to provide students with an understanding of key issues involved in comparative social policy research, and develops their analytical skills in systematic comparison. It explores the implications of globalization on social policy development; considers the impact of transnational policy making bodies; and considers international variation in policy challenges as well as variation in policy responses to those challenges.

[Note: Formerly ISS 400R]

Prereq: Level at least 3A

Also offered Online

SDS 405R SEM 0.50

Course ID: 014385

Cosmopolitanism and Social Development

What does it mean to be a "citizen of the world"? Cosmopolitanism is a social and political philosophy that views all human beings as members of a moral, political, relational, or cultural community. From a critical and comparative perspective, students in this course explore the philosophy of cosmopolitanism and its implications for social development in diverse social, political, and cultural contexts.

Prereq: SDS/ISS 131R; Level at least 3A

Also offered Online

SDS 411R SEM 0.50

Course ID: 015573

Decolonization and Social Action

This course focuses on the relationships between Indigenous and non-Indigenous peoples within, against, and beyond settler colonialism. We explore the concepts of decolonization, resurgence, unsettling, and reconciliation and address issues of settlement, sovereignty, treaty relationships, solidarity, appropriation, and the relationship between Indigenous struggles and other movements for social change.

Prereq: Level at least 3A

SDS 415R SEM 0.50

Course ID: 013737

Gender Relations within Educational Institutions

This course focuses on gender in education as both an analytical category and a teaching/learning tool. The course introduces students to the study of gender, intersected with class, race, sexuality, and disability, by focusing on pedagogy, curriculum, and identity development.

[Note: Formerly ISS 415R]

Prereq: Level at least 3A

SDS 420R SEM 0.50

Course ID: 006509

Critical Encounter with Human Nature

This course explores human nature, issues fundamental to human life, and theories which have developed around these issues. The approach is interdisciplinary and intercultural/interreligious with emphasis on such themes as self knowledge, community, loneliness and anxiety, free will and purpose in human life, and the nature of human happiness.

Prereq: Level at least 3A.

Antireq: ISS 320R/420R

(Cross-listed with RS 420R)

SDS 425R SEM 0.50

Course ID: 013738

Educational Equity in Canada

This course examines the social foundations of education (traditionally philosophy, sociology, and history of education, but also cultural and equity studies). Through an interdisciplinary framework, this course considers the roles that schooling systems, teachers, and students play in both reproducing and challenging social inequalities and injustices.

[Note: Formerly ISS 425R]

Prereq: Level at least 3A

Also offered Online

SDS 431R SEM 0.50

Course ID: 014244

Radical Ideology and Social Policy

From a critical and comparative perspective, students explore the impact of radical political ideologies on US and Canadian political institutions and processes. Students consider the potential implications of an ideologically polarized political landscape for social policy and social development.

Prereq: ISS/SDS 131R; Level at least 3A

SDS 440R SEM 0.50

Course ID: 013892

Optimal Living

This course takes an interdisciplinary perspective to consider what conditions foster optimal living. Topics may include the mind-body connection, spirituality, simplicity, healthy relationships, work-life balance, community engagement, leadership, generativity, and meaning.

[Note: Formerly ISS 440R]

Prereq: Level at least 3A.

Antireq: ISS/SDS 450R taken Winter 2011

SDS 449R SEM 0.50

Course ID: 014380

Race and Gender Equality

This course examines stereotypes and prejudices from a social sciences perspective, focusing on understanding and applying the research in schools, the workplace, and the home. Topics include overt and subtle prejudice, situational barriers to stigmatized groups' success, and interventions that promote equality by reducing prejudice and its negative effects.

[Note: Formerly PSYCH 449R]

Prereq: PSYCH 253/253R or 220R; SDS/ISS 250R or PSYCH 292; SDS/ISS 251R or PSYCH 291; Level at least 3A.

Antireq: PSYCH 449R; PSYCH 450R taken Winter 2012

SDS 450R SEM 0.50

Course ID: 013099

Senior Seminar in Special Topics

Senior seminars may include weekly readings, individual and/or group projects, class presentations and discussions, research proposals, essay/literature reviews, assignments, midterms, and final exams. Consult departmental listings for topics and prerequisites for the current year.

[Note: Formerly ISS 450R. This is a repeatable course, subject to different content; it may be completed a total of three times.]

Prereq: Level at least 3A

SDS 451R SEM 0.50

Course ID: 015275

Community Based Research for Social Development

This course introduces research approaches that prioritize community participation in the active creation and democratic use of knowledge for social development. Through concrete examples, this course explores the role of power in knowledge production, and examines fundamental principles and dilemmas in community-engaged research.

Prereq: One of SDS/ISS 251R, HLTH 333, KIN 330, LS/SOC 221, LS/SOC 321, PSYCH 291, REC 270; Level at least 3A.

Antireq: ISS 450R taken Fall 2010 (section 002), Fall 2011; SDS 450R taken Fall 2012, 2013, 2014, 2015

SDS 490R ESS 0.50

Course ID: 013103

Special Studies

An independent, in-depth study, based on empirical research and/or extensive reading from multiple disciplines on a contemporary social issue under the direction of individual instructors in Social Development Studies. Available to individuals or small groups of fourth-year Social Development Studies Majors and arranged with one of the faculty members from the plan. The project must be approved by the academic supervisor of the course prior to registration.

[Note: Normally, a student may take only two of the following: PSYCH 490R, SOC 490R, SOCWK 490R, SDS/ISS 490R, SDS/ISS 499A and SDS/ISS 499B. Formerly ISS 490R]

Department Consent Required

Prereq: Level at least 3A

SDS 495R PRJ 0.50

Course ID: 011389

Research Apprenticeship

This course invites students to work with a professor on the latter's research project. During this unpaid apprenticeship (six to eight hours per week throughout the term), students will do agreed-upon tasks to help them acquire skills and gain understanding of the research process and of the discipline itself. The faculty member and the student will determine the exact duties together. A document outlining these duties must be approved by the Social Development Studies Chair and kept on file. The course is offered on a credit/non-credit basis only. Paid or volunteer positions outside this course are not eligible for credit.

[Note: Formerly ISS 495R]

Department Consent Required

Prereq: SDS/ISS 250R and 251R; Level at least 3A

SDS 496R PRA,SEM 0.50

Course ID: 013220

Applied Apprenticeship in Social Development Studies

This course provides third- and fourth-year Social Development Studies students with an opportunity for an unpaid apprenticeship in an applied setting. The course consists of two components. The apprenticeship component normally requires a commitment of 6-8 hours per week for 10 weeks. The seminar component requires students to meet bi-weekly, as a group, with a course coordinator to set learning goals, to discuss issues arising from their apprenticeship, and to present their apprenticeship experiences and outcomes.

[Note: This course is offered on a credit/non-credit basis only. Formerly ISS 496R]

Department Consent Required

Prereq: Level at least 3A

SDS 499A ESS 0.50

Course ID: 006516

Senior Honours Essay/Thesis

Under the supervision of a faculty member, students focus on an area of Social Development Studies and either complete an essay involving in-depth literature research and analysis or complete a scholarly report on their own study involving literature review, research design, data collection, and analysis.

[Note: A numeric grade for SDS 499A will be submitted only after completion of SDS 499B. Formerly ISS 499A]

Department Consent Required

Prereq: Level at least 3A Honours Social Development Studies

SDS 499B ESS 0.50

Course ID: 006517

Senior Honours Essay/Thesis

Under the supervision of a faculty member, students focus on an area of Social Development Studies and either complete an essay involving in-depth literature research and analysis or complete a scholarly report on their own study involving literature review, research design, data collection, and analysis.

[Note: Formerly ISS 499B]

Prereq: SDS/ISS 499A

Notes

Enrolment in Software Engineering courses is normally restricted to students enrolled in the Software Engineering Program.

SE 100s

SE 101 LAB,LEC,SEM 0.25

Course ID: 010030

Introduction to Methods of Software Engineering

An introduction to some of the basic methods and principles used by software engineers, including fundamentals of technical communication, measurement, analysis, and design. Some aspects of the software engineering profession, including standards, safety and intellectual property. Professional development including résumé skills, interview skills, and preparation for co-op terms. Safety-orientation training, including WHMIS assessment, is included in this course. [Offered: F]

Prereq: Software Engineering students only

SE 102 SEM 0.00

Course ID: 011339

Seminar

General Seminar [Offered: W]

Prereq: Software Engineering students only

SE 200s

SE 201 SEM 0.00

Course ID: 011341

Seminar

General Seminar [Offered: F]

Prereq: Software Engineering students only

SE 202 SEM 0.00

Course ID: 011330

Seminar

General Seminar [Offered: S]

Prereq: Software Engineering students only

SE 212 LEC,TST,TUT 0.50

Course ID: 010031

Logic and Computation

Formal logic. Proof systems and styles. Rudimentary model theory. Formal models of computation. Logic-based specification. Correctness proofs. Applications in software engineering. [Offered: F]

Prereq: MATH 135; Software Engineering students only

SE 300s

SE 301 SEM 0.00

Course ID: 011335

Seminar

General Seminar [Offered: W]

Prereq: Software Engineering students only

SE 302 SEM 0.00

Course ID: 011336

Seminar

General Seminar [Offered: F]

Prereq: Software Engineering students only

SE 350 LAB,LEC,TUT 0.50

Course ID: 013372

Operating Systems

An introduction to the fundamentals of operating system function, and implementation. Topics include concurrency, synchronization, processes, threads, scheduling, memory management, file systems, device management, and security. [Offered: W]

Prereq: CS 240, (CS 246 or 247), ECE 222; Software Engineering students only.

Antireq: CS 350, ECE 254, 354, MTE 241

SE 380 LAB,LEC,TUT 0.50

Course ID: 013373

Introduction to Feedback Control

Introduction to control systems. Advantages of closed-loop feedback systems. The role of the system mathematical model. Block diagrams and signal flow graphs. The basic control system design problem, stability in control systems. Frequency response analysis techniques. Root-locus analysis. Elementary lead-lag compensation. [Offered: F]

Prereq: MATH 213; Software Engineering students only.

Antireq: ECE 380, ME 360, MTE 360, SYDE 352

SE 390 LEC,PRJ 0.50

Course ID: 012940

Design Project Planning

Students undertake a substantial customer-driven group project as part of the SE 390/490/491 design-project sequence covering all major phases of the software-engineering lifecycle. Lectures describe expectations and project-planning fundamentals. Students form groups, decide on a project concept, complete a project-approval process, develop high-level requirements for the project, perform a risk assessment, develop a test plan, and complete a first-iteration prototype. Social, legal, and economic factors are considered. [Offered: F]

Prereq: CS 240, (CS 246 or 247);PD 10; Software Engineering students only

SE 400s

SE 401 SEM 0.00

Course ID: 011337

Seminar

General Seminar [Offered: S]

Prereq: Software Engineering students only

SE 402 SEM 0.00

Course ID: 011338

Seminar

General Seminar. [Offered: W]

Prereq: Software Engineering students only

SE 463 LAB,LEC,TUT 0.50

Course ID: 010034

Software Requirements Specification and Analysis

Introduces students to the requirements definition phase of software development: Models, notations, and processes for software requirements identification, representation, analysis, and validation. Cost estimation from early documents and specifications.

*[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work.
Offered: S]*

Prereq: CS 246 or 247; Software Engineering students only.

Antireq: CS 445, ECE 451.

SE 464 LAB,LEC,TUT 0.50

Course ID: 010035

Software Design and Architectures

Introduces students to the design, implementation, and evolution phases of software development. Software design processes, methods, and notation. Implementation of designs. Evolution of designs and implementations. Management of design activities.

*[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work.
Offered: F]*

Prereq: CS 246 or 247; Software Engineering students only.

Antireq: CS 446, ECE 452

SE 465 LAB,LEC,TUT 0.50

Course ID: 010036

Software Testing and Quality Assurance

Introduces students to systematic testing of software systems. Software verification, reviews, metrics, quality assurance, and prediction of software reliability and availability. Related management issues.

*[Note: Lab is not scheduled and students are expected to find time in open hours to complete their work.
Offered: W]*

Prereq: CS 246 or 247; Software Engineering students only.

Antireq: CS 447, ECE 453

SE 490 LEC,PRJ 0.50

Course ID: 012941

Design Project 1

Continuing from SE 390, students undertake a substantial customer-driven group project. Project groups establish and maintain project control processes, delivering a series of iterations on their initial SE 390 prototype. Adaptive methodologies are encouraged and supported. [Offered: S]

Prereq: SE 390; Software Engineering students only

SE 491 LEC,PRJ 0.50

Course ID: 012942

Design Project 2

Final implementation, testing, and communication of the design project started in SE 390. Technical presentations by groups. Analysis of social, legal, and economic impacts. Final release of the project. Project retrospective. [Offered: W]

Prereq: SE 490; Software Engineering students only

SE 498 LEC 0.50

Course ID: 012292

Advanced Topics in Software Engineering

See the Course Offerings List for topics available. [Offered: As available]

Prereq: Level at least 3B Software Engineering

SE 499 PRJ 0.50

Course ID: 012293

Project

A software engineering project requiring the student to demonstrate initiative and assume responsibility. The student normally proposes his or her own project, which must involve substantial engineering science or engineering design. The student must find a faculty supervisor. A project report is required at the end of the term. Program consent required. [Offered: F, W, S]

Department Consent Required

Prereq: Level at least 4A Software Engineering

STUDIES IN ISLAM**Notes**

1. Students who are interested in the Arabic language courses should be aware that the completion of at least three courses in a subject is recommended for a minimum working knowledge of the language.
2. Students who have previous experience with or who have studied the Arabic language at the elementary or secondary school level should not enrol in first-year level courses of the same language. Such students should consult the Renison Registrar's Office regarding the appropriate level to enter.
3. Students are not permitted to enrol in more than one Arabic language course at the same time.
4. Students seeking entry into Arabic courses who have not previously taken a course in Arabic at Renison must complete an assessment form which is available at Renison University College's Registrar's Office. Renison reserves the right to allocate students to the appropriate class based on this assessment.
5. Renison University College reserves the right to refuse admission to, and/or credit for, any of its language courses to a student who has, in Renison's view, a level of competence unsuited to the course(s).

SI 100s**SI 101R LAB,LEC,TUT 0.50**

Course ID: 013338

Introduction to Arabic 1

This course is designed for students with no previous knowledge of Arabic. It focuses on recognizing the Arabic alphabet and cursive writing. Students will build up basic vocabulary and construct simple sentences. Students will exchange basic conversations in Modern Standard Arabic and be exposed to Egyptian and Levantine colloquial Arabic.

[Note: Not open to students with native, near-native, or similar advanced ability. Completion of student assessment required]

Antireq: SI 120R, AB 101W

Also offered Online

SI 102R LAB,LEC,TUT 0.50

Course ID: 013339

Introduction to Arabic 2

Language structures and verb conjugations will be covered at a beginner level. Students will exchange conversations in varied contexts and build compound sentences and short paragraphs on topics of interest.

[Note: Not open to students with native, near-native, or similar advanced ability. Completion of student assessment required.]

Prereq: SI 101R.

Antireq: SI 120R, AB 102W

SI 120R LAB,LEC,TUT 0.50

Course ID: 015276

Literary Arabic for Heritage Speakers

Designed for heritage speakers who have had some meaningful exposure to Arabic (usually a spoken dialect), this language course focuses on improving technical literacy in Modern Standard Arabic (Fusha) by concentrating on grammar and literary skills. Upon finishing, students will be prepared to join non-heritage students in either intermediate or advanced Arabic.

[Note: Basic knowledge of Arab culture and geography recommended. For students who have been exposed to Arabic at home or lived in an Arabic speaking country but do not possess linguistic competence and literacy of native speakers. Completion of student assessment required.]

Antireq: SI 101R, SI 102R, SI 201R

SI 121R LEC 0.50

Course ID: 013340

Islam in the World

An introduction to the caliphates, cities, and cultures of Islam, through film and selected texts, including the experience of Islam in Canada as revealed through its writers. This course provides a foundation for Studies in Islam, establishing a context for multidisciplinary approaches to a wide variety of topics.

SI 131R LEC 0.50

Course ID: 015277

Arab Culture

Integrating elements of Arab history, geography, language, literature (prose and poetry), art, music, theatre, cinema, politics, press, humour, dance, fashion, and food, this course explores varied expressions of Arab culture. Students will also study the phenomenon of Orientalism and the impact of European colonialism upon the Arabs.

Antireq: ARTS 190 taken Spring 2016 (Topic: SI - Arab Culture)

Offered at Renison University College

SI 132R LEC 0.50

Course ID: 015014

Introduction to Modern Arab and Muslim Drama

The course explores modern Arab and Muslim drama in English from multiple perspectives: literary, social, economic, and political.

[Note: Formerly SI 320R.]

Antireq: SI 320R

SI 200s

SI 201R LAB,LEC,TUT 0.50

Course ID: 014001

Intermediate Arabic 1

This is an intermediate course focusing on reading comprehension of authentic Arabic materials. Students are introduced to verb patterns and subject-verb agreement rules and write longer paragraphs and short essays.

[Note: Not open to students with native, near native, or similar advanced ability.]

Prereq: SI 102R.

Antireq: SI 120R

SI 202R LAB,LEC,TUT 0.50

Course ID: 014002

Intermediate Arabic 2

This is an intermediate course where students construct complex sentences and write essays. They read, analyze, and translate authentic texts. Students participate in conversations on topics of interest and learn complex grammar patterns, lexical derivations, and dictionary use.

Prereq: SI 120R or SI 201R

SI 221R LEC 0.50

Course ID: 014398

Islam, the West, and the Modern World

This course examines conceptions of East-West divide and confrontation as well as topics of interest, both geo-political and religious, that influence the relationships of Muslims and the Western world. The focus is on the history of Muslims in the West and the challenges of integration of Muslim communities in pluralistic, secular societies.

Prereq: Level at least 1B

SI 230R LEC 0.50

Course ID: 014874

Islamic Visual Culture: Art, Architecture, and Aesthetics

This course explores Islamic visual culture by focusing on three main design elements in Islamic art and architecture: calligraphy, arabesque, and geometry. The course emphasizes the aesthetic, visual, and cultural importance of ornamentation in Islamic art and examines its manifestation in the work of contemporary Muslim artists.

Prereq: Level at least 1B

Offered at Renison University College

SI 231R LEC 0.50

Course ID: 014876

Calligraphy to Conceptual Art: Text as an Image in Islamic and East Asian Visual Arts

Exploring the history of Islamic and East Asian calligraphic arts and the study of Eastern and Western artists, this course examines multiple ways in which writing and other forms of visible language are incorporated into visual arts. Through studio projects, students explore conceptual approaches to text-based image making.

Prereq: Level at least 2A.

Antireq: FINE 204 (section 001) taken Winter 2012 or Winter 2014; SI 375R taken Winter 2014

(Cross-listed with EASIA 231R, FINE 275)

Offered at Renison University College

SI 240R LEC 0.50

Course ID: 015145

Migration, Diaspora, and Exile: Muslim Narratives

This course examines Muslim narratives written in the United States, Canada, and the United Kingdom. It investigates the diversity of Islamic culture and expression in diasporic contexts, exploring an array of experiences written from various socio-cultural locations. The major issues of focus are the dilemmas of individual religiosity and religious identity within diasporic contexts, the politics of identity and community, and the ways in which Islam is lived and formulated (or reformulated) in these contexts.

SI 241R LEC 0.50

Course ID: 015146

Sacred Spaces and Human Geographies: Literary Expressions

Using the Muslim dimension as a central theme, this course explores the social, cultural, and political implications to be found in a range of postcolonial literatures from Africa, South Asia, and the Middle East. Students investigate and analyze a variety of issues and concerns manifest in these literatures: identities and native sensibilities, nationalism and politics, cultural memory, and issues of sacred space and place.

SI 250R LEC 0.50

Course ID: 015147

The History of Islamic Civilization from Late Antiquity to 1300

This course surveys the diverse history of Islamic societies from the seventh to the thirteenth century. The primary focus is on the central Islamic lands from Egypt to Iran. In addition to the standard narrative, the course also examines salient aspects of Islamic civilization on a thematic basis.

[Note: SI 121R recommended.]

(Cross-listed with MEDVL 250R)

SI 251R LEC 0.50

Course ID: 015148

The History of Islamic Civilization from 1300-1800: The Islamic Gunpowder Empires

This course studies in comparative fashion the rise, consolidation, and decline of the three major Islamic empires of the early modern period (c. 1300-1800): the Ottomans in Anatolia, the Balkans, and the Middle East, the Safavids in Iran, and the Mughals in India.

[Note: SI 121R recommended.]

(Cross-listed with MEDVL 251R)

SI 300s**SI 301R LAB,LEC,TUT 0.50**

Course ID: 014003

Advanced Arabic 1

This is an advanced course focusing on honing reading comprehension skills. Students write longer essays using advanced grammatical structures, and they participate in longer conversations.

[Note: Not open to students with native, near native, or similar advanced ability.]

Prereq: SI 202R

SI 302R LAB,LEC,TUT 0.50

Course ID: 014004

Advanced Arabic 2

This is an advanced level course that provides additional practice of the four integrated language skills at the advanced level. Students examine and analyze texts more deeply and confidently, responding to the texts in

oral presentations and class discussions.

[Note: Not open to students with native, near native, or similar advanced ability.]

Prereq: SI 301R

SI 315R LEC 0.50

Course ID: 014399

Islam, Women, and the Modern World

This course examines the lives and contributions of Muslim women in history - past and present - and political, social, and cultural influences that have affected the lives of Muslim women around the world. Challenging stereotypes of Muslim women and using religious, historical, and literary images, the course focuses on contributions of Muslim women as religious leaders, scholars, and politicians.

Prereq: Level at least 2A

SI 316R LEC,SEM 0.50

Course ID: 015351

Religion & War: The Language and Imagery of War within Islam, Christianity, and Judaism

This course explores the phenomena of militant words and images within Islam, Christianity, and Judaism. Considered in conversation with one another, these Abrahamic traditions challenge students to consider the interconnectedness of these communities, histories, and textual traditions.

[Note: This course fulfils an Area 1C requirement for Religious Studies majors.]

Prereq: SI 121R or RS 216; Level at least 2A

(Cross-listed with RS 316)

SI 375R LEC 0.50

Course ID: 014139

Special Topics in Islam

This course allows for in-depth study of selected topics in interdisciplinary studies in Islam.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Department Consent Required

Prereq: SI 121R

SI 390R SEM 0.50

Course ID: 013354

Understanding Islam

This course brings together the diverse strands that constitute the student's learning and experience in required as well as elective courses of Studies in Islam. Exploring Islam in a variety of contexts, the approach is interdisciplinary and integrative.

[Note: In addition to the three prerequisite courses, a student must have completed at least four Studies in Islam elective courses. Students who do not meet the prerequisites may take the course with department consent.]

Prereq: SI 121R, SI 221R; One of SI 250R/MEDVL 250R or SI 251R/MEDVL 251R

SI 400s

SI 420R SEM 0.50

Course ID: 015352

Islamic Spirituality (Sufism) and Psychotherapy

This course explores Muslim conceptions of the soul and psychotherapy within religious and spiritual frameworks. Students will place contemporary models and psychotherapeutic approaches in dynamic conversation with the psycho-spiritual strategies of traditional Sufi systems and sages.

Prereq: SI 121R or RS 216; Level at least 3A

SI 450R SEM 0.50

Course ID: 015353

Reading and Interpreting the Qur'an (in translation)

This course serves as a comprehensive introduction to the sacred text of Islam. Students engage in a process of scriptural reasoning as they read the Qur'an and learn a wide array of hermeneutical approaches, from traditional forms of exegesis to new trends in the academic study of the Qur'an.

Prereq: SI 121R or RS 216; Level at least 3A

SEXUALITY, MARRIAGE, AND FAMILY STUDIES

Notes

The following courses are administered by St. Jerome's University.

SMF 100s

SMF 101 LEC 0.50

Course ID: 008556

Introduction to Relationships and Families

This course provides an overview of couple, marital, and family relationships from a broad, interdisciplinary perspective.

[Note: Formerly SMF 206]

Antireq: SMF 206

Also offered Online

SMF 200s

SMF 200 LEC 0.50

Course ID: 015154

Special Topics in Sexualities, Relationships, or Families

This course introduces students to special topics in sexualities, relationships, and/or families.

[Note: This is a repeatable course, subject to different content; it may be completed a total of five times.]

SMF 204 LEC 0.50

Course ID: 008554

Introduction to Human Sexuality

This course provides a broad interdisciplinary overview of theories and research on human sexuality. Topics may include: human anatomy, sexual health, sexual response cycle, sexual orientation, gender, sex work, sexual practices, fetishes and paraphilias, and attraction/intimacy/love.

Antireq: PSYCH 236

SMF 205 LEC 0.50

Course ID: 008555

The Dark Side of Sexuality

As with all profound and meaningful human activities, sexuality has the potential to involve harm, manipulation, and abuse. This course offers a theoretical and empirical examination of the dark side of human sexuality. Topics may include sex work, pornography, sexual violence and abuse, incest, compulsive sexual behaviour, and paraphilias.

Prereq: SMF 204 or PSYCH 236

SMF 207 LEC 0.50

Course ID: 008557

Parents, Children, and Family Relations

This course examines caregiver/parent-child relationships from a broad interdisciplinary perspective over the lifespan. Topics may include: the transition to parenthood, parenting practices and their intersection with child/adult development, social and cultural influences on families with children, same-sex parenting, gender variance/fluidity and family relationships, family relations after parental separation, and care of aging parents.

Prereq: SMF 101/206

SMF 208 LEC 0.50

Course ID: 012038

Introduction to Systemic Therapies and Anti-Oppressive Practices

This course provides an overview of various theoretical and therapeutic practices in relational and sex therapy, and serves as an introduction to social justice, anti-oppressive, and inclusionary therapeutic practices. In doing so, the intersections of social locations such as class, culture, dis/ability, gender, and race within various social contexts are critically analyzed.

Prereq: SMF 101/206; one of SMF 204, 207, PSYCH 236; Level at least 2A

SMF 211 LEC 0.50

Course ID: 015155

Dynamics of Dating

This course examines the dynamics of intimate relationships in the context of the modern, Western construct of dating. Topics explored may include long-distance relationships, polyamorous relationships, online dating, hook-up culture, shifting romantic and family formation dynamics, modern communications and technology, and the role of pop culture in dating trends.

SMF 212 LEC 0.50

Course ID: 015156

Navigating Sexuality and Relationships in Mid/Later Life

This course reviews the process of navigating relationships and sexuality as persons age. Topics may include physical/biological changes, desire, youth-focused culture, relationship dissolution, dating, and technologies.

SMF 213 LEC 0.50

Course ID: 015157

Sexual Health and Well-Being

This course offers a theoretical and empirical examination of sexuality from a health perspective. Approaches to counselling, prevention, and treatment will be discussed. Topics may include STI and pregnancy prevention, pregnancy and post-partum health, healthy romantic and sexual relationships, chronic and long-term illnesses, and sexual cancers.

SMF 214 LEC 0.50

Course ID: 015158

Constructing Erotics

This course examines the social construction of the erotic, in particular how culture, politics, religion, literature, economics, medicine, or technology interact to regulate the definition and performance of sexuality across cultures. Topics may include the sexual body (e.g., beauty and desire), the regulation of sex (e.g., taboos, laws, religion), and other cultural constructions of sexuality (e.g., sexual education).

SMF 215 LEC 0.50

Course ID: 015159

Sexuality and Popular Culture

This course examines how sexuality is depicted in, shaped by, and contested in popular culture. It introduces different theories in the study of popular culture and sexuality through a range of historical and contemporary texts and practices.

SMF 216 LEC 0.50

Course ID: 015160

Sexual Pleasure

This course offers a theoretical and empirical examination of the pleasurable and recreational aspects of human sexuality. Topics may include optimal sexuality, romantic passion, sexual techniques, sex toys, BDSM, and sexual role-playing. A range of pleasure discourses and practices (beyond those focused on the genitalia) are addressed.

SMF 220 LEC 0.50

Course ID: 012963

Research Methods

This course introduces students to the philosophy and methods of social science and humanities research, including an examination of issues and approaches to conducting research in the areas of sexuality, couples, and families.

Prereq: One of SMF 101/206, 204, PSYCH 236.

Antireq: KIN 330, PSCI 315, PSYCH 291, REC 270, 270A, SOC/LS 221, 321, SDS/SWREN 251R

SMF 230 LEC 0.50

Course ID: 013010

Introduction to Statistics in Sexuality, Marriage, and Family Studies

The goal of this introductory statistics course is to help students understand the logic and appropriate application of commonly used descriptive and inferential statistics, with examples drawn from various disciplines relevant to sexuality, marriage, and family studies.

Prereq: One of SMF 101/206, 204, PSYCH 236.

Antireq: ARTS 280, ECON 221, ENVS 278, KIN 222, PSCI 314, PSYCH 292, REC 371, SDS/SWREN 250R, SOC/LS 280, STAT 202, 206, 211, 221, 231, 241

SMF 300s

SMF 301 LEC 0.50

Course ID: 013613

Communication and Counselling Skills

This course is an examination and analysis of the theories and methods of communication as applied within the processes of individual, relational, and family consultation and counselling.

[Note: Formerly SMF 311]

Prereq: One of SMF 101/206, 204, PSYCH 236; Level at least 2A.

Antireq: SOCWK/SWREN 220R, SMF 311

SMF 304 LEC 0.50

Course ID: 008566

Human Sexuality in Relationships

This course examines the development and experience of sexuality in a relational context from infancy to old age. Emphasis will be placed on sexual interaction and communication in adult relationships, but the effects of relationships on sexual experiences during infancy, childhood, adolescence, and old age may also be examined.

Prereq: SMF 204 or PSYCH 236; Level at least 2A

SMF 305 LEC 0.50

Course ID: 008567

Social Issues and Controversies in Human Sexuality

This course will provide a detailed examination of selected issues and controversies in the area of human sexuality. Topics may include the role of sex education in schools, nature vs. nurture, censorship, and surrogate motherhood.

Prereq: SMF 204 or PSYCH 236; Level at least 2A

SMF 306 LEC 0.50

Course ID: 008568

The Formation and Maintenance of Close Relationships

The interpersonal dynamics involved in the formation and maintenance of close relationships will be examined. Topics such as attraction, commitment, love, trust, and communication will be examined from various theoretical and empirical perspectives.

Prereq: One of SMF 101/206, PSYCH 220R, 253/253R; Level at least 2A.

Antireq: PSYCH 221R, 354/354R

SMF 307 LEC 0.50

Course ID: 008569

Conflict, Crisis, and Dissolution in Close Relationships

Families and close relationships are among the most important and valued human experiences, but they can also be the source of much conflict and pain. This course will examine the dark side of close relationships, with a focus on topics such as conflict and conflict resolution, family violence, poverty, separation and divorce, illness, and death and bereavement.

Prereq: One of SMF 101/206, PSYCH 220R, 253/253R; Level at least 2A

SMF 308 SEM 0.50

Course ID: 008570

Relational Therapy

Modern and postmodern therapeutic approaches to working clinically within relational contexts (e.g., family, romantic, other relationship configurations) are taken up. This course emphasizes cultural sensitivity, social justice, and anti-oppressive practices in therapeutic settings. Students will apply theory to practice and explore the ethical implications associated with doing clinical work.

Prereq: SMF 208; One of SMF 301, 311, SOCWK/SWREN 220R; Level at least 2A

SMF 309 SEM 0.50

Course ID: 008571

Sex Therapy

This course examines therapeutic approaches and clinical issues when working with sexuality related problems. Research and theoretical issues in the field of sex therapy will be discussed and applied to clinical contexts. The applied focus enables students to connect clinical theory and ethical issues to practice.

Prereq: SMF 208; One of SMF 301, 311, SOCWK/SWREN 220R; Level at least 2A

SMF 310 LEC 0.50

Course ID: 011878

Sexual and Relational Ethics

A study of social relationships and systems that support sexual identities and relationship structures which generate ethical issues related to attitudes, values, and behaviours at both the individual and group level. This course may address sexual and relationship ethics on local, national, and transnational scales focusing on how issues of ethics and morality have been socially constructed.

Prereq: SMF 101/206; SMF 204 or PSYCH 236; Level at least 2B

SMF 317 DIS,LEC 0.50

Course ID: 013234

History of Sexuality: The Pre-Modern Period

This course introduces students to the history of Western sexuality, beginning with the ancient world and focusing primarily on the Middle Ages and the transition to modernity.

Prereq: At least one HIST course; Level at least 2A

(Cross-listed with HIST 317)

SMF 318 DIS,LEC 0.50

Course ID: 012964

History of Sexuality: The Modern Period

This seminar introduces students to the history of sexuality. The course focuses on the 19th and 20th centuries.

Prereq: At least one HIST course; Level at least 2A

(Cross-listed with HIST 318)

SMF 319 SEM 0.50

Course ID: 013011

History of Sexuality: Special Topics

A specialized course in topics related to the history of sexuality. Topics cover the application of theory and research in any area related to the history of sexuality.

[Note: See the Schedule of Classes for current offerings. This is a repeatable course, subject to different content; it may be completed a total of five times.]

Prereq: One of SMF 204, any HIST course, PSYCH 236; Level at least 2A

SMF 365 LEC 0.50

Course ID: 010353

Special Topics in Human Sexuality

A specialized course in topics related to human sexuality. Topics cover the application of theory and research in any area related to human sexuality.

[Note: See the Schedule of Classes for current offerings. This is a repeatable course, subject to different content; it may be completed a total of five times.]

Prereq: SMF 204 or PSYCH 236; Level at least 2A

SMF 366 LEC 0.50

Course ID: 011879

Special Topics in Couples, Marriages, and Family Studies

A specialized course in topics that cover the application of theory and research in any area related to couples, relationships, and families.

[Note: See the Schedule of Classes for current offerings. This is a repeatable course, subject to different content; it may be completed a total of five times.]

Prereq: SMF 101/206; Level at least 2A

SMF 400s

SMF 400 SEM 0.50

Course ID: 015161

Capstone Seminar

This seminar invites students to integrate their knowledge in the domains of sexuality, relationships, and families and make connections among theories, research, and practices. The capstone focus provides students the opportunity for critical self-reflection on their university experience.

[Note: Normally students will take SMF 400 in their last term of study. Offered: Winter. SMF 220 equivalent courses: KIN 330, PSCI 315, PSYCH 291, REC 270, 270A, SOC/LS 221, 321, SDS/SWREN 251R. SMF 230 equivalent courses: ARTS 280, ECON 221, ENVS 278, KIN 222, PSCI 314, PSYCH 292, REC 371, SDS/SWREN 250R, SOC/LS 280, STAT 202, 206, 211, 221, 231, 241.]

Prereq: SMF 220 or equivalent courses; SMF 230 or equivalent courses; SMF 310; Level at least 4B; Honours or General Sexuality, Marriage, and Family Studies students

SMF 404 RDG 0.50

Course ID: 008574

Independent Study in Sexuality, Relationships, and/or Families

An independent, in-depth study based on empirical research and/or extensive reading of a topic in the area of sexuality, relationships, and/or families. The project must be approved by the academic supervisor of the course prior to enrolment.

[Note: This is a repeatable course, subject to different content; it may be completed a total of five times. SMF 220 equivalent courses: KIN 330, PSCI 315, PSYCH 291, REC 270, 270A, SOC/LS 221, 321, SDS/SWREN 251R. SMF 230 equivalent courses: ARTS 280, ECON 221, ENVS 278, KIN 222, PSCI 314, PSYCH 292, REC 371, SDS/SWREN 250R, SOC/LS 280, STAT 202, 206, 211, 221, 231, 241.]

Department Consent Required

Prereq: SMF 220 or equivalent courses; SMF 230 or equivalent courses; One of SMF 304, 305, 306, 307, 365, 366, PSYCH 221R, 354/354R; SMF 310; Level at least 3A

SMF 460 PRA,SEM 0.50

Course ID: 012117

Practicum and Professional Ethics

This course involves an assigned unpaid apprenticeship in a human sexuality or family studies setting combined with regular seminar meetings. The practicum will require no more than ten hours per week. Paid or volunteer positions that are obtained outside the context of this course are not eligible for credit in this course.

[Note: Priority enrolment will be given to students in the Honours Sexuality, Marriage, and Family Studies plan. SMF 220 equivalent courses: KIN 330, PSCI 315, PSYCH 291, REC 270, 270A, SOC/LS 221, 321, SDS/SWREN 251R. SMF 230 equivalent courses: ARTS 280, ECON 221, ENVS 278, KIN 222, PSCI 314, PSYCH 292, REC 371, SDS/SWREN 250R, SOC/LS 280, STAT 202, 206, 211, 221, 231, 241.]

Department Consent Required

Prereq: SMF 220 or equivalent courses; SMF 230 or equivalent courses; SMF 310; Sexuality, Marriage, and Family Studies students only

SMF 461 PRA,SEM 0.50

Course ID: 013012

Practicum and Applied Theory

This course involves an assigned unpaid apprenticeship in a human sexuality or family studies setting

combined with regular seminar meetings. The practicum will require no more than eight hours per week. Paid or volunteer positions that are obtained outside the context of this course are not eligible for credit in this course.

Prereq: SMF 460; Honours Sexuality, Marriage, and Family Studies students only

SMF 462 PRJ,SEM 0.50

Course ID: 013013

Research Thesis and Applied Theory

Under supervision of a faculty member, students normally will review literature, present an oral research proposal, analyze data, write a scholarly research paper, and deliver a seminar presentation based on the paper.

[Note: SMF 220 equivalent courses: KIN 330, PSCI 315, PSYCH 291, REC 270, 270A, SOC/LS 221, 321, SDS/SWREN 251R. SMF 230 equivalent courses: ARTS 280, ECON 221, ENVS 278, KIN 222, PSCI 314, PSYCH 292, REC 371, SDS/SWREN 250R, SOC/LS 280, STAT 202, 206, 211, 221, 231, 241.]

Department Consent Required

Prereq: SMF 220 or equivalent courses; SMF 230 or equivalent courses; Honours Sexuality, Marriage, and Family Studies students only

SMF 490 PRA,SEM 0.75

Course ID: 015207

Practicum and Professional Ethics

This course involves an assigned unpaid apprenticeship in a human sexuality or family studies setting combined with regular seminar meetings. The practicum will require 15 hours per week. Paid or volunteer positions that are obtained outside the context of this course are not eligible for credit in this course.

Department Consent Required

Prereq: Human Services Practicum Specialization students only

SMF 491 PRA,SEM 0.75

Course ID: 015208

Practicum and Applied Theory

This course involves an assigned unpaid apprenticeship in a human sexuality or family studies setting combined with regular seminar meetings. The practicum will require 15 hours per week. Paid or volunteer positions that are obtained outside the context of this course are not eligible for credit in this course.

Department Consent Required

Prereq: SMF 490; Human Services Practicum Specialization students only

SMF 494 SEM 0.50

Course ID: 013015

Seminar in Sexuality

This seminar allows students to integrate their knowledge in the domain of sexuality studies. Topics reflect current issues from a theoretical and research perspective.

[Note: SMF 220 equivalent courses: KIN 330, PSCI 315, PSYCH 291, REC 270, 270A, SOC/LS 221, 321, SDS/SWREN 251R. SMF 230 equivalent courses: ARTS 280, ECON 221, ENVS 278, KIN 222, PSCI 314, PSYCH 292, REC 371, SDS/SWREN 250R, SOC/LS 280, STAT 202, 206, 211, 221, 231, 241.]

Prereq: SMF 220 or equivalent courses; SMF 230 or equivalent courses; One of SMF 304, 305, 365; SMF 310; Level at least 3B

SMF 496 SEM 0.50

Course ID: 013016

Seminar in Family Studies

This seminar allows students to integrate their knowledge in the domains of couples, marriages, and family studies. Topics reflect current issues from a theoretical and research perspective.

[Note: SMF 220 equivalent courses: KIN 330, PSCI 315, PSYCH 291, REC 270, 270A, SOC/LS 221, 321, SDS/SWREN 251R. SMF 230 equivalent courses: ARTS 280, ECON 221, ENVS 278, KIN 222, PSCI 314, PSYCH 292, REC 371, SDS/SWREN 250R, SOC/LS 280, STAT 202, 206, 211, 221, 231, 241.]

Prereq: SMF 220 or equivalent courses; SMF 230 or equivalent courses; One of SMF 306, 307, 366, PSYCH 221R, 354/354R; SMF 310; Level at least 3B

SMF 498 SEM 0.50

Course ID: 013017

Seminar in Therapy: Couple, Family, and Sex Therapy

This seminar allows students to integrate their knowledge in the domain of couples, family, and sex therapy. Topics reflect current issues from a theoretical and research perspective.

[Note: SMF 220 equivalent courses: KIN 330, PSCI 315, PSYCH 291, REC 270, 270A, SOC/LS 221, 321, SDS/SWREN 251R. SMF 230 equivalent courses: ARTS 280, ECON 221, ENVS 278, KIN 222, PSCI 314, PSYCH 292, REC 371, SDS/SWREN 250R, SOC/LS 280, STAT 202, 206, 211, 221, 231, 241.]

Prereq: SMF 220 or equivalent courses; SMF 230 or equivalent courses; SMF 308 or 309; SMF 310; Level at least 3B

SMF 499A PRJ 0.75

Course ID: 015162

Thesis - Part 1

Under supervision of a faculty member, students normally will review literature, design a study, present an oral research proposal, analyze data, write a scholarly research paper, and deliver a seminar presentation based on the paper. Students will have the opportunity to submit a proposal to present at an annual departmental research conference (the SMF Symposium).

[Note: SMF 220 equivalent courses: KIN 330, PSCI 315, PSYCH 291, REC 270, 270A, SOC/LS 221, 321, SDS/SWREN 251R. SMF 230 equivalent courses: ARTS 280, ECON 221, ENVS 278, KIN 222, PSCI 314, PSYCH 292, REC 371, SDS/SWREN 250R, SOC/LS 280, STAT 202, 206, 211, 221, 231, 241.]

Department Consent Required

Prereq: SMF 220 or equivalent courses; SMF 230 or equivalent courses; Honours Sexuality, Marriage, and Family Studies students with major average of at least 75%

SMF 499B PRJ 0.75

Course ID: 015163

Thesis - Part 2

Under supervision of a faculty member, students normally will review literature, design a study, present an oral research proposal, analyze data, write a scholarly research paper, and deliver a seminar presentation based on the paper. Students will have the opportunity to submit a proposal to present at an annual departmental research conference (the SMF Symposium).

Department Consent Required

Prereq: SMF 499A; Honours Sexuality, Marriage, and Family Studies students with a major average of at least 75%

SOCIOLOGY

Notes

1. Not all the courses listed in this section are available in the current year. Please consult the Schedule of Classes online at the Registrar's web page for current course information.
2. Sociology courses with an "R" designation are administered by Renison University College and are primarily for Social Development Studies Majors. Courses with a "J" designation are administered by St. Jerome's University.

SOC 100s

SOC 101 LEC 0.50

Course ID: 008580

Introduction to Sociology

An introduction to the basic concepts and frames of reference of sociological investigation and interpretation. Topics for analysis will include communities, associations and institutions, classes and status groups, crowds and publics, social processes, and social change. Special attention is given to Canadian society.

[Note: SOC 101 offered on main campus, Conrad Grebel University College, St. Jerome's University, and online; SOC 101R offered at Renison University College.]

Antireq: SOC 120R

(Cross-listed with SOC 101R)

Also offered Online

SOC 101R LEC 0.50

Course ID: 008580

Introduction to Sociology

An introduction to the basic concepts and frames of reference of sociological investigation and interpretation. Topics for analysis will include communities, associations and institutions, classes and status groups, crowds and publics, social processes, and social change. Special attention is given to Canadian society.

[Note: SOC 101 offered on main campus, Conrad Grebel University College, St. Jerome's University, and online; SOC 101R offered at Renison University College.]

Antireq: SOC 120R

(Cross-listed with SOC 101)

Also offered Online

SOC 200s**SOC 200 LEC 0.50**

Course ID: 008583

Sociology of Marriage and Family

An introduction to the sociological perspectives on marriage and the family in urban-industrial societies. Special attention is given to marriage and the family in Canada. Comparisons with U.S. and Britain will be undertaken.

Prereq: SOC 101/101R or 120R

SOC 201 LEC 0.50

Course ID: 008584

Victims and Society

This course will examine the substance of victimization: the scientific study of victims, the process, etiology, and consequences of victimization. Topics will include victims and politics, the victims' movement, "victim-precipitation", the victimization of women, and family violence.

Prereq: SOC 101/101R or 120R

(Cross-listed with LS 224)

SOC 202 LEC 0.50

Course ID: 009512

Classical Sociological Theory

An examination of the nature and function of sociological theory and the types of theory that founded the discipline in the 19th and early 20th centuries.

Prereq: SOC 101/101R or 120R

SOC 204R LEC 0.50

Course ID: 008587

Sociology of Adolescence

The social definitions of adolescence in cross-cultural and historical perspective. Social roles of adolescents in the institutional structures of urban-industrial societies with special emphasis on the family, education, and the economy. The relationship of adolescents' social roles to processes of social change and stability.

Prereq: SOC 101/101R or 120R

Also offered Online

SOC 205 LEC 0.50

Course ID: 008581

Social Problems

The specific social problems discussed will vary but will include problems of well-being, problems of inequality and power, and problems related to modernization.

[Note: Formerly SOC 102.]

Prereq: SOC 101/101R or 120R.

Antireq: SOC 102

SOC 206 LEC 0.50

Course ID: 008588

Gender Relations

An examination of gender relations in Canadian society, including historical changes and the contemporary situation. Emphasis is placed on a consideration of the social construction of gender, the gender structure of institutions, and gender inequality. This course also examines selected issues in contemporary gender relations.

Prereq: SOC 101/101R or 120R

(Cross-listed with WS 209)

SOC 207 LEC 0.50

Course ID: 008590

Sociology of Education

Attention will be focused on the concepts and theories of sociology as they apply especially to the educational system. This course is designed for co-op and regular students who plan to enter the teaching field.

Prereq: SOC 101/101R or 120R

(Cross-listed with SOC 207R)

SOC 207R LEC 0.50

Course ID: 008590

Sociology of Education

Attention will be focused on the concepts and theories of sociology as they apply especially to the educational system. This course is designed for co-op and regular students who plan to enter the teaching field.

Prereq: SOC 101/101R or 120R

(Cross-listed with SOC 207)

SOC 210 LEC 0.50

Course ID: 008112

Sociology of Sport

This course examines sport in modern societies and the distinctive features of Canadian sport. Attention is directed to the relationship between sport and other institutions, including the economy and political system. Contemporary issues, including racial and gender inequality and controversies over violence and drugs are

also considered.

Prereq: SOC 101/101R or 120R

(Cross-listed with REC 203)

SOC 221 LEC 0.50

Course ID: 008661

Research Methods

An introductory survey of the research techniques commonly employed by sociologists, criminologists, and legal studies researchers. The formulation of research designs appropriate to various kinds of intellectual problems in social science is stressed.

Prereq: SOC 101/101R or 120R; Level at least 2A; Not open to students in the Faculty of Mathematics.

Antireq: ISS/SDS 251R, KIN 330, PSYCH 291, REC 270, SOC 321/LS 321, SMF 220, SWREN 251R

(Cross-listed with LS 221)

SOC 222 LEC 0.50

Course ID: 008602

Juvenile Delinquency

A systematic analysis and criticism is presented of biological, psychological, psychoanalytical, and sociological theories of juvenile delinquency. Attention is given to statistics and contemporary research with special emphasis on the distribution and types of delinquent subcultures.

Prereq: SOC 101/101R or 120R

(Cross-listed with LS 222)

Also offered Online

SOC 223 LEC 0.50

Course ID: 008603

Deviance: Perspectives and Processes

The deviance-making process is examined in a variety of social contexts. This course examines the emergence of rules and control agencies, the processes by which people become involved in deviant activities, and the contingencies affecting their careers as deviants.

Prereq: SOC 101/101R or 120R

(Cross-listed with LS 223, SOC 223R)

SOC 223R LEC 0.50

Course ID: 008603

Deviance: Perspectives and Processes

The deviance-making process is examined in a variety of social contexts. This course examines the emergence of rules and control agencies, the processes by which people become involved in deviant activities, and the contingencies affecting their careers as deviants.

Prereq: SOC 101/101R or 120R

(Cross-listed with LS 223, SOC 223)

SOC 224R LEC 0.50

Course ID: 008605

Poverty in Canada and its Social Consequences

A sociological analysis of poverty in contemporary Canada as it underlies a multiplicity of interlocking social problems.

[Note: SWREN 224R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: SOC 101/101R or 120R

(Cross-listed with SWREN 224R)

Also offered Online

SOC 225 LEC 0.50

Course ID: 015011

Games and Gamers

This course examines games, gamers, and gaming culture as entry points to understanding the social implications of digital media technologies.

Prereq: SOC 101/101R or 120R

SOC 227 LEC 0.50

Course ID: 008609

Criminology

An examination of the major theories of crime causation and their implications for the development of social policy. Both historical and contemporary theories will be discussed.

Prereq: SOC 101/101R or 120R

(Cross-listed with LS 227)

SOC 228 LEC 0.50

Course ID: 008610

Sociology of Criminal Justice

Decisions to process offenders and the role of social factors in the Canadian criminal justice system are critically examined. Focal issues include police discretion, the legal profession, and prison systems.

Prereq: SOC 101/101R or 120R

(Cross-listed with LS 228)

SOC 229 LEC 0.50

Course ID: 010101

Selected Topics in Criminology

Sociological analysis of research and theory on selected criminal activities. Motivation, modus operandi, and the social characteristics of offenders will be examined in relation to such specific crimes as drug and sexual offenses, theft, robbery, murder, organized crime, and/or other criminal activities.

Prereq: SOC 101/101R or 120R

(Cross-listed with LS 229)

Also offered Online

SOC 230 LEC 0.50

Course ID: 015562

Special Topics in Sociology

An in-depth analysis of research in selected topics in Sociology.

[Note: This is a repeatable course, subject to different content; it may be completed a total of two times.]

Prereq: SOC 101/101R

SOC 232 LEC 0.50

Course ID: 008612

Technology and Social Change

This course examines how forms of society influence technological developments and, reciprocally, how society is influenced by technology. It covers such topics as the de-skilling of work, technocracy, communications technology, and cyberspace, from an historical perspective, looking for the unifying features

of technologies ranging from Stone Age tools to the microprocessor.

Prereq: SOC 101/101R or 120R

Also offered Online

SOC 240 LEC 0.50

Course ID: 014846

Terrorism

This course offers an introduction to the study of terrorism, with a primary focus on sociological approaches. The course examines the history, causes, and diversity of forms of terrorist groups and the process of radicalization, suicide terrorism, and some aspects of the counter-terrorism response of states.

Prereq: SOC 101/101R or 120R

(Cross-listed with LS 240)

SOC 241 LEC 0.50

Course ID: 008623

Sociology of Work and Occupations

This course is an introduction to the study of work and occupations including: labour market trends, professions and the professionalization process, how work is experienced, balancing work and family, and the impact of work on lifestyles, leisure, and retirement.

Prereq: SOC 101/101R or 120R

SOC 246 LEC 0.50

Course ID: 008628

Mass Communication

This course provides an introduction to the social processes and functions of mass media communication -- with particular reference to the Canadian context. Emphasis is focused on the relationship between mass communication and the ongoing reconstruction of social reality.

Prereq: SOC 101/101R or 120R

SOC 248 LEC 0.50

Course ID: 008630

Health, Illness and Society

This course discusses health, illness and the distribution of disease in society. It introduces concepts such as social determinants of health, population health and culturally competent care. The strength and the limitations of the Canadian health care system will be examined through a sociological lens.

Prereq: SOC 101/101R or 120R

SOC 249 LEC 0.50

Course ID: 008631

Sociology of Mental Disorder

An examination of sociological research and theory in the field of mental disorder particularly as they apply to issues of law and social control. Topics include mental health legislation, the medical model of mental "illness," the epidemiology of mental disorder, family processes and psychiatric hospitalization, public attitudes and social stigma, and specific forms of mental disorder.

Prereq: SOC 101/101R or 120R

(Cross-listed with LS 226)

SOC 253 LEC 0.50

Course ID: 008634

Demographic Change in Canada

An introduction to the study of human population, with a focus on mortality, fertility, migration and spatial distribution in Canada. Methods and measures used in demographic research, sources of demographic data, and the health and social implications of the major demographic trends are discussed.

Prereq: Level at least 2A

(Cross-listed with HLTH 253)

SOC 256 LEC 0.50

Course ID: 008636

Ethnic and Racial Relations

Relations between different racial and cultural groups, analysis of majority-minority group status with special reference to Canada.

Prereq: SOC 101/101R or 120R

SOC 258 LEC 0.50

Course ID: 008311

Millennialism & Violence

An examination of the nature and causes of episodes of mass violence inspired by apocalyptic beliefs. This course will use historical and contemporary case studies and theoretical discussions of the social and psychological factors precipitating violence.

[Note: This course fulfils an Area 3C requirement for Religious Studies majors.]

Prereq: SOC 262 or RS 221/280

(Cross-listed with RS 281)

SOC 260 LEC 0.50

Course ID: 008309

Religion in Sociological Perspective

An examination of the nature of religious experience, the elements of religious group life, the ways in which religions are a source of social stability and peace as well as of social change and conflict.

[Note: This course fulfils an Area 3A requirement for Religious Studies majors.]

Prereq: SOC 101/101R or 120R

(Cross-listed with RS 262)

SOC 262 LEC 0.50

Course ID: 008312

Cults and New Religious Movements

This course examines various cults and new religious movements (e.g., Scientology, Krishna Consciousness, Neo-paganism) and places them within the context of our sociological knowledge of their emergence, who joins and why, and other issues.

[Note: This course fulfils an Area 3C requirement for Religious Studies majors.]

Prereq: Level at least 2A

(Cross-listed with RS 280)

SOC 263 LEC 0.50

Course ID: 015069

Organized Crime

An examination of select criminal organizations in North America. Particular attention will be given to the social history of 'the mafia' and the development of legal tools for policing criminal organizations. Additional themes for discussion include enterprise and economic crimes, corruption, and the role of women in organized crime.

Prereq: SOC 101/101R or 120R

(Cross-listed with LS 263)

SOC 270 LEC 0.50

Course ID: 014847

International Migration

This course examines different international migration flows, including irregular immigration, refugees and asylum seekers, and low and high-skilled labourers. Drawing on migration theories, it critically examines why people move, how states respond to different flows, and how migration controls intersect with gender, race, class, and nationality.

Prereq: SOC 101/101R or 120R

SOC 275 LEC 0.50

Course ID: 008644

Mennonites as a Sociological Community

An analysis of the Mennonites as a social movement, their transition to a sectarian community, transformation to a religious-ethnic society, and present pluralistic profile. Case studies of/and field visits to area Mennonites included.

Offered at Conrad Grebel University College

SOC 280 LEC 0.50

Course ID: 008645

Social Statistics

A basic course in statistics used in social science research including sampling, central tendency, probability, covariance, as illustrated in specifically sociological and criminological data.

Prereq: One of LS 101, SOC 101/101R or 120R; Not open to Math students.

Antireq: ARTS 280, ECON 221, ENVS 278, ISS/ 250A/B, ISS/SDS 250R, KIN 222, PSCI 214/314, PSYCH 292, REC 371, SMF 230, STAT 202, 206, 211, 221, 231, 241, SWREN 250A/B, 250R

(Cross-listed with LS 280)

SOC 300s

SOC 302 LEC 0.50

Course ID: 009513

Contemporary Sociological Theory

An examination of the nature and functioning of sociological theory in the 20th and 21st centuries, with a focus on selected types of theory that have been influential in shaping the discipline.

Prereq: SOC 202 or 305

SOC 304 LEC 0.50

Course ID: 015572

Media and Crime

This course explores the complex interactions between media and crime. Topics to be addressed may include news reporting of crime; moral panics; signal crimes; media constructions of crime, offenders, and victims; "reality" crime shows; citizen journalism and the new media; surveillance and social control.

Prereq: SOC 101/101R or SOC 120R; Level at least 3A

SOC 306 LEC 0.50

Course ID: 008608

Juvenile Justice

An examination of theories of juvenile justice, juvenile law, and the structure and operations of juvenile systems, especially in Canada.

Prereq: LS/SOC 222.

Antireq: SOC 226

(Cross-listed with LS 306)

SOC 307 LEC 0.50

Course ID: 008653

Problems in Contemporary Education

A study of problems arising from the interplay between institutionalized education and the forces of rapid social change in the contemporary society. It emphasizes the changing roles of the learners and instructors and social dimensions of newer learning theories and programs.

Prereq: SOC 207/207R

SOC 310 LEC 0.50

Course ID: 008710

Social Networks

A survey of applications of the concept of the network in studying social structures. Examples will be drawn from diverse areas, such as interpersonal relations, community studies, social support, interorganizational relations, elites, deviant groups, etc.

Prereq: SOC 101/101R or 120R.

Antireq: SOC 415

SOC 312 LEC 0.50

Course ID: 008658

Sociology of Science

An examination of the social character of the development of science and the production of scientific knowledge. Specific topics will include defining science, cultural influences on the rise of science, the social nature of scientific institutions, selective bias in scientific procedures, and the social construction of scientific facts.

Prereq: SOC 101/101R or 120R.

Antireq: SOC 231

SOC 320 LEC 0.50

Course ID: 014851

Social Problems in a Global Context

This course examines causes of and responses to critical social problems in different world regions with a focus on how these problems intersect with processes of globalisation. Topics include global economic inequality, global health, gender inequality, the environment, and war.

Prereq: SOC 101/101R or 120R

SOC 322 LEC 0.50

Course ID: 008664

Field Research Methods

This course provides a critical evaluation of research techniques in sociology, criminology, and legal studies with an emphasis on learning and applying qualitative fieldwork approaches.

Prereq: SOC/LS 221 or SOC/LS 321; Not open to Mathematics students

(Cross-listed with LS 322)

SOC 324 LEC 0.50

Course ID: 015012

Digital Cultures

This course examines how digital 'play' represents and structures social interaction and how games develop social norms, influence social consensus, and respond to deviance.

Prereq: SOC 101/101R or 120R

SOC 325 LEC 0.50

Course ID: 008667

Sexuality and the Law

Despite the commonly held belief that sexuality is nothing more than "doing what comes naturally," cultural definitions, including prohibitions against specific forms of conduct, impinge upon the most private or intimate of acts. This course examines the social construction and control of sexuality through law.

Prereq: SOC 101/101R or 120R

(Cross-listed with LS 325)

SOC 326 LEC 0.50

Course ID: 014130

Punishment and Society

A critical criminological and sociological examination of theories and practices of punishment. This course will examine transformations in penal theory, penal management, and penal institutions and their social and policy implications.

Prereq: SOC 101/101R or 120R

(Cross-listed with LS 326)

SOC 327 LEC 0.50

Course ID: 009873

Policing in a Democratic Society

A critical examination of the police as social control agents in contemporary democratic societies. Topics include the historical evolution of policing; police recruitment, training, and education; police/community relations; the occupational subculture of the police; police authority and discretion; private policing; and police deviance and criminality.

Prereq: One of SOC/LS 227, SOC/LS 228, or SOC/LS 229

(Cross-listed with LS 327)

Also offered Online

SOC 328 LEC 0.50

Course ID: 015551

Trafficking and Financial Crime

An examination of the causes and impact of the illegal traffic in goods and services in Canada and internationally. Topics may include human trafficking, trade in illicit drugs and weapons, money laundering and financing of terror, and the relationship between trafficking and state political violence.

Prereq: SOC 101/101R; Level at least 3A

(Cross-listed with LS 328)

Also offered Online

SOC 330 LEC 0.50

Course ID: 015563

Special Topics in Sociology

An in-depth analysis of research in selected topics in Sociology.

[Note: This is a repeatable course, subject to different content; it may be completed a total of two times.]

Prereq: SOC 101/101R; Level at least 3A

SOC 334 LEC 0.50

Course ID: 011638

Public Policy

An examination of the policy-making process in liberal democratic societies, and an evaluation of the tools employed by policy analysts to understand that process.

Prereq: Level at least 2A

(Cross-listed with PSCI 334)

SOC 342 LEC 0.50

Course ID: 014132

Migration and Legality

This course introduces students to key concepts and case study research on the regulation of human migration and its exclusionary practices. It examines how state policies, laws, and international organizations control the mobility of migrants and refugees across regions and borders.

Prereq: SOC 101/101R or 120R

(Cross-listed with LS 342)

SOC 346 LEC 0.50

Course ID: 010098

Social Movements

The analysis of varieties of social movements and their relationships to social organization and social change.

Prereq: SOC 101/101R or 120R

SOC 349 LEC 0.50

Course ID: 014133

Migration and Development

This course explores theoretical perspectives and empirical studies on development and the related field of migration studies. Specific themes may include history and colonialism, seasonal and labour migration, forced migration, immigration policies and their social and economic implications, and transnationalism and diasporas.

Prereq: SOC 101/101R or 120R

SOC 352 LEC 0.50

Course ID: 006438

Sociology of Aging

An introduction to individual and population aging. Topics discussed include: aging from a historical and comparative perspective; aging in subcultures; aging and the social structure; aging and social processes; aging and the environment; work and retirement; and aging and leisure patterns.

Prereq: SOC 101/101R or 120R

(Cross-listed with GERON 352, HLTH 352, KIN 352, REC 362)

SOC 354 SEM 0.50

Course ID: 011845

Comparative Health Care Systems

This course discusses health care systems around the world with sociological perspectives and introduces health care system evaluation criteria to examine different nations' health care models, including health care delivery and financing. Some basic research methods for health care systems studies will be introduced.

[Note: Formerly SOC 254]

Prereq: SOC 248

SOC 355J LEC 0.50

Course ID: 009517

Power and Parenting

An examination of contemporary parent-child relations in terms of a reconceptualization of power. Special attention will be given to contemporary interpretive (e.g. hermeneutic) approaches to a reformulation of the relation between power and action.

Prereq: SOC 101/101R or 120R

SOC 362 LEC 0.50

Course ID: 010096

Canadian Society: Special Topics

A critical examination of special issues and topics bearing on the nature of Canadian society and/or the interrelationship of Canada with other aspects of the international community. Topics will vary according to the instructor's interests, but may include such issues as multiculturalism, immigration, national unity, globalization, poverty, and industrial development and policy.

Prereq: SOC 101/101R or 120R

SOC 369J LEC 0.50

Course ID: 009876

The Sociology of Community

This course examines how our contemporary concern with community is connected with the rise of modern society and the development of the urban-rural debate. Our anxieties about community will be shown to be connected to our anxieties about family. Special attention will be given to the interpretive approach to these issues.

Prereq: SOC 101/101R or 120R

SOC 370 LEC 0.50

Course ID: 008694

Sociology of Law

Examines the social construction of law and its administration as a social process. Topics will include law as an instrument of social control and social change; legal culture; the identification and evaluation of criminal suspects; the trial process and the rights of special groups. The specific laws highlighted will vary.

Prereq: SOC 101/101R or SOC 120R; Level at least 3A

(Cross-listed with LS 300)

Also offered Online

SOC 375R LEC 0.50

Course ID: 012193

Studies in Sociology

This course will deal with selected topics in sociology. Subjects will be dependent upon the research and/or instructional interests of faculty.

[Note: Students wishing to take such courses should consult with the Social Development Studies undergraduate advisor. This is a repeatable course, subject to different content; it may be completed a total of three times.]

Department Consent Required

SOC 387 LEC 0.50

Course ID: 015373

Criminal Justice Institutions

The societal context of policing, courts, and corrections is examined to understand how social control and the law are used in the criminal justice system. Special emphasis is placed on the socio-economic, legal, political, and situational environment that shapes responses to different categories of offenders and offences.

Prereq: SOC 101/101R or SOC 120R; Level at least 3A

(Cross-listed with LS 387)

SOC 398R RDG 0.50

Course ID: 008701

Independent Study

An independent in-depth study of a selected area of concern to the student within the discipline of sociology. Available to individuals or small groups of third- or fourth-year Social Development Studies majors and arranged with one of the faculty members from the program.

[Note: Normally, a student may take only two of the Independent Studies courses, SDS 398R, 399R; PSYCH 398R, 399R; SOCWK 398R, 399R; SOC 398R, 399R.]

Department Consent Required

Prereq: Social Development Studies students

SOC 399R RDG 0.50

Course ID: 009900

Independent Study

An independent in-depth study of a selected area of concern to the student within the discipline of sociology. Available to individuals or small groups of third or fourth-year Social Development Studies majors and arranged with one of the faculty members from the program.

[Note: Normally, a student may take only two of the Independent Studies courses, SDS 398R, 399R; PSYCH 398R, 399R; SOCWK 398R, 399R; SOC 398R, 399R.]

Department Consent Required

Prereq: Social Development Studies students

SOC 400s

SOC 401 SEM 0.50

Course ID: 008702

Theoretical Perspectives on Gender

An examination of sociological theories of gender and gender relations. Emphasis is placed on tracing historical changes in interpretations of gender, with a particular consideration of contemporary theoretical debates. Approaches to be considered include feminist theories as well as political economy and cultural studies.

Prereq: SOC 206/WS 209; Level at least 4A Sociology majors

(Cross-listed with WS 409)

SOC 402 SEM 0.50

Course ID: 010232

Sociology of Religion

This course examines key substantive, theoretical, and methodological issues of the sociology of religion through the detailed study of important classical and contemporary works in the field.

[Note: This course fulfils an Area 3A requirement for Religious Studies majors.]

Prereq: Level at least 4A Sociology majors

(Cross-listed with RS 462)

SOC 404 SEM 0.50

Course ID: 008703

Sociology of Knowledge

This seminar undertakes to develop a general theory of the relation of social thought to social action, comparative value systems and the role of the scientist, artist and intellectual in society.

Prereq: SOC 302; Level at least 4A Sociology majors

SOC 405 SEM 0.50

Course ID: 008704

Seminar in Classical Sociological Theory

An analysis of selected original writings by the major figures in the classical sociological tradition of the 19th and early 20th centuries and selected critical literature.

Prereq: SOC 302; Level at least 4A Sociology majors

SOC 406 SEM 0.50

Course ID: 008705

Seminar in Contemporary Sociological Theory

An analysis of selected original writings by influential figures in contemporary theory (i.e., mid-20th century onwards) and selected critical literature.

Prereq: SOC 302; Level at least 4A Sociology majors

SOC 407 SEM 0.50

Course ID: 008706

Canadian Social Thought

We examine the development of sociological theory in Canada by focusing on major historical and contemporary figures and theories representative of English-language sociology. We examine, in addition, sociologically important scholars and schools of thought in history and political economy as well as selected developments in French-language Canadian sociology.

Prereq: SOC 302; Level at least 4A Sociology majors

SOC 408 SEM 0.50

Course ID: 008707

Contemporary Debates in Sociological Theory

Deals with recent controversies in sociological theory; e.g., Giddens' theories of structuration and the state; critical theory, including the works of Habermas on communicative action; postmodernist theory; the positivist/interpretive debate and varieties of psychoanalytic theory.

Prereq: SOC 302; Level at least 4A Sociology majors

SOC 413 SEM 0.50

Course ID: 015013

Surveillance and Society

An examination of the way monitoring technologies alter and shape social life in terms of security, fear, control, and vulnerability.

Prereq: Level at least 4A Sociology majors

(Cross-listed with LS 413)

SOC 416 SEM 0.50

Course ID: 012405

Educational Theory and Practice

An examination of the major theoretical explanations and practices in education. Topics include an analysis of the various social processes that have been developed to define and transmit knowledge, skills, attitudes, values and power relations from one generation to the next. The role of state-sponsored formal education systems in the context of world economic systems will be explored.

Prereq: Level at least 4A Sociology majors

SOC 417 SEM 0.50

Course ID: 012617

Sociology of Higher Education

This course examines the relationship between higher education and society. Topics include: major trends, student culture, how and why students are stratified across fields of study and various kinds of postsecondary institutions, and the relationship between education and the labour market.

Prereq: Level at least 4A Sociology majors

SOC 418 SEM 0.50

Course ID: 014135

Social Theory and Popular Culture

This course will critically assess contemporary approaches to the study of culture and media in sociology and related fields. The course will examine the production, mediation, and consumption of cultural artifacts, images, and spaces, and the problems of culture as ideology, reproduction, and resistance.

Prereq: SOC 302; Level at least 4A Sociology majors

SOC 419 SEM 0.50

Course ID: 015549

Police Systems and Practices

This course examines contemporary issues in policing. Topics may include police response strategies in different models of policing, economics of policing, use of discretion, police accountability, and the changing functions and activities of the police.

*Prereq: Level at least 4A Sociology majors
(Cross-listed with LS 419)*

SOC 420 SEM 0.50

Course ID: 009879

Seminar in Social Inequality

Analysis of social stratification and inequality in industrial societies, with emphasis on Canada. Issues of class, power, wealth and occupational structure will be examined.

Prereq: Level at least 4A Sociology majors

SOC 422 SEM 0.50

Course ID: 015550

Violent Extremism and Terrorism

This course examines contemporary issues in terrorism studies. Topics may include the history and comparative analysis of political and religious forms of violent extremism, the process of radicalization and recruitment, the analysis of different forms of terrorist activity, and the counter-terrorism policies and practices.

*Prereq: Level at least 4A Sociology majors
(Cross-listed with LS 422)*

SOC 423 SEM 0.50

Course ID: 015548

Peers and Crime

This seminar examines the peer influence perspective in criminology. Key theoretical, methodological, and substantive issues and challenges are addressed.

*Prereq: Level at least 4A Sociology majors
(Cross-listed with LS 423)*

SOC 424 SEM 0.50

Course ID: 011846

Seminar in Sociology of Health

Current issues and debates within health care, including the social organization of the health care system and the socio-cultural determinants of health and illness, are examined from a sociological perspective.

Prereq: SOC 248; Level at least 4A Sociology majors

SOC 425 SEM 0.50

Course ID: 014849

Crossing Borders: Law & Global Deviance

This seminar-style course, positioned at the intersection of sociology and law, examines illicit cross border activity such as terrorism, piracy, drugs, trafficking, and illegal immigration. Each cross-border activity will be examined, along with the way states respond to it politically and legally at a national and international level. Ethnographic research on the activity will provide for rich descriptions of how and why people participate in such activities.

*Prereq: Level at least 4A Sociology majors
(Cross-listed with LS 425)*

SOC 428 SEM 0.50

Course ID: 010152

Sentencing as a Social Process

Examines in depth the process and results of criminal sentencing. Topics include types of sentences for criminal and quasi-criminal offences; objectives of sentences; factors affecting sentences; the process of sentencing; the administration and effectiveness of sentences; and unresolved debates in sentencing.

*Prereq: SOC/LS 228; Level at least 4A Sociology majors
(Cross-listed with LS 428)*

SOC 430 LEC 0.50

Course ID: 015564

Special Topics in Sociology

An in-depth analysis of research in selected topics in Sociology.

[Note: This is a repeatable course, subject to different content; it may be completed a total of two times.]

Prereq: SOC 101/101R; Level at least 4A Sociology majors

SOC 431 LEC 0.50

Course ID: 014710

Science as Practice and Culture

An examination of science as being constituted by practices which are inevitably social and cultural, as well as of scientific expertise in contemporary issues of new technology, biomedicine, and environmental conflict.

*Prereq: Level at least 4A
(Cross-listed with ANTH 430)*

SOC 434 SEM 0.50

Course ID: 014842

Sociology of At-Risk Youth

This course examines the social attributes and surrounding conditions associated with at-risk youth. It will focus on the development of youth in three major institutions - education, criminal justice, and mental healthcare. This course will focus on the attributes of youth themselves, but also to changing institutional definitions and practices. This course will include an experiential learning component outside regular classroom hours.

*Prereq: Level at least 4A Sociology majors
(Cross-listed with LS 434)*

SOC 450R SEM 0.50

Course ID: 013097

Senior Seminar in Special Topics

Senior seminars may include weekly readings, individual and/or group projects, class presentations and discussions, research proposals, essay/literature reviews, assignments, midterms, and final exams. Consult departmental listings for topics and prerequisites for the current year.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Prereq: 1.0 unit of SOCWK; Level at least 3A

SOC 451 SEM 0.50

Course ID: 014134

Global Development

This course explores theoretical perspectives on development through an examination of the social and cultural consequences of development efforts across the globe. It offers an approach through cases and themes that may include conflict and inequalities, cultural constructions of peoples and places, global aid governance, and alternative approaches to development.

Prereq: Level at least 4A Sociology majors

SOC 452 SEM 0.50

Course ID: 014136

Humanitarianism

This course explores the theoretical and historical background of humanitarianism, and offers an approach to this field through specific cases and themes that may include: the paradoxes of humanitarian intervention, war and humanitarianism, genocide and refugees, gendered bodies, and social justice activism.

Prereq: Level at least 4A Sociology majors

SOC 459 SEM 0.50

Course ID: 008731

Sociology of Work and Occupations

This seminar examines major theoretical perspectives and issues in the sociology of work.

Prereq: Level at least 4A Sociology majors

SOC 461 SEM 0.50

Course ID: 015070

Transnational Organized Crime

This seminar course examines contemporary legal regimes surrounding transnational organized crime, terrorism and organized crime, and international money laundering.

*Prereq: Level at least 4A Sociology majors
(Cross-listed with LS 461)*

SOC 490R ESS 0.50

Course ID: 013101

Special Studies

An independent, in-depth study, based on empirical research and/or extensive reading in sociology under the direction of individual instructors in sociology. Available to individuals or small groups of fourth-year Social Development Studies majors and arranged with one of the faculty members from the plan. The project must be approved by the academic supervisor of the course prior to registration.

[Note: Normally, a student may take only two of the following: PSYCH 490R, SOC 490R, SOCWK 490R, SDS/ISS 490R, SDS/ISS 499A and SDS/ISS 499B.]

Department Consent Required

Prereq: Level at least 3A

SOC 497 PRJ 0.50

Course ID: 011348

Honours Research Practicum

Denoting a preprofessionalization experience, this course provides selected students with an opportunity to work [to a maximum of 8 hours per week over one term] as an apprentice with a specific instructor on a research project in which the instructor is currently engaged.

[Note: This is a nonpaid position and may not be combined with sponsored research positions. Earlier or outside research involvements will not meet the criteria for this course. This course cannot be substituted for other 400-level course requirements (as in seminars, theory courses). This course is offered on a credit/noncredit basis only.]

Instructor Consent Required

Prereq: Level at least 3A Honours Sociology

SOC 498 RDG 0.50

Course ID: 010021

Directed Studies

Selected study and assignments under the direction of a faculty member.

Instructor Consent Required

SOC 499A RDG 0.50

Course ID: 008744

Senior Honours Essay

Directed reading and research in a selected area of sociology inquiry.

[Note: A numeric grade for SOC 499A will be submitted only after the completion of SOC 499B.]

Prereq: Level at least 4A Sociology

SOC 499B RDG 0.50

Course ID: 008745

Senior Honours Essay

Directed reading and research in a selected area of sociology inquiry.

Prereq: Level at least 4A Sociology

**SOCIAL WORK
(SOCIAL DEVELOPMENT STUDIES)****Notes**

1. The following courses are part of the Bachelor of Arts in Social Development Studies. Depending upon demand, courses may be subject to priority enrolment. First priority will be given to Social Development Studies majors.
2. For courses in Social Work in the Bachelor of Social Work program, see Social Work (Bachelor of Social Work). For information on admission to the post-BA Bachelor of Social Work visit the [School of Social Work's website](#).

SOCWK 100s

SOCWK 120R LEC 0.50

Course ID: 008748

Introduction to Social Work

Presentation of the values, knowledge, and skill base, principles and purposes of the profession, and an examination of methods of practice. Traditional and innovative social work settings are discussed. Historic development of social work and its influence on contemporary practice are reviewed.

[Note: SWREN 120R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

(Cross-listed with SWREN 120R)

Also offered Online

SOCWK 200s

SOCWK 220R LEC 0.50

Course ID: 008749

Social Work with Individuals - Theory and Practice 1

A presentation of some of the theoretical constructs necessary for the understanding of the individual in the casework relationship, as well as an introduction to some appropriate casework interventions. Emphasis in the course will be theoretical.

[Note: SWREN 220R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: SOCWK 120R.

Antireq: SMF 301/311

(Cross-listed with SWREN 220R)

Also offered Online

SOCWK 221R LEC 0.50

Course ID: 008750

Social Group Work

Presentation of some of the theoretical constructs necessary for an understanding of social group work as well as an introduction to methodology and interventions.

[Note: SWREN 221R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: SOCWK 120R

(Cross-listed with SWREN 221R)

Also offered Online

SOCWK 222R LEC 0.50

Course ID: 008751

Community Organization 1

An examination of social work practice as it relates to functional and geographical communities. The course will explore the theoretical foundations of organization practice as well as a variety of models.

[Note: SWREN 222R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: SOCWK 120R

(Cross-listed with SWREN 222R)

Also offered Online

SOCWK 240R LEC 0.50

Course ID: 008753

Palliative Care

An introduction to the concepts and practices in palliative care. Topics include historical and philosophical background, the hospice movement, current approaches in palliative care, the multi-discipline team, stress factors, suicide and cross-cultural beliefs of death, illness and loss as they affect the terminally ill and their families.

Prereq: SOCWK 120R

SOCWK 300s**SOCWK 300R LEC 0.50**

Course ID: 008755

Canadian Social Welfare Policy

This course will introduce students to the concept of social welfare as it has evolved in the post-industrial era. It will examine various social, economic and political factors that have shaped Canadian social welfare policy and it will consider present-day factors that are transforming that policy.

[Note: SWREN 300R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: SOCWK 120R

(Cross-listed with SWREN 300R)

Also offered Online

SOCWK 301R LEC 0.50

Course ID: 011116

Understanding Diversity in Canada

This course explores culture, its components, characteristics and processes, theories, issues, and the history of diversity in Canadian social systems. It also examines the implications of diversity for social work practice and fosters culturally competent practice with micro and macro social systems.

[Note: SWREN 301R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: SOCWK 120R

(Cross-listed with SWREN 301R)

Also offered Online

SOCWK 320R LEC 0.50

Course ID: 008757

Social Work with Individuals - Theory and Practice 2

Considers some of the intellectual components of the social work skills necessary for working with individuals. Social work theories of the individual will be examined in order for the student to learn some clinical applications relevant to the casework relationship.

Prereq: SOCWK 220R

Also offered Online

SOCWK 321R LEC 0.50

Course ID: 008758

Social Work with Families

Presentation of some of the theoretical constructs necessary for an understanding of the family in the social work relationship as well as an introduction to methodology and interventions.

[Note: SWREN 321R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: SOCWK 120R

(Cross-listed with SWREN 321R)

Also offered Online

SOCWK 322R LEC 0.50

Course ID: 008759

International Perspectives in Community Organization

An exploration of community organization activities in the context of international processes of colonization and globalization.

Prereq: SOCWK 120R

SOCWK 326R LEC 0.50

Course ID: 008760

Philosophy and History of Social Welfare

Social welfare from the 18th century to the present. The effects of religious, political, economic, and cultural factors on social welfare development and the continuing influence of inherent attitudes, philosophies, and values on this complex institution. Focus on the Canadian social welfare system.

Prereq: SOCWK 120R

SOCWK 355R LEC,SEM 0.50

Course ID: 008767

Child Maltreatment: Identification and Prevention

The objectives of this course are to provide an understanding of the dimensions and causes of child maltreatment, to develop skills identifying cases of this social problem, and to explore current methods of management and treatment of persons involved in child maltreatment situations.

Prereq: SOCWK 120R

(Cross-listed with SDS 358R)

Also offered Online

SOCWK 356R LEC 0.50

Course ID: 008768

Developmental Disabilities and the Family

This course explores the nature and extent of developmental disability in Canada. It reviews traditional approaches to support services and social work practice with people with disabilities and their families, and it examines how these have changed in response to social change movements and milestones. Students consider social work interventions with individuals and families from a strengths-based perspective emphasizing advocacy, empowerment, and social support.

Prereq: SOCWK 120R

SOCWK 357R LEC 0.50

Course ID: 008769

Family Violence

An application of the principles and models of medical, psychogenic, and sociogenic adjustment to an understanding of family violence. The treatment of victims of family violence, the prevention of such violence, and social policies affecting family welfare are considered.

Prereq: SOCWK 120R

(Cross-listed with SDS 357R)

Also offered Online

SOCWK 365R LEC 0.50

Course ID: 008770

Social Work in Health Care

Analysis of social work in the medical setting, concentrating on identification and treatment of emotional, family, and community aspects of illness. Emphasis is on the concrete application of professional social work to health care while comparing medical and social work values and concepts of illness.

Prereq: SOCWK 120R

SOCWK 367R LEC 0.50

Course ID: 008771

Social Work with the Elderly

An examination of social work theory and practice concerning the needs of the elderly. Social work strategies of intervention with the healthy and frail aged will be considered from the individual, group, family, community, and bureaucratic perspectives.

Prereq: SOCWK 120R

SOCWK 375R LEC 0.50

Course ID: 012192

Studies in Social Work

This course will deal with selected topics in social work. Subjects will be dependent upon the research and/or instructional interests of faculty.

[Note: Students wishing to take such courses should consult with the Social Development Studies undergraduate advisor. This is a repeatable course, subject to different content; it may be completed a total of three times.]

Department Consent Required

SOCWK 390A LEC,SEM 0.50

Course ID: 008772

Family Violence: An Advanced Seminar

Social work concepts and practices introduced in preceding family violence courses will be considered in depth. Over the course of two terms, a seminar format will be used to explore etiological and intervention issues pertaining to the various forms of family violence.

[Note: A numeric grade for SOCWK 390A will be submitted only after completion of SOCWK 390B.]

Prereq: SOCWK 355R/SDS 358R and SOCWK 357R

SOCWK 390B LEC,SEM 0.50

Course ID: 008773

Family Violence: An Advanced Seminar

A continuation of SOCWK 390A. Social work concepts and practices introduced in preceding family violence courses will be considered in depth. A seminar format will be used to explore etiological and intervention issues pertaining to the various forms of family violence.

Prereq: SOCWK 355R/SDS 358R and SOCWK 357R

SOCWK 398R RDG 0.50

Course ID: 008774

Independent Study

An independent in-depth study of a selected area of concern to the student within the discipline of social work. Available to individuals or small groups of third- or fourth-year Social Development Studies students and arranged with one of the faculty members from the program.

[Note: Normally, a student may take only two of the Independent Studies courses, SDS 398R, 399R; PSYCH 398R, 399R; SOCWK 398R, 399R; SOC 398R, 399R.]

SOCWK 399R RDG 0.50

Course ID: 008775

Independent Study

An independent in-depth study of a selected area of concern to the student within the discipline of social work. Available to individuals or small groups of third- or fourth-year Social Development Studies students and arranged with one of the faculty members from the program.

[Note: Normally, a student may take only two of the Independent Studies courses, SDS 398R, 399R; PSYCH 398R, 399R; SOCWK 398R, 399R; SOC 398R, 399R.]

Department Consent Required

SOCWK 400s

SOCWK 421R LEC 0.50

Course ID: 013335

Advanced Family Practices

This course examines the integrated use of advanced knowledge, assessment and interventions addressing selected social problems in families, individuals, and communities.

Prereq: SOCWK 220R or 321R; Level at least 3A

SOCWK 450R SEM 0.50

Course ID: 013098

Senior Seminar in Special Topics

Senior seminars may include weekly readings, individual and/or group projects, class presentations and discussions, research proposals, essay/literature reviews, assignments, midterms, and final exams. Consult departmental listings for topics and prerequisites for the current year.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Prereq: 1.0 unit of SOCWK; Level at least 3A

SOCWK 490R ESS 0.50

Course ID: 013102

Special Studies

An independent, in-depth study, based on empirical research and/or extensive reading in social work under the direction of individual instructors in social work. Available to individuals or small groups of fourth-year Social Development Studies majors and arranged with one of the faculty members from the plan. The project must be approved by the academic supervisor of the course prior to registration.

[Note: Normally, a student may take only two of the following: PSYCH 490R, SOC 490R, SOCWK 490R, SDS/ISS 490R, SDS/ISS 499A and SDS/ISS 499B.]

Department Consent Required

Prereq: Level at least 3A

SPANISH

Notes

1. Native speakers and students with a knowledge of Spanish not acquired in an academic institution should contact the Undergraduate Advisor to determine their level of language ability.
2. Language courses follow a sequence. Moving backwards in language courses is not permitted.

3. The Department of Spanish and Latin American Studies reserves the right to refuse admission to, and/or credit for, any of its language courses to a student who has, in the view of the Department, a level of competence unsuited to that course.
4. Course descriptions for course numbers with a suffix of "W" are available on the Wilfrid Laurier University website.

SPAN 100s

SPAN 101 LAB,LEC 0.50

Course ID: 008783

Introduction to Spanish 1

This course is for students with no previous knowledge of Spanish. The basic elements of Spanish grammar will be studied, with emphasis on group and individual oral practice. Focus will be given to the development of skills in listening/comprehension, speaking, reading, and writing. Multimedia exercises accompany each chapter of the textbook. Students will be expected to use them in the multimedia language centre and at home.

[Note: SPAN 101 is not open to students with native, near-native or similar advanced ability.]

Antireq: 4U Spanish

Also offered Online

SPAN 102 LAB,LEC 0.50

Course ID: 008786

Introduction to Spanish 2

This course is a continuation of SPAN 101, with emphasis being placed on more advanced elements of Spanish grammar and the spoken language. Students will be provided with a range of opportunities to gain practical insights into the customs and cultural contexts of the contemporary Spanish-speaking world.

[Note: SPAN 102 is not open to students with native, near-native or similar advanced ability.]

Prereq: SPAN 101.

Antireq: 4U Spanish

Also offered Online

SPAN 150 LEC 0.50

Course ID: 014279

The Hispanic World Through Literature and the Arts

A study of Hispanic cultures as represented in their literature, film, and visual arts with particular attention to issues of race, gender, sexuality, and cultural and national identity.

[Note: Taught in English.]

SPAN 200s

SPAN 201A LEC,TUT 0.50

Course ID: 008791

Intermediate Spanish 1

Course develops intermediate skills in reading, writing, speaking, and listening. The primary goals are to build communicative competence and enhance social and cultural awareness of the Spanish-speaking world.

Prereq: SPAN 102 or 4U Spanish.

Antireq: SPAN 210

SPAN 201B LEC,TUT 0.50

Course ID: 008792

Intermediate Spanish 2

The course continues development of intermediate skills in reading, writing, speaking, and listening. The primary goals of the course are the further enhancement of communicative competence, and social and cultural awareness. Particular attention is placed on the use of the subjunctive mood.

Prereq: SPAN 201A.

Antireq: SPAN 210

SPAN 210 LEC 0.50

Course ID: 012753

Intermediate Spanish for Native Speakers

This is an intensive course designed for students of Spanish-speaking background (native or near-native) who have not received formal language training. The course focuses on a comprehensive study of Spanish grammar. It includes a critical analysis of colloquial Spanish, or anglicized vocabulary, and influences of other languages on modern Spanish. A major component of the course is the acquisition and development of writing skills and oral discourse at the academic level. The course further develops listening comprehension and reading skills.

[Note: Classes and written work are in Spanish.]

Department Consent Required

Antireq: SPAN 201A, 201B

SPAN 217 LEC 0.50

Course ID: 008804

First Nations, Native Americans, Pueblos Originarios

This course will introduce and expose students to the indigenous civilizations that embody the Americas. Students will look at the cosmogonies, histories and cultures of indigenous peoples from pre-Columbian times to the 20th century. They will analyze Latin America's Pueblos Originarios' perspectives on conquest, colonization, and independence, and compare such perspectives to those of the Canadian First Nations and Native Americans. Through their study of colonial, social, economic, and political relations, students will examine how the meanings of these categories changed over time and how indigenous peoples have contributed to the ethnically diverse regional societies that continue to characterize Latin America today.

[Note: Taught in English.]

SPAN 218 LEC 0.50

Course ID: 008805

Parallel Revolutions in a Nascent Continent

This course provides a broad foundation to the varied and complex geographical, ethnic, social, and historical forces that have shaped contemporary Latin American nations from the early 19th-century independence period to current affairs. Students will be introduced to the diverse regions of the continent: Mexico, Central America, the Caribbean, the Bolivarian republics, and the South Cone. Students will analyze and discuss nation-building factors such as European-African-Asian-New World interactions, ethnic mixtures, military takeovers, revolutions, U.S. interventions in the region, and migratory experiences. Discussions will also be aimed at contrasting and comparing the contemporary and diverse cultural manifestations of the peoples living in Latin America and the cultural transformation of Latin Americans who have emigrated to other parts of the world, as well as the perceptions of Latin Americans in other cultures.

[Note: Taught in English.]

SPAN 228 LEC 0.50

Course ID: 008811

Introduction to Latin American Literature

Through reading representative works, this course introduces students to the study of Latin American literature, paying special attention to questions of critical approach and terminology, genre, literary history, and the historicity of texts.

Prereq: SPAN 201B or 210

SPAN 300s

SPAN 301A LEC,TUT 0.50

Course ID: 008812

Spanish in Context 1

This course promotes students' oral and written abilities, as well as their critical understanding of Latin American history and culture. Course components include: written and oral/aural practice of Spanish through oral reports, class discussions and debates on assigned topics, short literary works, and films. It offers a review of more advanced grammatical structures with the aim of achieving greater accuracy.

[Note: Formerly SPAN 251A.]

Prereq: SPAN 201B or 210.

Antireq: SPAN 261W/303W

SPAN 301B LEC,TUT 0.50

Course ID: 008813

Spanish in Context 2

This course further develops the development of critical understanding of Latin American history and culture. Course components include: assigned readings in a variety of genres, critical cultural analysis, in-class discussions, written essays, and the viewing of films.

[Note: Formerly SPAN 251B.]

Prereq: SPAN 301A.

Antireq: SPAN 262W/304W

SPAN 326 LEC 0.50

Course ID: 008833

Theatre of the Spanish Golden Age: Texts and Cultural Contexts

Representative dramatic texts from the early modern period will be studied in relation to the history and society of Imperial Spain. Students will consider the texts as vehicles to support the political agenda and moral education of the time, with discussion centering on such issues as the formation of state, court culture, social order and disorder, and cultural discourses of identity and difference.

Prereq: SPAN 228; SPAN 223W

SPAN 334 LEC 0.50

Course ID: 008838

Narrating Place and Ethnicity in Nineteenth Century Latin America

This course will provide insight into Latin American political and cultural history by viewing key nineteenth and early twentieth-century texts in the context of ideas about nation, nation-building processes, and the emergence of the modern nation-state. These issues will also be viewed in the context of aesthetic developments in Latin America.

[Note: This course is taught in Spanish.]

Prereq: SPAN 228

SPAN 344 LEC 0.50

Course ID: 008839

Special Topics in Hispanic Studies

Special topics in Hispanic studies, as announced by the department.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Department Consent Required

Prereq: Level at least 3A

SPAN 345 RDG 0.50

Course ID: 013958

Directed Studies

Study in a limited field under tutorial guidance.

[Note: This is a repeatable course, subject to different content; it may be completed a total of three times.]

Department Consent Required

SPAN 350 LEC 0.50

Course ID: 014415

Poetry of the Tango

This course examines the poetic value of tango lyrics as an authentic merger of the learned and the popular poetry. The poetic aspects of tango from its birth at the turn of the twentieth century to the present, with special attention to the so called "golden age of tango" (1940), are explored.

Prereq: SPAN 228

SPAN 366 LEC 0.50

Course ID: 009915

Aesthetics of Rupture: Latin American Avant-garde Movements

This course explores the artistic and cultural projects advanced by different avant-garde movements in Latin America over the early decades of the twentieth century. Through the study of representative visual and literary works, the course traces how the avant-garde worked to develop a new artistic language for Latin America.

Prereq: SPAN 228

SPAN 386 LEC 0.50

Course ID: 014280

Memory and Performance in Latin American Literature

This course studies the participation of poetry and theatre in the reconstruction of the historical memory in Latin America. It will examine the varied means of expressions used by poets and play writers to rebuild fragments of the historical reality frequently omitted by the official discourse.

Prereq: SPAN 228

SPAN 387 LEC 0.50

Course ID: 008848

Gender, Power, and Representations in Latin America

This course analyzes women's cultural production in Latin America. Examining the construction and the representation of gender/sex differences, the course explores the power relations inherent in these representations, while also examining how gender roles and expectations are linked to representations of class, race, sexuality, age, nationality, and ability.

Prereq: SPAN 228

SPAN 390 LEC 0.50

Course ID: 009916

Introduction to Spanish Business Translation

This course is designed for students enrolled in their third year of the General or Honours program in Spanish. A strong command of Spanish and English is required. Intense concentration of the Spanish language through oral and written work will focus on business-oriented fundamentals of communication, such as letter writing, as well as the translation of primary source materials such as newspapers and business documents.

Prereq: SPAN 301B

SPAN 395 LEC 0.50

Course ID: 015077

Cultural Dimensions in English/Spanish Literary Translation

This course focuses on the actual practice of translating literature, not only as the transformation of textual expressions, but also as a process of cultural interpretation. Besides reinforcing vocabulary and grammar, students will also review and research notions of different literary genres (poetry, narrative and theatre), and solidify their knowledge of cultural studies.

Department Consent Required

Prereq: SPAN 301B

SPAN 400s

SPAN 400 LEC 0.50

Course ID: 011349

Memories and Representations: Constructive Truths and Competing Realities

This course studies the emergence of testimonial discourse in Latin America in relation to the socio-political turmoil that has characterized Latin American life in the past decades. Contemporary fictional and non-fictional texts, as well as documentaries and movies, will be discussed in order to establish the grounds of testimonial discourse as a genre.

[Note: Taught in English.]

SPAN 401 LEC,TUT 0.50

Course ID: 015010

Spanish in Motion

This course will further develop effective communication strategies at an advanced level through a wide variety of activities. Students will be able to develop arguments in diverse contexts and formats.

Prereq: SPAN 301B.

Antireq: SPAN 401A, 401B, 401W

SPAN 410 LEC 0.50

Course ID: 013341

Visual Culture in the Contemporary Hispanic World

This course explores the expressive avenues opened up by the confluence of verbal and visual representation in contemporary Hispanic cultural production. Through a close analysis of representative visual and literary works from Latin America and Spain covering a variety of genres and media, including poetry, novel, short story, theatre, painting, photography, and film, the many ways in which words and images interact with each other and make meaning will be examined.

[Note: Taught in English.]

SPAN 415 LEC 0.50

Course ID: 014414

The Hispanic Transatlantic

This course explores cultural interactions between Spain and Latin America, and among Spain, Latin America, and the U. S., in literature, music, film, and popular culture from the early modern period to the present. Topics include imperialism; the relationship between modernity and colonialism, diasporas, contact zones, transculturation, rearticulation of transnational identities, coexistence in difference, borderlines, mestizo cultural spaces, and cultures of resistance.

Prereq: SPAN 228

SPAN 418 LEC 0.50

Course ID: 013889

Modernity and the Colonial Encounter in Latin America

This course explores the divergent consequences of the colonial "encounter" for the indigenous cultures and for the Western world. Students analyze colonial cultural productions in order to understand the role of the colonial experience in the economic development of Western Europe, as well as the underdevelopment of Latin America.

[Note: Taught in English.]

SPAN 430 LEC 0.50

Course ID: 010352

Literary Women in Early Modern Hispanic Culture

This course will examine works by and about women in early modern Hispanic culture (16th and 17th centuries), with particular attention to engagements with and subversions of patriarchal culture in theatre, prose, and poetry. Authors to be discussed may include Santa Teresa de Avila, Sor Juana Ines de la Cruz, Maria de Zayas, and Ana Caro.

[Note: Taught in English.]

Antireq: SPAN 330

(Cross-listed with WS 430)

SPAN 445 LEC 0.50

Course ID: 008850

History of the Spanish Language

This course presents a detailed study of the external and internal history of the language. Topics treated include a brief outline of factors involved in linguistic evolution and language formation. The main features of the phonetic evolution from Latin to Spanish are studied with emphasis on the formation of speech sounds and the factors that spearheaded the mutations.

Prereq: One of SPAN 352W, 362W, 401

SPAN 450 LEC 0.50

Course ID: 011660

Theory and Practice of Translation

This course examines the theory of translation, combined with intense practical experience. The students continue the review of Spanish and English grammar in a practical context as a basis for translation between the two languages. The course also enhances the students' lexical and semantic knowledge of the Spanish language through direct experience in translation.

[Note: Students may be required to complete 2 hours of translation practice within the KW community.]

Prereq: One of SPAN 351W, 361W, 390, 401

SPAN 490 LEC 0.50

Course ID: 008856

Advanced Translation

This course is designed for students enrolled in the third and fourth year of the General or Honours program in Spanish. Fluency in both Spanish and English is required. The objective of this course is to refine translation techniques in order to enable the student to provide accurate and idiomatic translations of English texts in Spanish and vice versa.

Prereq: One of SPAN 352W, 362W, 401

SPAN 497 LEC 0.50

Course ID: 008858

The Novel in Latin America

This course studies the 20th-century novel and its development from the 1930s to the present through representative authors. While special attention is paid to the individual works in the last half century, the individual works are analyzed for their value as the expression of social and historical reality.

Prereq: SPAN 228

SPEECH COMMUNICATION**Notes**

Courses in Speech Communication are offered through the Department of Drama and Speech Communication. Many courses emphasize team work and will require meetings outside of class time.

SPCOM 100s**SPCOM 100 LEC 0.50**

Course ID: 004666

Interpersonal Communication

Focuses on the one-to-one, face-to-face communication in both the personal and professional realms. Such topics as verbal and non-verbal interactions, listening, and the better management of interpersonal communication will be studied.

SPCOM 101 LEC 0.50

Course ID: 014532

Theories of Communication

This is an introductory course addressing the major theoretical issues in, approaches to, and applications of communication. Theories from various branches of communication, including interpersonal, group/organizational, rhetorical, mass and cultural, will be explored in-depth. Historical, current, and practical critiques of each theory will be conducted. Coursework is designed to encourage students to give critical consideration to the place of theory within the field of Speech Communication and within everyday life.

SPCOM 102 WSP 0.50

Course ID: 004662

Introduction to Performance

This workshop course introduces students to the creative processes of performance in a range of formal and informal settings. Emphasis is placed on the student's development as a performer. Prior performance experience is not required.

Prereq: SPCOM 100/224 or 223

(Cross-listed with DRAMA 102)

SPCOM 111 LEC 0.50

Course ID: 013718

Leadership, Communication, and Collaboration

This course focuses on developing the qualities and transferable skills necessary for integration, continuous learning, and professional development. This course establishes a common baseline of leadership, communication, and collaboration capabilities for accounting and financial management majors. Focus will be on the design and delivery of various types of communication and the development of basic teamwork skills.

[Note: Students will be videotaped.]

Prereq: Accounting and Financial Management, Mathematics Chartered Accountancy, or Science Biotechnology/Chartered Accountancy students only.

SPCOM 200s

SPCOM 204 LEC,TST 0.50

Course ID: 013723

Leadership, Teams, and Communication

This course examines leadership, team dynamics, and communication in organizational contexts. Students will develop communication knowledge and skills to enhance their abilities to be effective in leadership and team roles.

Prereq: Level at least 2A Arts and Business students.

Antireq: SPCOM 111, ARBUS 204

SPCOM 220 WSP 0.50

Course ID: 012417

Performance Studies

This workshop course in performance studies explores performance as a way of knowing. It investigates performance as artistic practice and as a means of understanding historical, social and cultural practices, including drama/theatre texts, poetry, narratives and texts of everyday life.

Prereq: Level at least 2A Speech Communication major and minor students only

(Cross-listed with DRAMA 220)

SPCOM 223 LEC 0.50

Course ID: 004665

Public Speaking

Theory and practice of public speaking. A workshop course involving design and delivery of various kinds of speeches, and the development of organizational, vocal, listening and critical skills. Students will be videotaped.

[Note: Must attend first class. May be subject to priority enrolment.]

SPCOM 225 LEC 0.50

Course ID: 004667

Interviewing

Theory and practice of interviewing. A workshop course which teaches theory, design, and presentation of interviews. Videotaping student exercises will enhance interview design and delivery, as well as listening and critical skills.

Prereq: (For Mathematics students only) one of EMLS 101R, 102R, EMLS/ENGL 129R, ENGL 109, SPCOM 100, SPCOM 223

SPCOM 226 LEC 0.50

Course ID: 012411

Introduction to Intercultural Communication

This course introduces the basic theories and practices for communicating among people of different racial, ethnic and cultural backgrounds. This class provides an opportunity for discussion of variations within and among cultures and encourages students to examine their cultural heritage.

Prereq: Level at least 2A

SPCOM 227 WSP 0.50

Course ID: 010342

Leadership

A workshop course in leadership combining theoretical and experiential perspectives. Students will develop and apply knowledge, skills and attitudes necessary to be effective and perceptive communicators in a leadership position.

Prereq: Level at least 2A Speech Communication major and minor students only; or for Mathematics students one of EMLS 101R, EMLS 102R, EMLS/ENGL 129R, ENGL 109, SPCOM 100, SPCOM 223

SPCOM 228 LEC 0.50

Course ID: 012410

Public Communication

This course introduces a theoretical framework for understanding the nature and significance of public communication. Strategies and techniques typically employed in political and commercial contexts are examined.

Prereq: Level at least 2A Speech Communication major and minor students only; or for Mathematics students one of EMLS 101R, EMLS 102R, EMLS/ENGL 129R, ENGL 109, SPCOM 100, SPCOM 223

SPCOM 300s**SPCOM 300 LEC 0.50**

Course ID: 011682

Special Topics in Digital Design

In this course students will learn advanced digital design theory. They will participate in workshops with professional designers, develop specialized digital materials and contribute signature work to their Digital Portfolio.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Prereq: Level at least 3A Speech Communication majors.

(Cross-listed with DAC 300, ENGL 303)

SPCOM 323 LEC 0.50

Course ID: 005137

Speech Writing

The analysis, writing, and editing of speeches. Analysis will focus on the reading and viewing of several famous 20th-century speeches using theories of communication. Writing and editing will focus on implementing oral/aural communication strategies.

(Cross-listed with ENGL 309E)

SPCOM 324 LEC 0.50

Course ID: 004691

Small Group Communication

A workshop course which works from theory to develop the skills to work in groups effectively. The principles of group dynamics, leadership, and conflict resolution will be studied and implemented in small group meetings and presentations.

Prereq: Level at least 2A Speech Communication major and minor students only

SPCOM 325 LEC 0.50

Course ID: 004739

Organizational Communication

This course examines organizational theory, the communication process and the interplay between the two. Students will develop the skills to identify, analyze, and solve a variety of organizational communication problems through case study group work, and other workshop-style methods.

SPCOM 326 WSP 0.50

Course ID: 004692

Performing the Voice

Students explore techniques to access and develop the voice as a resource for performance.

Prereq: DRAMA 102/SPCOM 102 or SPCOM 223/DRAMA 223

(Cross-listed with DRAMA 326)

SPCOM 329 LEC 0.50

Course ID: 012415

Digital Presentations

In this course, students will be introduced to design and production of digital business presentations. They will develop specialized digital materials and contribute work to their Digital Portfolio.

Prereq: Level at least 3A Speech Communication major and minor students only

(Cross-listed with DAC 329)

SPCOM 335 SEM 0.50

Course ID: 015100

Power, Agency, Community

This course examines the ways in which individuals and institutions communicate to enact agency and build communities situated within power relations. Students will develop their understanding of what power and agency are, the relationship of each to communication, and how each constitutes community life.

Prereq: Level at least 2A Speech Communication major and minor students only

SPCOM 339 SEM 0.50

Course ID: 015099

Media, Images, and Communication

This course investigates how distinct modes of communication impact the creation of messages, dissemination or knowledge and reception of meaning. Students will examine aural, textual, and visual communication in the context of print, electronic, and digital media.

Prereq: Level at least 2A Speech Communication major and minor students only

SPCOM 399 DIS 0.50

Course ID: 014533

Communication Inquiry

This course identifies critical communication inquiry at the individual, group, public, and collective levels of theory and practice. Students will work to develop strategies of engagement or thinking that could extend, modify, or overturn standing theoretical positions and initiate new inquiry. Critique and criticism are developed in order to explore advanced questions within the field of Speech Communication, and students are introduced to critical research methods used by scholars in the field of Speech Communication.

Department Consent Required

Prereq: Level at least 3A Speech Communication major students only

SPCOM 400s

SPCOM 401 LEC 0.50

Course ID: 012412

Gender, Communication and Culture

In this course students examine multiple relationships between communication and gender. The class emphasizes how communication creates gender and power roles and how communicative patterns reflect, sustain and alter social conceptions of gender.

Prereq: Level at least 3A Speech Communication major and minor students only

SPCOM 402 LEC 0.50

Course ID: 012413

Advanced Intercultural Communication

This course is designed to study the intersection of communication and culture. In this course, culture is defined broadly to include a variety of contexts, such as race, ethnicity, nationality, gender, age and class. Students gain theoretical and practical understanding of the opportunities and obstacles that exist as individuals and communities communicate within and across cultures.

Prereq: Level at least 3A Speech Communication major and minor students only

SPCOM 420 SEM 0.50

Course ID: 013571

Persuasion

This course examines the communicative, psychological, and sociological aspects of persuasion and persuasive messages, with attention to interpersonal contexts, the role of images, and persuasion in the media and public discourse. This course will explore the ways in which the sending and receiving of persuasive messages involve cognition, emotions, and social norms in everyday contexts.

Prereq: SPCOM 223; Level at least 3A

SPCOM 430 SEM 0.50

Course ID: 013570

Communication and Social Justice

An examination of the ways in which communication on the part of individuals, groups, and institutions contributes to fostering justice in social contexts. Areas of focus include communication and justice in interpersonal, workplace, community, and national/international contexts.

Prereq: Level at least 3A

(Cross-listed with LS 492)

SPCOM 431 LEC 0.50

Course ID: 010340

Crisis Communication

This case study course examines the communication strategies involved in a public response to crisis, using such fields as sports, the entertainment world, politics and business.

Prereq: Level at least 3A Speech Communication major and minor students only

SPCOM 432 LEC 0.50

Course ID: 010350

Conflict Management

This course focuses on how conflict is communicated and resolved in one-on-one, group and organizational contexts. Theoretical perspectives, simulations, role plays and self-assessment exercises will enhance students' abilities to be successful communicators in conflict situations.

Prereq: Level at least 3A

SPCOM 433 WSP 0.50

Course ID: 010345

The Organizational Consultant

This workshop course will examine the communication skills necessary for the organizational consultant. Participation in videotaped simulations will allow students to explore consulting styles and training interventions by developing the communications expertise and knowledge specific to the consulting professional.

Prereq: Level at least 3A

SPCOM 434 DIS,LEC 0.50

Course ID: 011393

The Discourse of Dissent

A study of the social, historical, and rhetorical dimensions of collective action. Topics may include health and welfare movements, civil rights and anti-war protests, and environmentalism.

(Cross-listed with ENGL 309G, HIST 309)

SPCOM 440 LEC,SEM,WSP 0.50

Course ID: 011906

Performative Inquiry and Practice

This course explores how to create, perform and analyze performance texts, here defined as including drama/theatre texts, poetry, narratives, and the texts of everyday life. Through readings and creative investigation, students will explore the links between the participant, the researcher, the site and the impulse of inquiry.

Prereq: Level at least 3A

(Cross-listed with DRAMA 440)

SPCOM 475 SEM 0.50

Course ID: 013573

Communication Ethics

An examination of the interplay between communication and ethics from historical and pragmatic perspectives. Issues discussed include communication in a variety of settings, such as intrapersonal, interpersonal, organizational, public, and intercultural interactions as they relate to personal development, values, meaning making, and ethical ways of communicating.

Prereq: Level at least 3A Speech Communications majors or minors or Level at least 2A Philosophy majors

SPCOM 490 SEM 0.50

Course ID: 011402

Selected Seminars in Speech Communication

Seminars in special areas of speech communication.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Department Consent Required

Prereq: Level at least 3A

SPCOM 491 SEM 0.50

Course ID: 011403

Selected Seminars in Speech Communication

Seminars in special areas of speech communication.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Department Consent Required

Prereq: Level at least 3B

SPCOM 499A LEC 0.50

Course ID: 004740

Senior Seminar

This course is designed to give the student an opportunity to complete a comprehensive presentation in her/his major area of concentration.

[Note: A grade for DRAMA/SPCOM 499A will be submitted only after the completion of DRAMA/SPCOM 499B.]

Department Consent Required

Prereq: Level at least 4A Honours Speech Communication

(Cross-listed with DRAMA 499A)

SPCOM 499B LEC 0.50

Course ID: 004741

Senior Seminar

This course is designed to give the student an opportunity to complete a comprehensive presentation in her/his major area of concentration. Second part of DRAMA/SPCOM 499.

Department Consent Required

Prereq: Level at least 4A Honours Speech Communication

(Cross-listed with DRAMA 499B)

S T A T I S T I C S

STAT 200s

STAT 202 LEC,TST,TUT 0.50

Course ID: 008859

Introductory Statistics for Scientists

Elementary probability, populations, samples and distributions with biological examples. Methods for data summary and presentation. Estimation, hypothesis testing, two-sample techniques and paired comparisons, regression, correlation. [Offered: F,W]

Prereq: Science or Knowledge Integration students only.

Antireq: STAT 220, 230

STAT 206 LEC,TUT 0.50

Course ID: 010128

Statistics for Software Engineering

Empirical problem solving with applications to software engineering. An introduction to probability theory. An introduction to distribution theory and to methods of statistical inference, including confidence intervals and hypothesis testing. An introduction to regression. [Offered: F]

Prereq: MATH 115, 119; Software Eng students only.

STAT 211 LAB,LEC,TUT 0.50

Course ID: 008861

Introductory Statistics and Sampling for Accounting

Descriptive statistics, probability, discrete and continuous random variables. Sampling distributions and simple hypothesis testing. Introduction to survey sampling. [Offered: W]

Prereq: MATH 109; Arts/Acc and SciBiot/CA students only.

STAT 220 LEC,TST,TUT 0.50

Course ID: 008862

Probability (Non-Specialist Level)

The laws of probability, discrete and continuous random variables, expectation, central limit theorem. [Offered: F,W]

Prereq: One of MATH 119, 128, 138, 148.

Antireq: STAT 202, 230, 240

STAT 221 LEC,TST,TUT 0.50

Course ID: 008863

Statistics (Non-Specialist Level)

Empirical problem solving, measurement systems, causal relationships, statistical models, estimation, confidence intervals, tests of significance. [Offered: F, W]

Prereq: (One of MATH 128, 138, 148) & (One of STAT 220, 230, 240).

Antireq: STAT 231, STAT 241.

STAT 230 LEC,TST,TUT 0.50

Course ID: 008864

Probability

This course provides an introduction to probability models including sample spaces, mutually exclusive and independent events, conditional probability and Bayes' Theorem. The named distributions (Discrete Uniform, Hypergeometric, Binomial, Negative Binomial, Geometric, Poisson, Continuous Uniform, Exponential, Normal (Gaussian), and Multinomial) are used to model real phenomena. Discrete and continuous univariate random variables and their distributions are discussed. Joint probability functions, marginal probability functions, and conditional probability functions of two or more discrete random variables and functions of random variables are also discussed. Students learn how to calculate and interpret means, variances and covariances particularly for the named distributions. The Central Limit Theorem is used to approximate probabilities.

[Note: STAT 230 is normally taken in second year. Students with an average of at least 80% in Honours Mathematics courses in 1A may enrol in STAT 230 in 1B. To enrol in STAT 231, a grade of at least 50% in STAT 230 is required. However, to enrol in STAT 330, 333, 334, 341 or 340 a grade of at least 60% in STAT 230 is required. Offered: F,W,S]

Prereq: (MATH 135 with min. grade of 60% or MATH 145)&(MATH 128 with min. grade of 70% or (MATH 117 or 137) with min. grade of 60% or MATH 147)); Level at least 1B Hon Math or Math/Phys students only.

Coreq: MATH 119 or 138 or 148.

Antireq: STAT 220, 240

Also offered Online

STAT 231 LEC,TST,TUT 0.50

Course ID: 008865

Statistics

This course provides a systematic approach to empirical problem solving which will enable students to critically assess the sampling protocol and conclusions of an empirical study including the possible sources of error in the study and whether evidence of a causal relationship can be reasonably concluded. The connection between the attributes of a population and the parameters in the named distributions covered in STAT 230 will be emphasized. Numerical and graphical techniques for summarizing data and checking the fit of a statistical model will be discussed. The method of maximum likelihood will be used to obtain point and interval estimates for the parameters of interest as well as testing hypotheses. The interpretation of confidence intervals and p-values will be emphasized. The Chi-squared and t distributions will be introduced and used to construct confidence intervals and tests of hypotheses including likelihood ratio tests. Contingency tables and Gaussian

response models including the two sample Gaussian and simple linear regression will be used as examples.

[Note: To satisfy any Statistics plan requirement a grade of at least 50% in STAT 231 is required. However, to enrol in STAT 331, 332, 371, 372, or 373, a grade of at least 60% in STAT 231 is required. Offered: F,W,S]

Prereq: (MATH 119 or 128 or 138 or 148) and (STAT 220 with a grade of at least 70% or STAT 230 or 240); Honours Math or Math/Phys students.

Antireq: STAT 221, 241

STAT 240 LEC,TST 0.50

Course ID: 008866

Probability (Advanced Level)

STAT 240 is an advanced-level enriched version of STAT 230.

[Note: STAT 240 is normally taken in second year. Students with an average of at least 80% in Honours Mathematics courses in 1A may enrol in STAT 240 in 1B. Students with a cumulative math average of at least 80% are encouraged to register in STAT 240. Offered: F]

Prereq: MATH 137 with a grade of at least 60% or MATH 147; Level at least 1B Honours Mathematics students only.

Coreq: MATH 138 or 148.

Antireq: STAT 220, 230

STAT 241 LEC,TST,TUT 0.50

Course ID: 008867

Statistics (Advanced Level)

STAT 241 is an advanced-level enriched version of STAT 231.

[Note: Students with a cumulative math average of at least 80% are encouraged to register in STAT 241. Offered: W]

Prereq: MATH 138/148 & STAT 230/240; Hon Math only.

Antireq: STAT 221,231.

STAT 300s

STAT 316 LEC,TUT 0.50

Course ID: 004384

Introduction to Statistical Problem Solving by Computer

This is an applications oriented course which prepares the nonmathematical student to use the computer as a research tool. Topics include aids for statistical analysis and the preparation of documents such as reports and theses. The course provides sufficient background for application to other problems specific to the individual's field. [Offered: W]

Prereq: One of ECON 221, ENVS 278, HLTH 204, ISS/SDS 250R, KIN 222, PSCI 214/314, PSYCH 292, REC 371, SOC/LS 280, any STAT course; Not open to Honours Mathematics students.

Antireq: STAT 331, 371

STAT 321 LEC,TUT 0.50

Course ID: 008870

Regression and Forecasting (Non-Specialist Level)

Modeling the relationship between a response variable and several explanatory variables via regression models. Model diagnostics and improvement. Using regression models for forecasting, Exponential smoothing. Simple time series modeling. [Offered: W]

Prereq: (MATH 225 or 235 or 245) and (STAT 221 or 231 or 241).

Antireq: ECON 321, STAT 331, 371, 373, 443

STAT 322 LEC,TUT 0.50

Course ID: 008871

Sampling and Experimental Design (Non-Specialist Level)

Planning sample surveys; simple random sampling; stratified sampling. Observational and experimental studies. Blocking, randomization, factorial designs. Analysis of variance. Applications of design principles. [Offered: F]

Prereq: STAT 221 or 231 or 241.

Antireq: STAT 332, 372

STAT 330 LEC,TUT 0.50

Course ID: 008872

Mathematical Statistics

This course provides a mathematically rigorous treatment for topics covered in STAT 230 and 231, and to make essential extensions to the multivariate case. Maximum likelihood estimation. Random variables and distribution theory. Generating functions. Functions of random variables. Limiting distributions. Large sample theory of likelihood methods. Likelihood ratio tests. Joint probability (density) functions, marginal probability (density) functions, and conditional probability (density) functions of two or more random variables are discussed. Topics covered include independence of random variables, conditional expectation and the determination of the distribution of functions of random variables using the cumulative distribution method, change of variable and moment generating functions. Properties of the Multinomial and Bivariate Normal distributions are proved. Limiting distributions, including convergence in probability and convergence in distribution, are discussed. Important results, including the Weak Law of Large Numbers, Central Limit Theorem, Slutsky's theorem, and the Delta Method, are introduced with applications. The maximum likelihood method is discussed for the multi-parameter case. Asymptotic properties of the maximum likelihood estimator are examined and used to construct confidence intervals or regions. Tests for simple and composite hypotheses are constructed using the Likelihood Ratio Test. [Offered: F,W,S]

Prereq: MATH 237 or 247, (STAT 230 with a grade of at least 60% or STAT 240), STAT 231 or 241.

Antireq: STAT 334

STAT 331 LEC,TUT 0.50

Course ID: 008873

Applied Linear Models

Modeling the relationship between a response variable and several explanatory variables (an output-input system) via regression models. Least squares algorithm for estimation of parameters. Hypothesis testing and prediction. Model diagnostics and improvement. Algorithms for variable selection. Nonlinear regression and other methods. [Offered: F,W,S]

Prereq: MATH 235 or 245, (STAT 231 with a grade of at least 60%) or STAT 241 or (SYDE 212 with a grade of at least 70%).

Antireq: ECON 321, STAT 321, 371, 373, SYDE 334

STAT 332 LEC,TUT 0.50

Course ID: 008874

Sampling and Experimental Design

Designing sample surveys. Probability sampling designs. Estimation with elementary designs. Observational and experimental studies. Blocking, randomization, factorial designs. Analysis of variance. Designing for comparison of groups. [Offered: F,W,S]

Prereq: (STAT 231 with a grade of at least 60%) or STAT 241 or (SYDE 212 with a grade of at least 70%).

Antireq: BIOL 361, STAT 322, 372

STAT 333 LEC,TUT 0.50

Course ID: 008875

Applied Probability

Review of basic probability. Generating functions. Theory of recurrent events. Markov chains, Markov processes, and their applications. [Offered: F,W,S]

Prereq: STAT 230 with a grade of at least 60% or STAT 240; Level at least 3A.

Antireq: STAT 334

STAT 334 LEC,TUT 0.50

Course ID: 012662

Probability Models for Business and Accounting

Random variables and distribution theory, conditional expectations, moment and probability generating functions, change of variables, random walks, Markov chains, Markov processes. [Offered F,S]

Prereq: MATH 237 or 247, (STAT 230 with a grade of at least 60% or STAT 240); STAT 231 or 241; Business/Math double degree, Mathematics/CPA or Math/Business students only.

Antireq: STAT 330, 333

STAT 337 LEC,TUT 0.50

Course ID: 013320

Introduction to Biostatistics

This course will provide an introduction to statistical methods in health research. Topics to be covered include types of medical data, measures of disease prevalence and incidence, age and sex adjustment of disease rates, sensitivity and specificity of diagnostic tests, ROC curves, measures of association between risk factors and disease, major sources of medical data in the Canadian context including surveys, registries, and clinical studies such as cohort studies, clinical trials and case-control studies. Papers from the medical literature will be used throughout to illustrate the concepts. Introduction to SAS for data analysis and an introduction to database management tools. [Offered: F]

Prereq: (STAT 221 with a grade of at least 60%) or STAT 231 or 241.

Antireq: HLTH 333, STAT 232

STAT 340 LEC,TUT 0.50

Course ID: 004408

Computer Simulation of Complex Systems

Building and validation of stochastic simulation models useful in computing, operations research, engineering and science. Related design and estimation problems. Variance reduction. The implementation and the analysis of the results. [Offered: W,S]

Prereq: (One of CS 116, 126/124, 134, 136, 138, 145, SYDE 221/322) and (STAT 230 with a grade of at least 60% or STAT 240) and (STAT 231 or 241).

Antireq: STAT 341, CS 457.

STAT 341 LEC 0.50

Course ID: 011431

Computational Statistics and Data Analysis

Approximation and optimization of noisy functions. Simulation from univariate and multivariate distributions, multivariate normal distribution, mixture distributions and introduction to Markov Monte Carlo. Introduction to supervised statistical learning including discrimination methods. [Offered: F]

Prereq: MATH 237 or 247, (STAT 230 with a grade of at least 60% or STAT 240), STAT 231 or 241.

Antireq: STAT 340

STAT 371 LEC,TUT 0.50

Course ID: 011723

Applied Linear Models and Process Improvement for Business

Practical and theoretical aspects of simple and multiple linear regression models. Model building, fitting and assessment. Process thinking and improvement. Strategies for variation reduction such as control charting.

Process monitoring, control and adjustment. Applications to problems in business. [Offered: F,W,S]

Prereq: (MATH 235 or 245) and (STAT 231 with a grade of at least 60% or STAT 241); Bus/Math dbl degree, Math/Bus, Math/FARM, Math/ITM, or Math Optimization - Business Spec students only.

Antireq: ECON 321, STAT 321, 331, 373

STAT 372 LEC,TUT 0.50

Course ID: 011724

Survey Sampling and Experimental Design Techniques for Business

Design and analysis of surveys. Management of sample and non-sample error. Simple random sampling and stratified random sampling. Additional topics in survey sampling. Observational and experimental studies. Principles for the design of experiments. Analysis of Variance, factorial experiments and interaction. Application to problems in business. [Offered: F,W,S]

Prereq: STAT 231 with a grade of at least 60% or STAT 241; Business/Math Double Degree, Math/Business, Math/FARM, Math/ITM or Mathematical Optimization - Business Specialization students only.

Antireq: STAT 322, 332

STAT 373 LEC,TUT 0.50

Course ID: 012225

Regression and Forecasting Methods in Finance

Application of regression and time series models in finance; multiple regression; algebraic and geometric representation of least squares; inference methods - confidence intervals and hypothesis tests, ANOVA, prediction; model building and assessment; time series modeling; autoregressive AR(1) models - fitting, assessment and prediction; moving average smoothing, seasonal adjustment; non-stationarity and differencing. [Offered: F]

Prereq: MATH 136, STAT 231 with a grade of 60% or STAT 241; Computing & Financial Management or Math/CPA students only.

Antireq: STAT 321, 331, 371, 443

STAT 400s

STAT 430 LEC,TUT 0.50

Course ID: 008880

Experimental Design

Review of experimental designs in a regression setting; analysis of variance; replication, balance, blocking, randomization, and interaction; one-way layout, two-way layout, and Latin square as special cases; factorial structure of treatments; covariates; treatment contrasts; two-level fractional factorial designs; fixed versus random effects; split-plot and repeated-measures designs; other topics. [Offered: F,S]

Prereq: (STAT 331 or 371) and (STAT 332 or 372).

Antireq: (for Arts and Environmental Studies students) BIOL 461, PSYCH 391

STAT 431 LEC 0.50

Course ID: 008881

Generalized Linear Models and their Applications

Review of the normal linear model and maximum likelihood estimation; regression models for binomial, Poisson and multinomial data; generalized linear models; and other topics in regression modelling. [Offered: F,W,S]

Prereq: STAT 330, (331 or 371)

STAT 433 LEC 0.50

Course ID: 008882

Stochastic Processes

Point processes. Renewal theory. Stationary processes. Selected topics. [Offered: F]

Prereq: STAT 333

STAT 435 LEC,TUT 0.50

Course ID: 011042

Statistical Methods for Process Improvements

Statistical methods for improving processes based on observational data. Assessment of measurement systems. Strategies for variation reduction. Process monitoring, control and adjustment. Clue generation techniques for determining the sources of variability. Variation transmission. [Offered: W]

Department Consent Required

Prereq: STAT 332 or 372

STAT 436 LEC 0.50

Course ID: 013322

Introduction to the Analysis of Spatial Data in Health Research

The objective of this course is to develop understanding and working knowledge of spatial models and analysis of spatial data. The course provides an introduction to the rudiments of statistical inference based on spatially correlated data. Methods of estimation and testing will be developed for geostatistical models based on variograms and spatial autoregressive models. Concepts and application of methods will be emphasized through case studies and projects with health applications. [Offered: W]

Prereq: STAT 431

STAT 437 LEC 0.50

Course ID: 013321

Statistical Methods for Life History Analysis

Statistical methods for the analysis of longitudinal data; hierarchical models, marginal models, and transitional models. Parametric and semiparametric methods for the analysis of survival data under censoring and truncation. [Offered: W]

Prereq: STAT 431

STAT 438 LEC 0.50

Course ID: 015598

Advanced Methods in Biostatistics

Causal inference methodologies including propensity score matching and inverse probability weighting. Methods for handling incomplete data and covariate measurement error; likelihood based on joint models, estimating functions.

Prereq: STAT 431

STAT 440 LEC 0.50

Course ID: 008883

Computational Inference

Introduction to and application of computational methods in statistical inference. Monte Carlo evaluation of statistical procedures, exploration of the likelihood function through graphical and optimization techniques including EM. Bootstrapping, Markov Chain Monte Carlo, and other computationally intensive methods. [Offered: W]

Prereq: STAT 341 or 340

STAT 441 LEC 0.50

Course ID: 008884

Statistical Learning - Classification

Given known group membership, methods which learn from data how to classify objects into the groups are treated. Review of likelihood and posterior based discrimination. Main topics include logistic regression, neural networks, tree-based methods and nearest neighbour methods. Model assessment, training and tuning. [Offered: F]

Prereq: STAT 341 or (STAT 330 and 340)

STAT 442 LEC,TUT 0.50

Course ID: 011434

Data Visualization

Visualization of high dimensional data including interactive methods directed at exploration and assessment of structure and dependencies in data. Methods for finding groups in data including traditional and modern methods of cluster analysis. Dimension reduction methods including multi-dimensional scaling, nonlinear and other methods. [Offered: F]

Prereq: STAT 231 with a grades of at least 60% or 241

STAT 443 LEC,TUT 0.50

Course ID: 008885

Forecasting

Model building. Multiple regression and forecasting. Exponential smoothing. Box-Jenkins models. Smoothing of seasonal data. [Offered: F,W,S]

Prereq: STAT 331 or 371 or SYDE 334.

Antireq: STAT 321, 373

STAT 444 LEC 0.50

Course ID: 011436

Statistical Learning - Function Estimation

Methods for finding surfaces in high dimensions from incomplete or noisy functional information. Both data adaptive and methods based on fixed parametric structure will be treated. Model assessment, training and tuning. [Offered: W]

Prereq: STAT 341 or STAT 331 or 371

STAT 450 LEC,TUT 0.50

Course ID: 008888

Estimation and Hypothesis Testing

Discussion of inference problems under the headings of hypothesis testing and point and interval estimation. Frequentist and Bayesian approaches to inference. Construction and evaluation of tests and estimators. Large sample theory of point estimation. [Offered: W]

Prereq: STAT 330

STAT 454 LEC 0.50

Course ID: 008890

Sampling Theory and Practice

Sources of survey error. Probability sampling designs, estimation and efficiency comparisons. Distribution theory and confidence intervals. Generalized regression estimation. Software for survey analysis. [Offered: W]

Prereq: STAT 332 or 372

STAT 464 LEC 0.50

Course ID: 008891

Topics in Probability Theory

Special Topics course as announced by the department.

Prereq: STAT 333

STAT 466 LEC 0.50

Course ID: 008892

Topics in Statistics 1

Special Topics course as announced by the department.

Prereq: STAT 330, 331

STAT 467 LEC 0.50

Course ID: 008893

Topics in Statistics 2

Special Topics course as announced by the department.

STAT 468 RDG 0.50

Course ID: 008894

Readings in Statistics 1

Reading course as announced by the department.

STAT 469 RDG 0.50

Course ID: 010728

Readings in Statistics 2

Reading course as announced by the department.

SOCIETY, TECHNOLOGY AND VALUES**STV 100s****STV 100 LEC 0.50**

Course ID: 008896

Society, Technology and Values: Introduction

This course examines the interaction of the technologies developed by a culture with the values and social organization of that culture. The course exposes students to various definitions of society, technology and values, and it presents alternative views about how the three interact. These views are then applied to a number of spheres of influence, including patterns of employment and the role of work; medicine and health; polity and economy; sustainable development and the environment.

STV 200s**STV 201 LEC 0.50**

Course ID: 010150

Society, Technology and Values: Special Topics

Study of the interaction of society, technology and values in a particular topic area under tutorial guidance by visiting or adjunct faculty.

STV 202 LEC 0.50

Course ID: 008905

Design and Society

The course uses design as a vehicle for examining technology and society interaction, particularly how we design, create, and choose technology. Design and Society has been created to introduce students to various methods to help them view design and technology from a technology-society perspective. The overriding aims of the course are to (a) develop an ability to see through the eyes of others and promote thinking about technology in terms of users as well as producers or creators, (b) develop critical thinking skills, and (c) present design and the choice of technology as an activity involving societal and individual concerns rather than as a purely technical matter. The course does not require advanced technical knowledge and is open to students of all faculties.

*Antireq: SYDE 261***STV 205 LEC 0.50**

Course ID: 011619

Cybernetics and Society

Cybernetics is the study of the interfaces between humans and machines. This course will present an overview of cybernetics from automation and robotics to prosthetics and wearable computing. The roles of men and women in a post-human era will be discussed along with related themes dealing with gender, cyberspace, politics and popular culture.

STV 210 LEC 0.50

Course ID: 014922

The Computing Society

This course examines the historical and current relationships between computer technology and society. It explores the impact and consequences of computing from a societal perspective, but also considers various nontechnical factors and values that have shaped computing technology and practice. The scope of the course will range from early mechanical aids, through the mid-20th century invention of electronic digital computers, to the networks and mobile applications of the 21st century. Technological studies relating to gender, education, employment and war will be used as focal points. Material artifacts will form a core element of the course.

*(Cross-listed with HIST 212)***STV 300s****STV 302 LEC 0.50**

Course ID: 008908

Information Technology and Society

The course has been designed to provide a framework or set of intellectual tools to help students understand and evaluate technological change. These tools will be applied to the development of information technology, its interaction with society, and possible future scenarios. Selected topics include understanding digitization as culture, visions of the future and the perils of prediction, as well as issues related to application areas such as the home, manufacturing, office work, design and services, education, and law. The course will also consider some of the privacy and personal dignity issues associated with information technology.

*Prereq: Level at least 3A or any 100- or 200-level STV course***STV 304 LEC 0.50**

Course ID: 011199

Technology in Canadian Society

The course begins by questioning whether or not there is anything distinctive about Canadian design and its context. Through the use of historical and contemporary cases, this course examines factors influencing design and technology choice in Canada and their outcomes. The future of design is also considered in terms of current trends, issues, challenges and opportunities.

Prereq: Level at least 3A or any 100- or 200-level STV course

STV 305 LEC 0.50

Course ID: 015611

Technology, Society and the Modern City

Cities may be humanity's most significant invention, where we shape our vision of the civilized life. At the same time, the demands of cities shape our lives in fundamental ways. As most of humanity now lives in cities, the technology of city living increasingly becomes the technology of human life itself. The purpose of this course is to examine the technology of civilized life, with the city itself as both a technological system and a scene of technological living. Topics explored include food, transport, cars, architecture, urban planning, public spaces, sanitation and health, civics and governance, sustainability, and information and communications technology. The Canadian city receives some emphasis. [Offered: W]

Prereq: Level at least 3A or any 100- or 200-level STV course

STV 306 LEC 0.50

Course ID: 008906

Biotechnology and Society

Biotechnologies are currently migrating from the laboratory to a wide range of consumer products. In everything from foods to pharmaceuticals, genetic engineering is entering daily life. The biotechnology revolution will likely have as much of an impact on our lives as the information technology revolution. However, there is a wide and potentially dangerous gap between research and development on the one hand and societal awareness of its impact on the other. This course is intended to help students gain a deeper appreciation for the issues, including ethics, surrounding biotechnology and society. It will do this through an investigation of such interactions between biotechnologies and society as genetics and the law, foods and the media, and soil remediation and the environment. Consideration will also be given to the role of computing in biotech research and in the human genome project.

Prereq: Level at least 3A or any 100- or 200-level STV course

STV 400s

STV 400 PRJ 0.50

Course ID: 008910

Society, Technology and Values: Senior Project

An independent, supervised research project related to the interaction of society, technology and values. Projects may take any format that demonstrates scholarly merit. Formats may include essays, impact studies, designs, computer software, or other media. Students are responsible for proposing suitable projects and are encouraged to seek faculty advice on plausible topics.

Prereq: Level at least 4A Society, Technology and Values Option students only

STV 401 LEC 0.50

Course ID: 010151

Society, Technology & Values: Advanced Topics

Advanced study of the interaction of society, technology and values in a particular topic area under tutorial guidance by visiting or adjunct faculty.

Prereq: Any 100- or 200- or 300- level STV course

SOCIAL VENTURE ENTREPRENEUR

SVENT 200s

SVENT 225P WSP 0.50

Course ID: 015232

Social Entrepreneurship: Exploring Social Change

This is a live-in experiential learning course at St. Paul's GreenHouse. Students will explore the entrepreneurial journey with an emphasis on the process of identifying a pressing problem, validating the problem and generating ideas to tackle the problem. Students will also engage in work to help them identify their own values and goals for affecting change, develop teamwork and collaboration skills and begin envisioning their own social venture or change initiative.

[Note: student must enrol and be accepted in the live-in GreenHouse Community at St. Paul's University College]

Instructor Consent Required

SVENT 300s

SVENT 325P WSP 0.50

Course ID: 015233

Social Entrepreneurship: Launching a Social Venture

This is a live-in experiential learning course at St. Paul's GreenHouse for students who have identified a social venture idea or change initiative they want to take action on. Students will pursue their entrepreneurial endeavour with an emphasis on validating their idea through beneficiary/customer discovery, project planning, building a team, funding strategies and early-stage revenue models. Students will submit a grant proposal that will lead to the execution of their idea into action.

[Note: student must be accepted and enrolled in the live-in GreenHouse Community at St. Paul's University College]

Instructor Consent Required

SOCIAL WORK (BACHELOR OF SOCIAL WORK)

Notes

1. SWREN 400-level courses represent requirements for the Honours Bachelor of Social Work (BSW) degree.
2. The following SWREN 100s, 200s, 300s are specific prerequisite courses available only to students who have been granted Conditional Admission to the BSW program.
3. For information on admission to the post-BA Honours Bachelor of Social Work program, visit the [Renison Social Work Website](#).
4. For courses in Social Work in the Bachelor of Arts Social Development Studies plans, see Social Work (Social Development Studies).

SWREN 100s

SWREN 120R LEC 0.50

Course ID: 008748

Introduction to Social Work

Presentation of the values, knowledge, and skill base, principles and purposes of the profession, and an examination of methods of practice. Traditional and innovative social work settings are discussed. Historic

development of social work and its influence on contemporary practice are reviewed.

[Note: SWREN 120R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

(Cross-listed with SOCWK 120R)

Also offered Online

SWREN 200s

SWREN 220R LEC 0.50

Course ID: 008749

Social Work with Individuals - Theory and Practice 1

A presentation of some of the theoretical constructs necessary for the understanding of the individual in the casework relationship, as well as an introduction to some appropriate casework interventions. Emphasis in the course will be theoretical.

[Note: SWREN 220R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: SWREN 120R

(Cross-listed with SOCWK 220R)

Also offered Online

SWREN 221R LEC 0.50

Course ID: 008750

Social Group Work

Presentation of some of the theoretical constructs necessary for an understanding of social group work as well as an introduction to methodology and interventions.

[Note: SWREN 221R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: SWREN 120R

(Cross-listed with SOCWK 221R)

Also offered Online

SWREN 222R LEC 0.50

Course ID: 008751

Community Organization 1

An examination of social work practice as it relates to functional and geographical communities. The course will explore the theoretical foundations of organization practice as well as a variety of models.

[Note: SWREN 222R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: SWREN 120R

(Cross-listed with SOCWK 222R)

Also offered Online

SWREN 224R LEC 0.50

Course ID: 008605

Poverty in Canada and its Social Consequences

A sociological analysis of poverty in contemporary Canada as it underlies a multiplicity of interlocking social problems.

[Note: SWREN 224R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: SOC 101/101R or 120R

(Cross-listed with SOC 224R)

Also offered Online

SWREN 250R LEC 0.50

Course ID: 006507

Social Statistics

This introductory level statistics course will emphasize the collection, manipulation, descriptive presentation, and statistical analysis of social research data.

[Note: SWREN 250R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: Level at least 2A; two courses from ANTH, SDS/ISS, PSYCH, SOC, SOCWK; Not open to students in the Faculty of Mathematics.

Antireq: ARTS 280, ECON 221, ENVS 278, ISS 250R, KIN 222, LS/SOC 280, PSYCH 292, REC 371, SMF 230, STAT 202, 206, 231.

(Cross-listed with SDS 250R)

Also offered Online

SWREN 251R LEC 0.50

Course ID: 006508

Social Research

Introduction to the philosophy and methodology of applied social science research including treatment of the problems and strategies of research design and execution.

[Note: SWREN 251R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: SDS/ISS 250R; Level at least 2A; Not open to students in the Faculty of Mathematics.

Antireq: ISS 251R, KIN 330, LS/SOC 221, LS/SOC 321, PSYCH 291, REC 270, SDS 251R

(Cross-listed with SDS 251R)

Also offered Online

SWREN 300s

SWREN 300R LEC 0.50

Course ID: 008755

Canadian Social Welfare Policy

This course will introduce students to the concept of social welfare as it has evolved in the post-industrial era. It will examine various social, economic and political factors that have shaped Canadian social welfare policy and it will consider present-day factors that are transforming that policy.

[Note: SWREN 300R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: SWREN 120R

(Cross-listed with SOCWK 300R)

Also offered Online

SWREN 301R LEC 0.50

Course ID: 011116

Understanding Diversity in Canada

This course explores culture, its components, characteristics and processes, theories, issues, and the history of diversity in Canadian social systems. It also examines the implications of diversity for social work practice

and fosters culturally competent practice with micro and macro social systems.

[Note: SWREN 301R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: SWREN 120R

(Cross-listed with SOCWK 301R)

Also offered Online

SWREN 311R LEC 0.50

Course ID: 011378

Public Policy and Native Peoples in Canada

This course examines the evolution, logic, processes, and impacts of government policies developed specifically for Native peoples, with particular attention to government policy as both a cause of and a response to social problems within Native communities.

[Note: SWREN 311R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: Level at least 2B

(Cross-listed with LS 373, SDS 311R)

SWREN 312R LEC 0.50

Course ID: 011979

Homelessness & Public Policy

This course provides students with a basic overview of homelessness in modern society. Its goal is to familiarize students with the human, social, political and economic aspects of homelessness. Throughout, the emphasis will be on understanding homelessness from a public policy framework - its incidence and prevalence, etiology, consequences, and strategies for its prevention and amelioration.

[Note: SWREN 312R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: Level at least 2B

(Cross-listed with SDS 312R)

SWREN 321R LEC 0.50

Course ID: 008758

Social Work with Families

Presentation of some of the theoretical constructs necessary for an understanding of the family in the social work relationship as well as an introduction to methodology and interventions.

[Note: SWREN 321R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: SWREN 120R

(Cross-listed with SOCWK 321R)

Also offered Online

SWREN 331R LEC 0.50

Course ID: 013894

Social Inequality, Social Justice, and Public Policy

This course examines the hidden causes of inequality and associated social injustices. It provides a snapshot of main issues associated with modern society and the evidence that ties them to persistent inequality and injustice. The course reviews not only the major types of inequality but also social and public policy responses to them.

[Note: Formerly ISS 331R. SWREN 331R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

(Cross-listed with SDS 331R)

Also offered Online

SWREN 349R LEC,SEM 0.50

Course ID: 011388

Cross-Cultural Psychology

This course focuses on human psychology (behaviours, cognition, emotion, motivation, and personality) across cultures, with the aim of raising awareness and understanding of human commonality and diversity. It examines theoretical, methodological, and ethical issues in cross-cultural psychology in light of the current literature.

[Note: SWREN 349R is available only to students who have been given conditional admission to the BSW program; such students must have already completed their first undergraduate degree.]

Prereq: PSYCH 220R or 253/253R.

Antireq: PSYCH 222R, 352

(Cross-listed with PSYCH 349R)

SWREN 400s

SWREN 411R LEC 0.50

Course ID: 008915

Integrative Practice: Aboriginal Perspectives and Social Work

This integrative practice course examines the impact of policy, service delivery and large and small systems on Aboriginal Peoples in Canada. Long-standing policies of assimilation and colonization are considered from a political, economic, and social perspective. With a critical eye towards matters of discrimination and oppression, specific attention is given to the culturally-specific skills and approaches particular to traditional and current helping with Aboriginal Peoples in Canada.

Department Consent Required

Prereq: Bachelor of Social Work students only

SWREN 414R LEC 0.50

Course ID: 008916

Interviewing and Assessment in Social Work Practice

This social work methods course explores the theory and skills of generalist social work practice, with particular attention to interviewing, communication, and assessment skills used with individuals, families, organizations and communities. Emphasis is placed on developing capacity for "critical reflection" on the social work practitioner's professional and personal self.

Department Consent Required

Prereq: Bachelor of Social Work students only

Also offered Online

SWREN 422R LEC 0.50

Course ID: 008918

Advanced Macro Practice

The course examines and compares the strengths, limitations, differential uses, and interconnections of the range of skills needed for community organization, social planning, and social policy practice. Practical applications such as conference planning, proposal writing and fund raising will be explored.

Department Consent Required

Prereq: Bachelor of Social Work students only

Also offered Online

SWREN 423R LEC 0.50

Course ID: 012135

Advanced Social Group Work Practice

The aim of this course is to develop student's knowledge of different approaches to social group work practice, and the ways in which specialized knowledge of client's life conditions, life circumstances, and significant life events informs social work practice with groups within a generalist framework. Emphasis is placed upon conceptualizing and analyzing group work skill and the capacity for self-directed practice with groups directed towards increasing the resiliency of the group as a whole and the resiliency of individual group members. A salient goal is the use of democratic means so that group process in all social work groups reflects a vision of social justice.

*Department Consent Required**Prereq: Bachelor of Social Work students only***Also offered Online****SWREN 424R LEC 0.50**

Course ID: 008919

Diversity and Empowerment

This social work course focuses on issues of diversity and social injustice, with emphasis on culturally sensitive and anti-oppressive practice. It is based on generalist and empowerment perspectives in responding to needs and facilitating changes at appropriate system levels.

*Department Consent Required**Prereq: Bachelor of Social Work students only***Also offered Online****SWREN 431R LEC 0.50**

Course ID: 008920

Fields of Practice Research

This course examines contemporary fields of practice. Attention is given to historical developments, service delivery systems, and practices. Research activities help develop a critical understanding of how social experience impacts the ways that people with diverse experiences access and encounter some of the major fields of practice.

*Department Consent Required**Prereq: Bachelor of Social Work students only***Also offered Online****SWREN 434R LEC 0.50**

Course ID: 008921

Selected Theories for Social Work Practice: Analysis and Application

This course focuses on analysis and application of selected theories and practice methods within a generalist-eclectic approach to social work practice with numerous populations in a variety of settings.

*Department Consent Required**Prereq: Bachelor of Social Work students only***Also offered Online****SWREN 441A PRA 0.50**

Course ID: 012395

Practicum 1A

This first practicum phase helps students understand the general structure and functioning of the helping network and the place of agency-based community settings in it. Simultaneously, the students begin to integrate interviewing and assessment skills to formulate an intervention plan with sensitivity to the diversity of the setting. A bi-weekly seminar runs concurrently with the practicum.

*[Note: This course is for BSW part-time students only.]**Department Consent Required**Prereq: Bachelor of Social Work students only*

Also offered Online

SWREN 441B PRA 0.50

Course ID: 012396

Practicum 1B

This first practicum phase helps students understand the general structure and functioning of the helping network and the place of agency-based community settings in it. Simultaneously, the students begin to integrate interviewing and assessment skills to formulate an intervention plan with sensitivity to the diversity of the setting. A bi-weekly seminar runs concurrently with the practicum.

[Note: This course is for BSW part-time students only.]

Department Consent Required

Prereq: SWREN 441A; Bachelor of Social Work students only

Also offered Online

SWREN 441R PRA 1.00

Course ID: 008922

Practicum 1

This first practicum phase helps students understand the general structure and functioning of the helping network and the place of agency-based community settings in it. Simultaneously, the students begin to integrate interviewing and assessment skills to formulate an intervention plan with sensitivity to the diversity of the setting. A bi-weekly seminar runs concurrently with the practicum.

Department Consent Required

Prereq: Bachelor of Social Work students only.

Coreq: SWREN 414R

Also offered Online

SWREN 442A PRA 0.50

Course ID: 012397

Practicum 2A

The second practicum phase develops students' intervention skills. Opportunity is given to enhance social work practice skills specific to particular client populations within the context of diversity, and to develop awareness of one's professional self in relation to social work practice within the agency context. A bi-weekly seminar runs concurrently with the practicum.

[Note: This course is for BSW part-time students only.]

Department Consent Required

Prereq: SWREN 441A and B; Bachelor of Social Work students only

Also offered Online

SWREN 442B PRA 0.50

Course ID: 012398

Practicum 2B

The second practicum phase develops students' intervention skills. Opportunity is given to enhance social work practice skills specific to particular client populations within the context of diversity, and to develop awareness of one's professional self in relation to social work practice within the agency context. A bi-weekly seminar runs concurrently with the practicum.

[Note: This course is for BSW part-time students only.]

Department Consent Required

Prereq: SWREN 442A; Bachelor of Social Work students only

Also offered Online

SWREN 442R PRA 1.00

Course ID: 008923

Practicum 2

The second practicum phase develops students' intervention skills. Opportunity is given to enhance social work practice skills specific to particular client populations within the context of diversity, and to develop awareness of one's professional self in relation to social work practice within the agency context. A bi-weekly seminar runs concurrently with the practicum.

Department Consent Required

Prereq: SWREN 414R, 441R; Bachelor of Social Work students only

Also offered Online

SWREN 443A PRA 0.50

Course ID: 012399

Practicum 3A

The third practicum phase helps students demonstrate understanding of, and ability to use, a range of interventions within the context of diversity. Professional identification and the integration of theory with practice are emphasized. A bi-weekly seminar runs concurrently with the practicum.

[Note: This course is for BSW part-time students only.]

Department Consent Required

Prereq: SWREN 442A and B; Bachelor of Social Work students only

Also offered Online

SWREN 443B PRA 0.50

Course ID: 012400

Practicum 3B

The third practicum phase helps students demonstrate understanding of, and ability to use, a range of interventions within the context of diversity. Professional identification and the integration of theory with practice are emphasized. A bi-weekly seminar runs concurrently with the practicum.

[Note: This course is for BSW part-time students only.]

Department Consent Required

Prereq: SWREN 443A; Bachelor of Social Work students only

Also offered Online

SWREN 443R PRA 1.00

Course ID: 008924

Practicum 3

The third practicum phase helps students demonstrate understanding of, and ability to use, a range of interventions within the context of diversity. Professional identification and the integration of theory with practice are emphasized. A bi-weekly seminar runs concurrently with the practicum.

Department Consent Required

Prereq: SWREN 414R, 442R; Bachelor of Social Work students only

Also offered Online

SWREN 470R LEC 0.50

Course ID: 012671

Mental Health and Addiction Issues: Social Work Responses

This course will focus on social work practice in the fields of mental health and addictions providing social work students with knowledge concerning the etiology and intervention issues related to mental health and addictions. A life-span perspective will allow an integration of practice, policy and research in relation to mental health, addictions, substance use and concurrent disorders. The continuum of services, including community-based and institutional care perspectives will be presented, along with "best practice" models for the future.

Department Consent Required

Prereq: Bachelor of Social Work students only

Also offered Online

SWREN 471R LEC 0.50

Course ID: 012672

Social Work with Older Adults: Critical Issues and Future Trends

Focusing on social work practice, policy and research, the course examines issues of aging such as health, economic changes, role transition, family dynamics and losses. The course also looks at implications of societal issues and the influence of recent Canadian research in the field of aging. Current innovative and traditional programs will be examined for their relevance for future work with populations of older adults.

Department Consent Required

Prereq: Bachelor of Social Work students only

SWREN 472R LEC 0.50

Course ID: 012673

International Context of Practice: An Experiential Learning Opportunity

This course provides a framework for understanding a developing country through a comparative study with Canada. The collective responses of citizens in meeting community needs in the context of colonial legacies and contemporary global influences are highlighted in both settings. The international learning experience usually takes place during Reading Week and is complemented by two days of pre-trip learning focusing on Canadian realities and one post-trip day to reflect upon the comparative analysis.

[Note: Student is responsible for travel expenses.]

Department Consent Required

Prereq: Bachelor of Social Work students only

SYSTEMS DESIGN ENGINEERING

Notes:

1. The numbering of Systems Design Engineering courses is as follows:
 - If the course is given in the "A" term, the number in the units place is odd; otherwise, it is even.
 - The number in the 10's place refers to the field of the subject matter of the course, according to the following codes:
 1. topics in applied mathematics
 2. computer systems
 3. socio-economic systems
 4. human systems
 5. physical systems
 6. the design of engineering systems
 7. communication and information systems
 8. engineering sciences
 9. laboratories
 - The number in the 100's place generally refers to the year in the program in which the student will encounter the course.
2. The majority of Systems Design courses are given on the basis of 3 formal lectures and 1 tutorial hour each week. The department endeavours to ensure that the formal course schedule remains below 30 hours per week in each term. Beyond this, other, less formally scheduled, meetings between students and faculty are required. It is expected that the average student will spend, in total, between 45 and 55 hours per week on her/his studies.
3. In the event of extraordinary circumstances, the department reserves the right to not offer certain elective courses at the 4XX/5XX level.

SYDE 100s

SYDE 101 LEC,TUT 0.25

Course ID: 009341

Introduction to Systems Design Engineering

This course introduces first year students to Systems Design Engineering. The fundamental emphases of the course are on the Engineering profession and on communication skills: graphical, written, and oral.

Engineering practice will be discussed, including Engineering professional development, Engineering ethics, résumé skills, interview skills, the co-op system, and preparations for the upcoming co-op term. [Offered: F]

Prereq: 1A Systems Design Engineering.

Antireq: BME 101

SYDE 101L LAB,LEC 0.25

Course ID: 012857

Graphics Laboratory

Laboratory experiments for students taking SYDE 101. [Offered: F]

Prereq: 1A Systems Design Engineering.

Antireq: BME 101L

SYDE 102 SEM 0.00

Course ID: 009342

Seminar

Systems Design first year students will meet with a faculty member designated as their class professor. Performance in assignments, conceptual difficulties with courses, interrelation of coursework, later work and engineering practice will be discussed. Non-credit course. [Offered: S]

Prereq: 1B Systems Design Engineering

SYDE 111 LEC,TST,TUT 0.50

Course ID: 008925

Fundamental Engineering Math 1

Functions: trigonometric, exponential, log, inverse functions. Differential calculus: limits, continuity, derivatives, differentials, applications. Sequences and series: convergence, power series, Taylor expansions. Simple numerical methods. [Offered: F]

Prereq: 1A Systems Design Engineering or 1A Biomedical Engineering.

Antireq: MATH 116, 117, 127, 137, 147

SYDE 112 LEC,TUT 0.50

Course ID: 008926

Fundamental Engineering Math 2

Integration: Indefinite and definite integral; techniques of integration; improper integrals, numerical methods, applications. Vector differential calculus: Partial, total, and directional derivative; Gradient divergence and curl; Jacobian. Applications. [Offered: S]

Prereq: 1B Systems Design Engineering or 1B Biomedical Engineering.

Antireq: MATH 118, 119, 128, 138, 148

SYDE 113 LEC,TUT 0.25

Course ID: 013144

Matrices and Linear Systems

Geometry and algebra: root-finding, vectors, coordinate systems, lines and planes, conic sections, complex numbers. Introduction to numerical computation. Floating point arithmetic, accuracy and sources of error. Matrix algebra, inverses. Analytical and numerical techniques for systems of linear equations. [Offered: F]

Prereq: 1A Systems Design Engineering or 1A Biomedical Engineering

SYDE 114 LEC,TUT 0.25

Course ID: 008928

Numerical and Applied Calculus

Matrices and linear systems: determinants, eigenvalues and eigenvectors, LU decomposition, conditioning, numerical methods. First order ordinary differential equations: analytical techniques, applications, elementary numerical methods, convergence. [Offered: S]

Prereq: 1B Systems Design Engineering or 1B Biomedical Engineering

SYDE 121 LAB,LEC,TUT 0.50

Course ID: 008929

Digital Computation

Computer systems, problem solving, data and programs, structured programming, arrays, matrices and pointers, correct and efficient algorithms, data structures. [Offered: F]

Prereq: 1A Systems Design Engineering.

Antireq: BME 121, CHE 121, CIVE 121, ECE 150, GENE 121

SYDE 161 LEC,TUT 0.50

Course ID: 008933

Introduction to Design

Multidisciplinary system design, the design process, problem definition, life-cycle design, design specification, concept/design generation and evaluation, design for manufacturing and assembly, system modelling and analysis, introduction to mechanical design, prototyping, safety and responsibility in engineering design, design documentation. [Offered: F]

Prereq: 1A Systems Design Engineering.

Antireq: BME 161

SYDE 162 LEC,TUT 0.50

Course ID: 008932

Human Factors in Design

Design of human-machine environments, design to reduce human error. Analytical methods of determining user needs in systems with humans. Information processing and human sensory processes and consideration of these elements in the design of systems with humans. Human physical capabilities and consideration of these in ergonomic design. [Offered: S]

Prereq: 1B Systems Design Engineering.

Antireq: BME 162

SYDE 181 LEC,TUT 0.50

Course ID: 008934

Physics 1 (Statics)

Basic concepts of mechanics, vectors. Statics of particles. Rigid bodies and force systems, equilibrium of rigid bodies. Analysis of trusses and frames. Distributed forces, centroids and moments of inertia. Friction. Virtual work. [Offered: F]

Prereq: 1A Systems Design Engineering.

Antireq: BME 181

SYDE 182 LEC,TUT 0.50

Course ID: 008935

Physics 2 (Dynamics)

Kinematics of particles, rectilinear and curvilinear motion. Kinetics of particles, application to space mechanics. Energy and momentum methods. Systems of particles. Kinematics and kinetics of rigid bodies; planar motion. Vibrations. [Offered: F, W, S]

Prereq: 1B Systems Design Engineering or 2A Mechatronics Engineering students only.

Antireq: BME 182

SYDE 192 LEC,TUT 0.50

Course ID: 008938

Digital Systems

Digital technology, combinatorial logic, binary arithmetic, synchronous sequential circuits, design methodology, algorithmic state machines, microcomputer interfacing. [Offered: S]

Prereq: 1B Systems Design Engineering.

Antireq: BME 292

SYDE 192L LAB 0.25

Course ID: 012858

Digital Systems Laboratory

Laboratory experiments for students taking SYDE 192. [Offered: S]

Prereq: 1B Systems Design Engineering. Antireq: BME 292L

SYDE 200s**SYDE 201 SEM 0.00**

Course ID: 009343

Seminar

Systems Design second-year students will meet a faculty member designated as their class professor. Performance in assignments, conceptual difficulties with courses, interrelation of coursework, later work and engineering practice will be discussed. Non-credit course. [Offered: W]

Prereq: 2A Systems Design Engineering

SYDE 202 SEM 0.00

Course ID: 009344

Seminar

Systems Design second-year students will meet a faculty member designated as their class professor. Performance in assignments, conceptual difficulties with courses, interrelation of coursework, later work and engineering practice will be discussed. Non-credit course. [Offered: F]

Prereq: 2B Systems Design Engineering

SYDE 211 LEC,TUT 0.50

Course ID: 008939

Advanced Engineering Math 1

Vector calculus: double and triple integrals, line and surface integrals, fundamental theorems, applications. Difference methods: root-finding, finite and divided differences, numerical differentiation, interpolation. Second order linear ordinary differential equations and systems. Applications in vibration. [Offered: W]

Prereq: 2A Systems Designs Engineering or 2B Biomedical Engineering

SYDE 212 LEC,TUT 0.50

Course ID: 013145

Probability and Statistics

Elementary probability theory. Random variables and distributions. Binomial, Poisson, and normal distributions. Elementary sampling. Statistical estimation. Tests of hypotheses and significance. Regression. Goodness-of-fit tests. Analysis of experimental measurements. [Offered: F]

Prereq: Level at least 2B Systems Design Engineering.

SYDE 223 LAB,LEC,TUT 0.50

Course ID: 008957

Data Structures and Algorithms

Algorithms and Data Structures emphasizes the following topics: structured software design, data structures, abstract data types, recursive algorithms, algorithm analysis and design, sorting and searching, hashing, problem-solving strategies and NP-completeness. [Offered: W]

Prereq: (2A Systems Design Engineering) or Computer Engineering Option.

Antireq: BME 122, CS 240, ECE 250, MTE 140

SYDE 252 LEC,TUT 0.50

Course ID: 008945

Linear Systems and Signals

Models and analysis of linear systems. Discrete time systems, continuous time systems; difference and differential equations; impulse and frequency response. Complex frequency, functions of complex variables, transform domain techniques: Z transforms; Fourier analysis, Laplace transform. Transfer functions and frequency response, frequency domain analysis of linear systems; sampling theory, stability, and linear filters. [Offered: F, S]

Prereq: Level at least 2B Systems Design Engineering or 2B Mechanical Engineering or 2B Mechatronics Engineering.

Antireq: BME 252

SYDE 261 LEC,TUT 0.50

Course ID: 012861

Design, Systems, and Society

This non-technical course will help students understand how others think about technology and then use this knowledge to make better choices when designing, specifying, choosing and implementing technology. The course includes topics such as: meanings of design and their implications; designed in/designed out analysis; reductionism and integration in design; the limits of objective thinking; alternate ways to define function; content and context; "we/me/them/it" analysis; redefining what constitutes acceptable technology; learning from the margins; reading design and understanding system boundaries as being defined by what we do rather than what we say. [Offered: W]

Prereq: 2A Systems Design Engineering.

Antireq: STV 202

SYDE 262 LEC,TUT 0.50

Course ID: 008958

Engineering Economics of Design

This course examines a variety of economic factors in Engineering and how they impact design. Topics include business plans, price and output decisions, choosing among alternative inputs, production processes, evaluating alternative investments, equipment service life and depreciation, new products. [Offered: F]

Prereq: 2B Systems Design Engineering.

Antireq: BME 364, MSCI 261

SYDE 283 LEC,TUT 0.50

Course ID: 008950

Physics 3 (Electricity, Magnetism and Optics)

Introduction to the fundamental laws of electricity, magnetism and optics; electric fields, voltage, resistance, current, properties of conductors and semiconductors, capacitance, properties of dielectrics, magnetic fields, Faraday's Law and inductance, properties of magnetic materials; electromagnetic waves and the nature of light, geometrical optics: reflection and refraction, physical optics: interference and diffraction. [Offered: W]

Prereq: 2A Systems Design Engineering.

Antireq: BME 386

SYDE 285 LEC,TUT 0.50

Course ID: 008936

Materials Chemistry

The course will present how the fundamentals of chemistry are applied to materials science and engineering. Concepts such as chemical bonding, crystal structure, phase diagram, redox reaction, and electrochemistry will be introduced in the context of materials science. Properties, processing and structure of metals, semiconductors, polymers, ceramic, nanomaterials and biomaterials will be presented. [Offered: W]

Prereq: 2A Systems Designs Engineering.

Antireq: BME 282

SYDE 286 LEC,TUT 0.50

Course ID: 008948

Mechanics of Deformable Solids

Introduction to mechanical response of materials and stress-strain relationship. Behaviour of prismatic members in tension, compression, shear, bending and torsion. Shear-force and bending-moment diagrams. Introduction to instability. [Offered: F]

Prereq: Level at least 2A Systems Design Engineering.

Antireq: BME 281, CIVE 204, ME 219

SYDE 292 LEC,TUT 0.50

Course ID: 008952

Circuits, Instrumentation, and Measurements

Active and passive circuit elements, Kirchhoff's laws, mesh and nodal circuit analysis, principle of superposition; step response of first and second order networks; sinusoidal steady state analysis using complex impedance phasors; input-output relationships, transfer functions and frequency response of linear systems; operational amplifiers, operational amplifier circuits using negative or positive feedback; diodes, operational amplifier circuits using diodes; analog signal detection, conditioning and conversion systems; transducers, difference and instrumentation amplifiers, active filters, A/D and D/A conversion. [Offered: F]

Prereq: (2B Systems Design Engineering) or Mechatronics Option.

Antireq: BME 392

SYDE 292L LAB 0.25

Course ID: 012859

Circuits, Instrumentation, and Measurements Laboratory

Laboratory experiments for students taking SYDE 292. [Offered: F]

Prereq: 2B Systems Design Engineering.

Antireq: BME 392L

SYDE 300s

SYDE 301 SEM 0.00

Course ID: 009345

Seminar

Systems Design third year students will meet with a faculty member designated as their class professor. Performance in assignments, conceptual difficulties with courses, interrelation of coursework, later work and engineering practice will be discussed. Non-credit course. [Offered: S]

Prereq: 3A Systems Design Engineering

SYDE 302 SEM 0.00

Course ID: 009346

Seminar

Systems Design third year students will meet with a faculty member designated as their class professor. Performance in assignments, conceptual difficulties with courses, interrelation of coursework, later work and engineering practice will be discussed. Non-credit course. [Offered: W]

Prereq: 3B Systems Design Engineering

SYDE 311 LEC,TUT 0.50

Course ID: 008953

Advanced Engineering Math 2

Series solutions of ordinary differential equations: Bessel functions, orthogonal functions, Fourier expansions and integral, Legendre polynomials, Sturm-Liouville systems. Partial differential equations: parabolic, hyperbolic and elliptic equations, numerical methods. Numerical integration: Gaussian quadrature, Runge-Kutta methods. Nonlinear systems: qualitative analysis, phase plane, Newton-Raphson method. [Offered: S]

Prereq: 3A Systems Design Engineering

SYDE 312 LEC,TUT 0.50

Course ID: 008954

Applied Linear Algebra

Vector spaces, linear independence, linear maps and matrix representations. Inner product spaces and orthogonality. Gram-Schmidt algorithm and orthogonal projection. Interpolation and curve-fitting. Eigenvalues and eigenvectors, diagonalization, singular value decomposition. Applications and numerical methods. [Offered: W]

Prereq: 3B Systems Design Engineering

SYDE 322 LEC,TUT 0.50

Course ID: 008943

Software Design

Software requirements specification; software architecture; design patterns; software testing and quality assurance; software maintenance; design of efficient algorithms and methods for their analysis, mathematical algorithms, string processing algorithms, geometrical algorithms, exhaustive search and traversal techniques, introduction to lower bound theory and NP-completeness. Case studies and engineering examples. [Offered: W]

Prereq: BME 122 or CS 240 or ECE 250 or MTE 140 or SYDE 223; Level at least 3A Biomedical Engineering or Level at least 3B Systems Design Engineering

SYDE 332 LEC,TUT 0.50

Course ID: 013382

Introduction to Complex Systems

The overwhelming majority of societal and ecological issues of pressing importance are complex systems: nonlinear interacting systems poorly characterized by linear analyses and Gaussian statistics. This course introduces the mathematics needed to understand such interactions, including nonlinear dynamics, critical and bifurcation behaviours, large-scale systems, power-law distributions, and statistical inference. The mathematical methods will be motivated by a set of case studies comprised of pressing large-scale interconnected problems such as global warming, energy shortages, desertification, overpopulation, poverty and economic instability, to be investigated from a systems engineering perspective that will connect the mathematical analyses to real-world examples. [Offered: W]

Prereq: Level at least 3A Biomedical Engineering or Level at least 3B Systems Design Engineering

SYDE 334 LEC,TUT 0.50

Course ID: 008961

Applied Statistics

Review of basic Normal theory, t, chi-squared, and F distributions. Simple linear regression. Lack of fit. Analysis of variance. Multiple linear regression, variable selection techniques, indicator variables, diagnostics. Brief introduction to non-linear regression, factorial experimentation. [Offered: W]

Prereq: BME 213 or SYDE 212 (with minimum grade of 70%); Level at least 3A Biomedical Engineering or Level at least 3B Systems Design Engineering.

Antireq: STAT 331, 371.

SYDE 348 LEC,TUT 0.50

Course ID: 010066

User Centred Design Methods

This course approaches the design of tasks, tools, products and systems from a user-centered design perspective. Emphasis is on the human factors and usability methods and techniques that can and should be applied throughout the iterative design process. While design issues pertaining to human-computer interaction are discussed, the methods presented can be applied to the design of almost any user interface. Major topics include: user research methods for usability and user experience, inspection methods, user testing, applied statistical analysis. [Offered: W]

Prereq: (Level at least 3A Biomedical Engineering) or (Level at least 3B Systems Design Engineering) or (Level at least 4A Mechatronics Engineering or Biomechanics Option or Ergonomics and Injury Prevention Minor).

Antireq: CS 449, MSCI 343

SYDE 351 LEC,TUT 0.50

Course ID: 008964

Systems Models 1

Introduction to systems modelling and analysis. Graph theoretic models and formulation of system equations. State space formulation and solution. Time and frequency domain solutions. Application to engineering systems. [Offered: W, S]

Prereq: 3A Systems Design Engineering or (MATH 115 and MTE 202 and level at least 3A Mechatronics Engineering)

SYDE 352 LEC,TUT 0.50

Course ID: 008965

Introduction to Control Systems

Classical and state space representations of control systems. Stability, controllability, observability and sensitivity. Routh-Hurwitz and root-locus methods. Frequency domain behaviour, Bode plots, Nyquist stability criteria. Pole placement, PID, phase-lead and phase-lag controllers.(labs alt. weeks) [Offered: W]

Prereq: 3B Systems Design Engineering.

Antireq: BME 353

SYDE 352L LAB 0.25

Course ID: 012860

Control Systems Laboratory

Laboratory experiments for students taking SYDE 352. [Offered: W]

Prereq: 3B Systems Design Engineering.

Antireq: BME 353L

SYDE 361 LAB,LEC,TUT 0.50

Course ID: 008968

Engineering Design

The methodology of design: defects, needs and the problem definition; criteria and generation of alternative solutions; feasibility analysis; optimization; selection, implementation and solution. The lecture material is supplemented by a term long design project done in small groups. [Offered: S]

Prereq: 3A Systems Design Engineering.

Antireq: BME 361

SYDE 362 LAB,LEC 0.50

Course ID: 008969

Systems Design Workshop 1

Engineering design project course where students work in small groups applying the principles of engineering problem solving, systems analysis, simulation, optimization and design to a problem of their own choosing. Students have individual project supervisors as well as an overall coordinator who provides the framework for the term projects. [Offered: W]

Prereq: 3B Systems Design Engineering.

Antireq: BME 362

SYDE 372 LEC,TUT 0.50

Course ID: 008972

Introduction to Pattern Recognition

Pattern recognition as a process of data analysis. Pattern features as components in a random vector representation. Classification techniques: distance measures in feature space, probabilistic (Bayesian) decision theory, linear discriminants. Clustering and feature extraction. Applications: optical character recognition, speech recognition, industrial robot vision, medical diagnosis, remote sensing and satellite image analysis, fault detection and diagnosis in complex systems such as nuclear reactors. [Offered: W]

Prereq: (Level at least 3A Biomedical Engineering) or (Level at least 3B Systems Design Engineering) or (Level at least 4A Mechatronics Engineering) or Mechatronics Option or Biomechanics Option

SYDE 381 LEC,TUT 0.50

Course ID: 008973

Thermodynamics

An introductory course in engineering thermodynamics structured for students in Systems Design. Classical thermodynamics is presented as the systematic study of energy; its use, degradation, and waste. Introduction to heat transfer by conduction, convection, and radiation. Applications focus on problems of energy and environment. The concepts of statistical thermodynamics are introduced. [Offered: S]

Prereq: 3A Systems Design Engineering.

Antireq: BME 384, ECE/MTE 309, ME 250

SYDE 383 LAB,LEC,TUT 0.50

Course ID: 008949

Fluid Mechanics

Fundamental concepts in systems involving fluid flow. Basic treatment of statics, kinematics and dynamics of fluids. Conservation of mass, momentum and energy for a control volume. Dimensional analysis and similarity. Flow in pipes and channels. Brief introduction to boundary layers, lift and drag, ideal and compressible flow. [Offered: S]

Prereq: Level at least 3A Systems Design Engineering.

Antireq: BME 384, ME 351

SYDE 384 LEC,TUT 0.50

Course ID: 013384

Biological and Human Systems

In this course, students will become familiar with the physiology and anatomical structures of the human body. The structure, functions and properties of the major biological systems (musculoskeletal, nervous, and cardiovascular) will be presented in relation to modeling biological systems and the design of biomedical devices (imaging, assistive and diagnostic). Various aspects of pathology and how they influence measurements will also be introduced. [Offered: W]

Prereq: (Level at least 3B Engineering) or (Level at least 3B Honours Physics (Biophysics specialization) and permission of instructor).

Antireq: BIOL 273, BME 284

SYDE 400s

SYDE 401 SEM 0.00

Course ID: 009347

Seminar

Systems Design fourth-year students will meet with a faculty member designated as their class professor. Conceptual difficulties, the interrelation of course work and engineering practice will be discussed. Non-credit course. [Offered: F]

Prereq: 4A Systems Design Engineering

SYDE 402 SEM 0.00

Course ID: 009348

Seminar

Systems Design fourth-year students will meet with a faculty member designated as their class professor. Conceptual difficulties, the interrelation of course work and engineering practice will be discussed. Non-credit course. [Offered: W]

Prereq: 4B Systems Design Engineering

SYDE 411 LEC,TUT 0.50

Course ID: 013146

Optimization and Numerical Methods

Root-finding methods. Linear programming, simplex and interior-point methods. Local and global optimization methods. Constrained optimization. Multiobjective and multidisciplinary design optimization. [Offered: F]

Prereq: 4A Systems Design Engineering.

Antireq: BME 411

SYDE 461 LAB,LEC 0.50

Course ID: 008993

Systems Design Workshop 2

The first half of a two term engineering design project continuing the systems design workshop sequence. An interim progress report is presented at the end of the first term. [Offered: F]

Prereq: 4A Systems Design Engineering.

Antireq: BME 461

SYDE 462 LAB,LEC 0.50

Course ID: 008994

Systems Design Workshop 3

The concluding half of the fourth year Systems Design Workshop. [Offered: W]

Prereq: 4B Systems Design Engineering.

Antireq: BME 462

SYDE 500s

SYDE 522 LEC,TUT 0.50

Course ID: 008981

Machine Intelligence

The objective of this course is to introduce the students to current intelligent system concepts. An overview of different learning schemes will be provided, including: Decision Tree, Bayesian, Inductive, Analytical and Rule-based Learning. The main focus of the course will be on Neural Nets, Genetic Algorithms and Reinforcement Learning. [Offered: W]

Prereq: One of BME 122, CS 240, ECE 250, MTE 140, SYDE 223 and Biomedical Engineering or Systems Design Engineering or level at least 4A Mechatronics Engineering or Mechatronics Option or Computer Engineering Option.

Antireq: ECE 457A

SYDE 531 LEC,TUT 0.50

Course ID: 013383

Design Optimization Under Probabilistic Uncertainty

Optimization methods for real world problems have to deal with probabilistic uncertainty either due to data uncertainty or manufacturing uncertainty or both. Maximizing the expected value of the objective function subject to reliability (or risk) constraints is commonly used in such design or decision-making problems. Common methods used are stochastic programming, stochastic dynamic programming, chance-constraints, yield optimization and tolerance design. Example applications are selected from water management, energy systems, financial engineering, and manufacturing. [Offered: W]

Prereq: Level at least 3A Biomedical Engineering or Level at least 3B Systems Design Engineering

SYDE 533 LEC,TUT 0.50

Course ID: 009003

Conflict Resolution

Formal methods for studying engineering decision making problems involving multiple participants and multiple objectives. Topics include the graph model for conflict resolution, normal game form, metagame analysis, games with misperceptions, preference elicitation, human behaviour under conflict, evolution of a conflict, decision making under uncertainty, sensitivity analyses, multiple criteria decision analysis, group decision and negotiation, coalition analysis, decision support systems, and real-world applications of the foregoing concepts. [Offered: F]

SYDE 542 LEC,TUT 0.50

Course ID: 010067

Interface Design

This course focuses on the design of computer interfaces for simple to complex systems. Examples of applications are used to illustrate theoretical approaches. Main topics include: forms of visual display; auditory display and soft controls; context, navigation and layout; development techniques; design for engagement. [Offered: W]

Prereq: One of BME 162 or SYDE 162 or 348 or 543; Biomedical Engineering or Systems Design Engineering or (level at least 4A Mechatronics Engineering) or Ergonomics and Injury Prevention Minor

SYDE 543 LEC,TUT 0.50

Course ID: 009006

Cognitive Ergonomics

This course focuses on the role engineering psychology research plays in design of the information displays and devices associated with simple and complex cognitive tasks. Main topics include: signal detection and target location tasks, navigation tasks, training tasks, communication tasks, human error, stress and mental workload, supervisory control, and situational awareness. [Offered: F]

Prereq: Biomedical Engineering or Systems Design Engineering or (Level at least 4A Mechatronics Engineering) or Biomechanics Option or Ergonomics and Injury Prevention Minor

SYDE 544 LEC,TUT 0.50

Course ID: 008988

Biomedical Measurement and Signal Processing

This course develops an understanding of biomedical measurements through the examination of electromyographic (EMG), and electroencephalographic (EEG), electrocardiographic (ECG) signals. Measurement of human-body position, force, and pressure, and related instrumentation will also be presented. Signal processing techniques will be discussed in the context of extraction and application of useful biomedical signals. [Offered: W]

Prereq: BIOL 273 or BME 284 or SYDE 384; Level at least 3A Biomedical Engineering or Level at least 3B Systems Design Engineering or Level at least 3B Honours Life Physics (Biophysics Specialization) and permission of the instructor

SYDE 552 LEC,TUT 0.50

Course ID: 014290

Computational Neuroscience

Introduction to quantitative principles in the analysis of neurophysiological systems. Biophysics of excitable membranes. Encoding of sensory information in neural spiking activity. Bayesian models in perception and motor control. Models of synaptic plasticity, learning, and memory. [Note for Systems Design Engineering students: It is recommended that one of BIOL 273, 376, 377 or BME 284 or SYDE 384 be taken before or concurrently with SYDE 552. Offered: W]

Prereq: Level at least 3A Biomedical Engineering or Level at least 3B Systems Design Engineering (Cross-listed with BIOL 487)

SYDE 553 LEC,TUT 0.50

Course ID: 009010

Advanced Dynamics

Newtonian and Eulerian formulation of particle and rigid body kinematics and dynamics. Energy (Lagrangian and Hamiltonian) formulations of particle and rigid body dynamics; generalized co-ordinates, generalized forces, holonomic constraints, Lagrange multipliers. [Offered: F]

Prereq: (Level at least 3A Biomedical Engineering) or (Level at least 3B Systems Design Engineering) or (Level at least 4A Mechatronics Engineering) or Mechatronics Option or Biomechanics Option

SYDE 556 LEC,TUT 0.50

Course ID: 012084

Simulating Neurobiological Systems

This course develops and applies a general framework for understanding neural computation in the context of recent advances in theoretical and experimental neuroscience. Particular emphasis is placed on understanding representation, nonlinear computation, and dynamics in real neurobiological systems. Students will apply signal processing, control theory, linear algebra, probability theory, and similar quantitative tools for the purpose of modelling sensory, motor, and cognitive systems. Topics covered include single neuron function, neural coding, neural dynamics, attractor networks, learning, statistical inference, locomotion, working memory, etc. Familiarity with neural systems is helpful but not essential. [Offered: W]

Prereq: BME 252 or SYDE 252

Image Processing

Beginning with a discussion of quantitative models of imaging systems, this course moves on to apply methods of linear systems theory and signal processing to image processing. Simple spatial domain techniques as well as spatial frequency domain methods and digital filter design for image enhancement and restoration are discussed. The key methods and problems are surveyed: edge detection, image denoising, image segmentation, image enhancement, image compression, image registration, and feature detection. Applications to machine vision, remote sensing, and medical imaging will be emphasized. [Offered: F]

Prereq: BME 252 or SYDE 252; (Level at least 3A Biomedical Engineering) or (Level at least 3B Systems Design Engineering) or (Level at least 4A Mechatronics Engineering) or Mechatronics Option or Biomechanics Option

UNIVERSITY

UNIV 100s

UNIV 101 LEC,SEM 0.50

Course ID: 014171

Strategies and Skills for Academic Success

The goal for this course is to help students become successful independent learners. It takes a modeled approach to teaching learning strategies to students who struggle to meet the demands of a university curriculum. In the lectures, students will be taught various learning strategies that they will be able to apply to successfully meet the demands of their other courses. Students will then apply these modeled strategies in their other courses during a weekly application seminar. Students will be expected to demonstrate their understanding of the material through a variety of assignments.

[Note: A grade of at least 60% is required to pass this course.]

Department Consent Required

VISUAL CULTURE

Notes

1. For studio, art history, film, and media courses please see *FINE (Fine Arts)* or contact the undergraduate co-ordinator prior to each term.
2. For a full list of approved courses in Visual Culture, please consult the [FINE \(Fine Arts\) course descriptions](#) or consult the Visual Culture co-ordinator.

VCULT 100s

VCULT 100 LAB,LEC,TUT 0.50

Course ID: 013621

World Cinema and Visual Culture

Introduction to film analysis via national cinemas and their worldwide reception, taking into account the role of new technologies. This course acknowledges not only the importance of multiple languages and cultures on the planet today but also the rapidly growing international contexts, complicated chains of production and distribution, and vastly different cultures of spectatorship.

[Note: All films will be shown with subtitles; no second language expertise is required.]

(Cross-listed with FINE 102)

VCULT 101 LEC,TUT 0.50

Course ID: 013622

Art History and Visual Culture

This course takes a case study approach to examining the role of the art object as a means of communication within the history of visual culture. Particular attention will also be paid to the unique properties of a range of diverse media, both traditional and new.

*Antireq: FINE 110**(Cross-listed with FINE 101)***VCULT 200s****VCULT 200 LEC 0.50**

Course ID: 013623

Visual Studies Across the Discipline

Weekly lectures by visiting faculty introduce students to how visual studies are conducted across and between the disciplines. Recognizing the vastness of the global study of visual culture, this course reinforces how, despite the diversity of media analyzed, various disciplines share related approaches and theories.

*Prereq: Level at least 2A***VCULT 300s****VCULT 300 LEC,SEM 0.50**

Course ID: 013624

Visual Culture in Theory

An advanced introduction to theorizing in art and media, highlighting the distinctive role of visual representation in cultural experience and the varied modes of thinking about images that visual representation has engendered. Readings will be drawn from several disciplines including art history, film and literary studies, media studies, and philosophy.

*Prereq: VCULT 200; Level at least 3A***VCULT 400s****VCULT 400 LAB,SEM 0.50**

Course ID: 015177

Visual Culture Seminar

This fourth-year honours seminar leads students through a variety of topics in the theory and history of visual culture. Through class discussions, readings, and presentations, students will engage in an interdisciplinary dialogue around what constitutes visual culture today and how to analyze it.

*Prereq: VCULT 300; Level at least 3B Visual Culture Honours students.**Antireq: FINE 490, 496***VCULT 401 LAB,SEM 0.50**

Course ID: 015178

Advanced Visual Culture Seminar

This fourth-year level advanced visual culture seminar is designed to focus student research skills toward the

development of a thesis project.

Department Consent Required

Prereq: VCULT 400.

Antireq: FINE 491, 497

WORK - TERM REPORT

For engineering work-term report questions, please contact your home department.

WKRPT 00s

WKRPT 3 PRJ 0.13

Course ID: 014274

Work-term Report

A work-term report presenting in detail a technical project, activity, or analysis engaged by the student during the work term.

WKRPT 4 PRJ 0.13

Course ID: 014275

Work-term Report

A work-term report presenting in detail a technical project, activity, or analysis engaged by the student during the work term.

WKRPT 100s

WKRPT 100 PRJ 0.13

Course ID: 009046

Work-term Report

A work-term report presenting in detail a technical project, activity, or analysis engaged by the student normally during the preceding work term. The report is evaluated on the basis of written communication skills and technical proficiency in the subject matter as demonstrated by the report. Work-term reports are required courses for the degree but their grades are not included in the average. However, failed work-term report evaluations may delay a student's progress as indicated in the Examinations and Promotions section of this calendar. Details regarding the evaluation of the work-term reports can be obtained from the student's program advisor.

Prereq: Level at least 1B Chemical, Civil, Environmental, Geological Management, Mechanical, Mechatronics, Nanotechnology, Software, or Systems Design Engineering.

Antireq: WKRPT 101

WKRPT 100M PRJ 0.25

Course ID: 015101

Work-term Report

A work-term report presenting in detail a technical project, activity, or analysis engaged by the student normally during the preceding work term. The report is evaluated on the basis of written communication skills and technical proficiency in the subject matter as demonstrated by the report. Work-term reports are required courses for the degree but their grades are not included in the average.

[Note: Credit for WKRPT 100M is granted upon the successful completion of the report component of PD 2 and no additional work is required for WKRPT 100M.]

Department Consent Required

Prereq: Level at least 1B; Bachelor of Mathematics, Bachelor of Computer Science or Bachelor of Computing & Financial Management students only

WKRPT 101 PRJ 0.13

Course ID: 013195

Work-term Report

A work-term report presenting in detail a technical project, activity, or analysis engaged by the student normally during the preceding work term. The report is evaluated on the basis of written communication skills and technical proficiency in the subject matter as demonstrated by the report. Work-term reports are required courses for the degree but their grades are not included in the average. However, failed work-term report evaluations may delay a student's progress as indicated in the Examinations and Promotions section of this calendar. Details regarding the evaluation of the work-term reports can be obtained from the student's program advisor.

[Note: This course is considered as DRNC]

Prereq: Level at least 1B Computer Engineering or Electrical Engineering.

Antireq: WKRPT 100

WKRPT 103 PRJ 0.25

Course ID: 014336

Work-term Report

Students will initiate an on-line record and assessment of their educational and work experience, tracked against two sets of criteria, the Student Performance Criteria established by the Canadian Architectural Certification Board and the Canadian Experience Record used by the provincial licensing bodies. The work-term reports are required courses for the degree but their grades are not included in the average. However, failed work-term report evaluations may delay a student's progress as indicated in the Examinations and Promotions section of this calendar. Details regarding the evaluation of the work-term reports can be obtained from the student's program advisor.

[Note: This course is considered as DRNA]

Prereq: Level at least 3A Architecture students

WKRPT 200s

WKRPT 200 PRJ 0.13

Course ID: 009047

Work-term Report

A work-term report presenting in detail a technical project, activity, or analysis engaged by the student normally during the preceding work term. The report is evaluated on the basis of written communication skills and technical proficiency in the subject matter as demonstrated by the report. Work-term reports are required courses for the degree but their grades are not included in the average. However, failed work-term report evaluations may delay a student's progress as indicated in the Examinations and Promotions section of this calendar. Details regarding the evaluation of the work-term reports can be obtained from the student's program advisor.

[Note: This course is considered as DRNA]

Prereq: Level at least 2B Biomedical, Chemical, Civil, Environmental, Geological, Management, Mechanical, Mechatronics, Nanotechnology, Software, or Systems Design Engineering.

Antireq: MSCI 391, NE 250, WKRPT 201

WKRPT 200A PRJ 0.13

Course ID: 015312

Arts Work-term Report 2

A work-term report presenting in detail a technical project, activity, or analysis engaged by the student

normally during the preceding work term. The report is evaluated on the basis of written communication skills and technical proficiency in the subject matter as demonstrated by the report. Work-term reports are required courses for the degree but their grades are not included in the average. However, failed work-term report evaluations may delay a student's progress as indicated in the Examinations and Promotions section of this calendar. Details regarding the evaluation of the work-term reports can be obtained from the student's program advisor.

[Note: This course is offered on a CR/NCR basis.]

Department Consent Required

Prereq: PD 12; Level at least 2A; Bachelor of Arts or Bachelor of Accounting and Financial Management students only

WKRPT 200E PRJ 0.13

Course ID: 015370

Environment Work-term Report 2

A reflection exercise through which students document the linkages between their work-term experiences and progress towards achieving their academic, professional and personal goals. The documentation can be presented in various forms, consistent with the Faculty's guidelines. The report is evaluated on the basis of both the quality of presentation and strength of reflection. Work-term reports are required courses for the degree but their grades are not included in the average. However, failed work-term report evaluations may delay a student's progress as indicated in the Examinations and Promotions section of this calendar. Details regarding the evaluation of the work-term reports can be obtained from the student's program advisor.

Department Consent Required

Prereq: PD12; Level at least 2A, Bachelor of Environmental Studies Co-op

WKRPT 200H PRJ 0.13

Course ID: 015401

Applied Health Sciences Work-term Report 2

A work-term report, presenting in detail, a technical or reflective review of a project, activity, or analysis, is normally undertaken by the student during the preceding work term. The report is evaluated on the basis of written communication skills and technical proficiency in the subject matter as demonstrated by the report. Work-term reports are required courses for a co-op designation but their grades are not included in the student's average. Failed work-term report evaluations may delay a student's progress.

Department Consent Required

Prereq: PD 12; Level at least 2A; Applied Health Sciences students only

WKRPT 200M PRJ 0.13

Course ID: 015102

Work-term Report

A work-term report presenting in detail a technical project, activity, or analysis engaged by the student normally during the preceding work term. The report is evaluated on the basis of written communication skills and technical proficiency in the subject matter as demonstrated by the report. Work-term reports are required courses for the degree but their grades are not included in the average.

Department Consent Required

Prereq: Level at least 2A; Bachelor of Mathematics, Bachelor of Computer Science or Bachelor of Computing and Financial Management students only

WKRPT 200S PRJ 0.13

Course ID: 015363

Science Work-Term Report 2

Students submit a detailed work-term report based on a technical project, activity or analysis they conducted during their work term. Work-term reports are required courses for the co-op designation. Submitted grades are not included in any averages. Detailed guidelines for work-term reports are posted on the Faculty website.

[Note: PD 11 counts as work-term report 1]

Department Consent Required

WKRPT 201 PRJ 0.13

Course ID: 013196

Work-term Report

A work-term report presenting in detail a technical project, activity, or analysis engaged by the student normally during the preceding work term. The report is evaluated on the basis of written communication skills and technical proficiency in the subject matter as demonstrated by the report. Work-term reports are required courses for the degree but their grades are not included in the average. However, failed work-term report evaluations may delay a student's progress as indicated in the Examinations and Promotions section of this calendar. Details regarding the evaluation of the work-term reports can be obtained from the student's program advisor.

[Note: This course is considered as DRNC]

Prereq: Level at least 2A Computer Engineering or Electrical Engineering.

Antireq: MSCI 391, NE 250, WKRPT 200

WKRPT 203 PRJ 0.25

Course ID: 014337

Work-term Report

Students will complete a case study analysis of the firm in which they are employed. Work-term reports are required courses for the degree but their grades are not included in the average. However, failed work-term report evaluations may delay a student's progress as indicated in the Examinations and Promotions section of this calendar. Details regarding the evaluation of the work-term reports can be obtained from the student's program advisor.

[Note: This course is considered as DRNA]

Prereq: Level at least 3B Architecture students

WKRPT 300s

WKRPT 300 PRJ 0.13

Course ID: 009048

Work-term Report

A work-term report presenting in detail a technical project, activity, or analysis engaged by the student normally during the preceding work term. The report is evaluated on the basis of written communication skills and technical proficiency in the subject matter as demonstrated by the report. Work-term reports are required courses for the degree but their grades are not included in the average. However, failed work-term report evaluations may delay a student's progress as indicated in the Examinations and Promotions section of this calendar. Details regarding the evaluation of the work-term reports can be obtained from the student's program advisor.

[Note: This course is considered as DRNA]

Prereq: Level at least 3A Biomedical, Chemical, Civil, Environmental, Geological, Management, Mechanical, Mechatronics, Nanotechnology, Software, or Systems Design Engineering.

Antireq: MSCI 392, NE 350, WKRPT 301

WKRPT 300A PRJ 0.13

Course ID: 015313

Arts Work-term Report 3

A work-term report presenting in detail a technical project, activity, or analysis engaged by the student normally during the preceding work term. The report is evaluated on the basis of written communication skills and technical proficiency in the subject matter as demonstrated by the report. Work-term reports are required courses for the degree but their grades are not included in the average. However, failed work-term report

evaluations may delay a student's progress as indicated in the Examinations and Promotions section of this calendar. Details regarding the evaluation of the work-term reports can be obtained from the student's program advisor.

[Note: This course is offered on a CR/NCR basis.]

Department Consent Required

Prereq: WKRPT 200A; Level at least 2B; Bachelor of Arts or Bachelor of Accounting and Financial Management students only

WKRPT 300E PRJ 0.13

Course ID: 015371

Environment Work-term Report 3

A reflection exercise through which students document the linkages between their work-term experiences and progress towards achieving their academic, professional and personal goals. The documentation can be presented in various forms, consistent with the Faculty's guidelines. The report is evaluated on the basis of both the quality of presentation and strength of reflection. Work-term reports are required courses for the degree but their grades are not included in the average. However, failed work-term report evaluations may delay a student's progress as indicated in the Examinations and Promotions section of this calendar. Details regarding the evaluation of the work-term reports can be obtained from the student's program advisor.

Department Consent Required

Prereq: WKRPT 200E; Level at least 2B; Bachelor of Environmental Studies Co-op

WKRPT 300H PRJ 0.13

Course ID: 015402

Applied Health Sciences Work-term Report 3

A work-term report, presenting in detail, a technical or reflective review of a project, activity, or analysis, is normally undertaken by the student during the preceding work term. The report is evaluated on the basis of written communication skills and technical proficiency in the subject matter as demonstrated by the report. Work-term reports are required courses for a co-op designation but their grades are not included in the student's average. Failed work-term report evaluations may delay a student's progress.

Department Consent Required

Prereq: WKRPT 200H; Level at least 2B; Applied Health Sciences students only

WKRPT 300M PRJ 0.13

Course ID: 015103

Work-term Report

A work-term report presenting in detail a technical project, activity, or analysis engaged by the student normally during the preceding work term. The report is evaluated on the basis of written communication skills and technical proficiency in the subject matter as demonstrated by the report. Work-term reports are required courses for the degree but their grades are not included in the average.

Department Consent Required

Prereq: WKRPT 200M; Level at least 2B; Bachelor of Mathematics, Bachelor of Computer Science or Bachelor of Computing and Financial Management students only

WKRPT 300S PRJ 0.13

Course ID: 015364

Science Work-Term Report 3

Students submit a detailed work-term report based on a technical project, activity or analysis they conducted during their work term. Work-term reports are required courses for the co-op designation. Submitted grades are not included in any averages. Detailed guidelines for work-term reports are posted on the Faculty website.

Department Consent Required

Prereq: WKRPT 200S; Prereq: All BSc Honours Co-operative Science Programs

WKRPT 301 PRJ 0.13

Course ID: 013197

Work-term Report

A work-term report presenting in detail a technical project, activity, or analysis engaged by the student normally during the preceding work term. The report is evaluated on the basis of written communication skills and technical proficiency in the subject matter as demonstrated by the report. Work-term reports are required courses for the degree but their grades are not included in the average. However, failed work-term report evaluations may delay a student's progress as indicated in the Examinations and Promotions section of this calendar. Details regarding the evaluation of the work-term reports can be obtained from the student's program advisor.

[Note: This course is considered as DRNC]

Prereq: WKRPT 201; Level at least 2B Computer Engineering or Electrical Engineering.

Antireq: MSCI 392, NE 350, WKRPT 300

WKRPT 303 PRJ 0.25

Course ID: 014338

Work-term Report

Students will complete an on-line record and assessment of their educational and work experience, tracked against two sets of criteria, the Student Performance Criteria established by the Canadian Architectural Certification Board and the Canadian Experience Record used by the provincial licensing bodies. Work-term reports are required courses for the degree but their grades are not included in the average. However, failed work-term report evaluations may delay a student's progress as indicated in the Examinations and Promotions section of this calendar. Details regarding the evaluation of the work-term reports can be obtained from the student's program advisor.

[Note: This course is considered as DRNA]

Prereq: Level at least 4A Architecture

WKRPT 400s**WKRPT 400 PRJ 0.13**

Course ID: 009049

Work-term Report

A work-term report presenting in detail a technical project, activity, or analysis engaged by the student normally during the preceding work term. The report is evaluated on the basis of written communication skills and technical proficiency in the subject matter as demonstrated by the report. Work-term reports are required courses for the degree but their grades are not included in the average. However, failed work-term report evaluations may delay a student's progress as indicated in the Examinations and Promotions section of this calendar. Details regarding the evaluation of the work-term reports can be obtained from the student's program advisor.

[Note: This course is considered as DRNA]

Prereq: Level at least 3B Biomedical, Chemical, Civil, Environmental, Geological, Management, Mechanical, Mechatronics, Nanotechnology, Software, or Systems Design Engineering.

Antireq: MSCI 491, NE 450, WKRPT 401

WKRPT 400A PRJ 0.13

Course ID: 015314

Arts Work-term Report 4

A work-term report presenting in detail a technical project, activity, or analysis engaged by the student normally during the preceding work term. The report is evaluated on the basis of written communication skills and technical proficiency in the subject matter as demonstrated by the report. Work-term reports are required courses for the degree but their grades are not included in the average. However, failed work-term report evaluations may delay a student's progress as indicated in the Examinations and Promotions section of this calendar. Details regarding the evaluation of the work-term reports can be obtained from the student's program advisor.

[Note: This course is offered on a CR/NCR basis.]

Department Consent Required

Prereq: WKRPT 300A; Level at least 3A; Bachelor of Arts or Bachelor of Accounting and Financial Management students only

WKRPT 400E PRJ 0.13

Course ID: 015372

Environment Work-term Report 4

A reflection exercise through which students document the linkages between their work-term experiences and progress towards achieving their academic, professional and personal goals. The documentation can be presented in various forms, consistent with the Faculty's guidelines. The report is evaluated on the basis of both the quality of presentation and strength of reflection. Work-term reports are required courses for the degree but their grades are not included in the average. However, failed work-term report evaluations may delay a student's progress as indicated in the Examinations and Promotions section of this calendar. Details regarding the evaluation of the work-term reports can be obtained from the student's program advisor.

Department Consent Required

Prereq: WKRPT 300E; Level at least 3A; Bachelor of Environmental Studies Co-op

WKRPT 400H PRJ 0.13

Course ID: 015403

Applied Health Sciences Work-term Report 4

A work-term report, presenting in detail, a technical or reflective review of a project, activity, or analysis, is normally undertaken by the student during the preceding work term. The report is evaluated on the basis of written communication skills and technical proficiency in the subject matter as demonstrated by the report. Work-term reports are required courses for a co-op designation but their grades are not included in the student's average. Failed work-term report evaluations may delay a student's progress.

Department Consent Required

Prereq: WKRPT 300H; Level at least 3A; Applied Health Sciences students only

WKRPT 400M PRJ 0.13

Course ID: 015104

Work-term Report

A work-term report presenting in detail a technical project, activity, or analysis engaged by the student normally during the preceding work term. The report is evaluated on the basis of written communication skills and technical proficiency in the subject matter as demonstrated by the report. Work-term reports are required courses for the degree but their grades are not included in the average.

Department Consent Required

Prereq: WKRPT 300M; Level at least 3A; Bachelor of Mathematics, Bachelor of Computer Science or Bachelor of Computing and Financial Management students only

WKRPT 400S PRJ 0.13

Course ID: 015365

Science Work-Term Report 4

Students submit a detailed work-term report based on a technical project, activity or analysis they conducted during their work term. Work-term reports are required courses for the co-op designation. Submitted grades are not included in any averages. Detailed guidelines for work-term reports are posted on the Faculty website.

Department Consent Required

Prereq: WKRPT 300S; Prereq: All BSc Honours Co-operative Science Programs

WKRPT 401 PRJ 0.13

Course ID: 013198

Work-term Report

A work-term report presenting in detail a technical project, activity, or analysis engaged by the student normally during the preceding work term. The report is evaluated on the basis of written communication skills and technical proficiency in the subject matter as demonstrated by the report. Work-term reports are required courses for the degree but their grades are not included in the average. However, failed work-term report evaluations may delay a student's progress as indicated in the Examinations and Promotions section of this calendar. Details regarding the evaluation of the work-term reports can be obtained from the student's program advisor.

[Note: This course is considered as DRNC]

Prereq: WKRPT 301; Level at least 3A Computer Engineering or Electrical Engineering.

Antireq: MSCI 491, NE 450, WKRPT 400

WKRPT 500s

WKRPT 500A PRJ 0.13

Course ID: 015318

Arts Work-term Report 5

A work-term report presenting in detail a technical project, activity, or analysis engaged by the student normally during the preceding work term. The report is evaluated on the basis of written communication skills and technical proficiency in the subject matter as demonstrated by the report. Work-term reports are required courses for the degree but their grades are not included in the average. However, failed work-term report evaluations may delay a student's progress as indicated in the Examinations and Promotions section of this calendar. Details regarding the evaluation of the work-term reports can be obtained from the student's program advisor.

[Note: This course is offered on a CR/NCR basis.]

Department Consent Required

Prereq: WKRPT 400A; Level at least 3B; Bachelor of Accounting and Financial Management students only

WKRPT 500H PRJ 0.13

Course ID: 015404

Applied Health Sciences Work-term Report 5

A work-term report, presenting in detail, a technical or reflective review of a project, activity, or analysis, is normally undertaken by the student during the preceding work term. The report is evaluated on the basis of written communication skills and technical proficiency in the subject matter as demonstrated by the report. Work-term reports are required courses for a co-op designation but their grades are not included in the student's average. Failed work-term report evaluations may delay a student's progress.

Department Consent Required

Prereq: WKRPT 400H; Level at least 3B; Applied Health sciences students only

WOMEN'S STUDIES

WS 100s

WS 101 LEC,TUT 0.50

Course ID: 009029

An Introduction to Women's Studies

This is a survey course that provides an overview of the history of women's rights and struggles in western countries, with a special focus on Canada. The course provides an interdisciplinary focus that includes the impacts of culture, religion, politics and societal values on women's lives. The historical overview concludes with contemporary issues that include race/ethnicity, class, sexuality, body image, and violence.

Also offered Online

WS 102 LEC 0.50

Course ID: 012196

Contemporary Women's Issues in Canada

This course introduces students to contemporary scholarship in the field of Women's Studies. Topics covered include female bodies and representation, aging women, violence against women, women and family, women and work, women in education, women and health, and women and religion.

WS 108E LEC 0.50

Course ID: 005049

Gender and Representation

A study of the ways gender in all its diversity is constructed and gendered experience is expressed in literature, rhetoric, and a variety of media.

(Cross-listed with ENGL 108E)

WS 200s

WS 201 LEC 0.50

Course ID: 009032

Images of Women in Popular Culture

This course examines contemporary images of women and their historical foundations in a range of media, including books, magazines, film, television and the internet. The effects of these images on women's self-esteem and body image, as well as the strategies used to challenge these effects, will also be discussed.

WS 202 LEC 0.50

Course ID: 012301

Women Across Cultures: Canadian and Global Perspectives

The dynamics of gender and their intersection with race, ethnicity, class and sexuality in an increasingly globalized world are the focus of this course. Special emphasis will be given to women in developing world contexts and the lives of women in a multicultural Canada.

WS 205 LEC 0.50

Course ID: 011699

Gender, Culture and Technology

This course highlights the social relations that surround and define a range of technologies from household appliances to the internet. Special emphasis will be given to the different ways and contexts in which men and women understand and experience technology as designers, engineers, producers, and consumers.

WS 206 LEC 0.50

Course ID: 012768

Women and the Law

This course provides an introduction to feminist legal thought with a particular focus on Canadian cases, legislation, law reform, and legal literature. Included is an analysis of the ways in which law contributes to women's legal, social, political, and economic status as well as the manner in which the law is used as a mechanism of social change for women. The intersection of gender with age, race, ethnicity, religion, and class will be addressed.

(Cross-listed with LS 201)

Also offered at St. Jerome's University

WS 207 LEC 0.50

Course ID: 011705

Women and Entrepreneurship

This course examines women's work in North America since the mid-19th century, through to the enormous growth and success of women entrepreneurs in today's society. The final weeks of this course will feature guest speakers, adding a practical component to the course.

[Note: Formerly WS 305]

WS 208E LEC 0.50

Course ID: 005084

Women's Writing

This course explores a range of women's writing and the social and cultural contexts in which they made their voices heard.

(Cross-listed with ENGL 208E)

Also offered at Renison University College

WS 209 LEC 0.50

Course ID: 008588

Gender Relations

An examination of gender relations in Canadian society, including historical changes and the contemporary situation. Emphasis is placed on a consideration of the social construction of gender, the gender structure of institutions, and gender inequality. This course also examines selected issues in contemporary gender relations.

Prereq: SOC 101/101R or 120R

(Cross-listed with SOC 206)

WS 222 LEC 0.50

Course ID: 007253

Gender Issues

Philosophical analysis of issues relating to sex/gender. Questions considered might include the following: What, if anything, is the difference between sex and gender? How much of a role do facts about biology play in our ideas about sex and gender? How many sexes are there? What ethical issues arise for us in virtue of our gender?

(Cross-listed with PHIL 202)

Also offered Online

WS 261 LEC 0.50

Course ID: 008331

Women and the Great Religions

Through a review of the teachings of the great religious traditions about women, this course aims to arrive at a global view of the situation of women "in the world of religion". On the basis of the evidence gathered, it will attempt an estimation of the role of religion as an intimate and important influence on human development.

[Note: This course fulfils an Area 3C requirement for Religious Studies majors.]

(Cross-listed with RS 284)

WS 262 LAB,SEM 0.50

Course ID: 013221

Global Queer Cinema

This course introduces the varied production of world-wide gay, lesbian, bisexual, and transgender cinema. Inquiry will focus on how queer cinematic production serves as a vehicle for documentation and education, aesthetic and sexual experimentation, as well as cultural export and self-inquiry.

Antireq: FINE 290 taken Fall 2008
(Cross-listed with FINE 262)

WS 300s

WS 302 LEC 0.50

Course ID: 012319

Thinking Through Gender: Feminist Perspectives

This course presents students with an opportunity to engage with a range of feminist theories and approaches to better understand gender in relation to the body, identity, law, sexuality, space, the State, and/or subjectivity. Queer and transgender theories and issues will also be addressed.

Prereq: WS 101

WS 306 LEC 0.50

Course ID: 012750

Contemporary Health Issues for Women

This course draws on a range of feminist theories and frameworks to examine the interconnections between women and health in local, national, and international contexts. Topics may include the medicalization of women's health; reproductive experiences, choices, technologies and rights; health care systems and institutions; health policy; and the links with leisure, recreation, and health. Intersections of gender with race, ethnicity, religion, class, sexuality, and aging will also be addressed.

Prereq: WS 101 or 102; Level at least 3A
(Cross-listed with REC 306)

WS 308 SEM 0.50

Course ID: 008200

Gender and Leisure

This seminar course focuses on recent theoretical and empirical research on the relationships between gender and leisure. Topics will include analysis of men's and women's leisure experiences, attitudes, constraints, challenges, and behaviours. Gendered aspects of leisure will be explored in a variety of social and cultural contexts, including families, informal and social settings, organized leisure, and the media.

(Cross-listed with REC 408)

WS 320 SEM 0.50

Course ID: 012739

Sex and the World Religions

This course examines deeply rooted attitudes in the major world religions toward sexual identity, practices, and gender. Examining sacred scriptures and codes of conduct from the world religions, as well as fictional writings and films, this course enables students to explore various social and religious traditions.

[Note: This course fulfils an Area 1C requirement for Religious Studies majors.]
(Cross-listed with RS 325)

WS 325 LEC 0.50

Course ID: 012931

Austen

A study of selected novels by Jane Austen, including *Pride and Prejudice* and *Emma*. Her letters and juvenilia may also be considered, as well as some of the films based on or inspired by her novels.

Prereq: Level at least 2A

(Cross-listed with ENGL 325)

WS 331 LEC 0.50

Course ID: 011121

Gender in War and Peace

An examination of various themes in the history of peace and war using gender as a central category of analysis. Theoretical literature and international case studies will be used to explore how the discourse and enactment of war and peace are influenced by societal constructions of gender, both historically and in the present.

Prereq: Level at least 2A

(Cross-listed with PACS 321)

WS 334 LEC 0.50

Course ID: 007042

Women and Music

An examination of women's roles in music from a cross-cultural perspective. Topics include women's music as a genre, historical accounts of women's music-making, the effects of gender ideology on women's musical activities, and music behaviour and performance in inter-gender relations.

Prereq: Level at least 2A

(Cross-listed with MUSIC 334)

WS 347 DIS,LEC 0.50

Course ID: 014231

Witches, Wives, and Whores

This course explores the ways in which Early Modern European women experienced, participated in, shaped, and responded to the world they inhabited. It investigates the ways in which women negotiated the Early Modern world as it unfolded in the Renaissance, the Reformation, European encounters around the world, and the challenges of everyday life.

Prereq: Level at least 2A.

Antireq: HIST 391 (section 002) taken Winter 2012, (section 001) taken Fall 2012

(Cross-listed with HIST 347)

WS 365 RDG 0.50

Course ID: 009036

Special Topics in Women's Studies

A reading course permitting a student to work with any member of the faculty participating in Women's Studies at Waterloo. To be arranged with the Women's Studies Director and the respective Women's Studies faculty member.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Department Consent Required

WS 370 LEC 0.50

Course ID: 013233

Women Writers of the Italian Renaissance

This course explores selected works by women writers of the Italian 16th century by focusing on their modes of adherence or challenges to the patriarchal literary and cultural canon of the day. It will examine early modern gender issues and innovative forms of self-expression as reflected in the writings of such women as Veronica Franco, Gaspara Stampa, Vittoria Colonna, Tullia D'Aragona, and Isabella di Morra. The course

attempts to explore these writers' stances as both consumers and producers of culture, as well as their contribution to the debate on women fashionable at the time.

Prereq: Level at least 3A

(Cross-listed with ITAL 370, ITALST 370)

Offered at St. Jerome's University

WS 400s

WS 409 SEM 0.50

Course ID: 008702

Theoretical Perspectives on Gender

An examination of sociological theories of gender and gender relations. Emphasis is placed on tracing historical changes in interpretations of gender, with a particular consideration of contemporary theoretical debates. Approaches to be considered include feminist theories as well as political economy and cultural studies.

Prereq: SOC 206/WS 209; Level at least 3A Women's Studies majors

(Cross-listed with SOC 401)

WS 410F LEC 0.50

Course ID: 014558

Eighteenth-Century Women Writers

A selection of writing by women such as Behn, Finch, Montagu, Fielding, Edgeworth, and Austen. Topics may include the culture of sensibility, romance and the gothic, and the interaction of women's writing with discourses of race and colonialism.

Prereq: Level at least 3A

(Cross-listed with ENGL 410F)

WS 422 SEM 0.50

Course ID: 007335

Studies in Feminist Philosophy/Philosophy of Sex

Special topics in feminist philosophy, women philosophers and/or the philosophy of sex, as announced by the Department of Philosophy.

Prereq: Level at least 3A

(Cross-listed with PHIL 402)

WS 430 LEC 0.50

Course ID: 010352

Literary Women in Early Modern Hispanic Culture

This course will examine works by and about women in early modern Hispanic culture (16th and 17th centuries), with particular attention to engagements with and subversions of patriarchal culture in theatre, prose, and poetry. Authors to be discussed may include Santa Teresa de Avila, Sor Juana Ines de la Cruz, Maria de Zayas, and Ana Caro.

[Note: Taught in English.]

Prereq: Level at least 2B

(Cross-listed with SPAN 430)

WS 475 RDG 0.50

Course ID: 009041

Advanced Research Project in Women's Studies

This course offers the opportunity for independent study of specialized areas, theory and methodology, texts, discourses and writers of interest in the context of women's history, status and condition. Students are under the tutorial guidance of a faculty member involved in Women's Studies.

[Note: This is a repeatable course, subject to different content; it may be completed a total of four times.]

Department Consent Required

WS 499A RDG 0.50

Course ID: 013230

Senior Honours Thesis

Directed reading and research in a selected area of Women's Studies inquiry.

[Note: A numeric grade for WS 499A will be submitted only after the completion of WS 499B.]

Department Consent Required

Prereq: Level at least 4A Honours Women's Studies students

WS 499B RDG 0.50

Course ID: 013231

Senior Honours Thesis

Directed reading and research in a selected area of Women's Studies inquiry.

Department Consent Required

Prereq: WS 499A; Level at least 4A Honours Women's Studies students