List of Coursework

(Gautier) Cole Killian

May 19, 2020

McGill

Computer Science

A **Comp 252**, *Honors Algorithms and Data Structures*, Winter 2020, Luc Devroye

Introduce student to algorithmic analysis, fundamental data structures, and problem solving paradigms.

Textbook: T.H. Cormen, C.E.Leiserson, R.L.Rivest, and C. Stein: Introduction to Algorithms (Third Edition)

A **Comp 273**, *Intro to Computer Systems*, Winter 2020, Kaleem Siddiqi

Number representations, combinational logic, sequential logic, MIPS assembly language and CPU architecture, Memory, I/O, Finite State Machines

Textbook: Computer organization and design: the hardware/software interface by David A. Patterson and John L. Hennese

A **Comp 322**, *Introduction to C++*, Winter 2020, Chad Zammar

Covers the essential features of C++. Focus on pointers, memory allocation, tepmlates, classes, operator overloading, namespaces, exceptions, and the STL.

Textbook: The C++ Programming Language by Bjarne Stroustrup

A **Comp 250**, *Intro to Computer Science*, Fall 2019, Michael Langer and Giulia Alberino

Learn basic data structures for lists (arrays, linked lists, stacks, queues), trees (search trees, heaps), and graphs. Analyze algorithms in terms of the amount of computation they use. Implementations in Java.

Textbook: None

A **Comp 206**, *Intro to Software Systems*, Fall 2019, Joseph Vybihal

This course focuses on System Application Development, which relates to the integration of differing software, programming languages and environments into a single application. It provides a comprehensive introduction to and overview of the C programming language and how to use it with the UNIX environment to build software. In this light the course also teaches programming in Bash, interfacing with the operating system and interfacing with networking

Textbook: Software Systems ed 3; Vybihal & Azar; Kendall/Hunt

Math and Stats

A- **Math 255**, *Honors Analysis 2*, Winter 2020, Pengfei Guan

Point set topology in metric space. Sequences, convergence, and continuity in general metric space. Normed vector spaces. Riemann-stieltjes integral. Infinite series. Uniform convergence of functions, Arzela-Ascoli Compactness Theorem, Stone-Weierstrass theorem.

Textbook: Introduction to Real Analysis, Bartle and Sherbert. Principles of Mathematical Induction, Rudin

A **Math 251**, *Honors Algebra 2*, Winter 2020, Henri Darmon

Focuses on linear algebra. Linear maps and matrix representations. Determinants. Canonical forms. Duality. Bilinear and quadratic forms. Real and complex inner product spaces. Diagonalization of self-adjoint operators.

Textbook: Linear Algebra and Geometry, Kostrikin and Manin

A **Math 254**, *Honors Analysis 1*, Fall 2019, Axel Hundeme

Logic, sets, functions, and other preliminaries. The Real Numbers. Sequences. Elementary Point-Set Topology. Limits and Continuity. Differentiation

Textbook: Introduction to Real Analysis by R. Bartle and D. Sherbert, 4th edition, Wiley

A **Math 235**, *Algebra 1*, Fall 2019, Daniel Wise

Sets, functions and relations. Groups, subgroups and cosets; group actions on sets. Methods of proof. Complex numbers. Divisibility theory for integers and modular arithmetic. Divisibility theory for polynomials. Rings, ideals and quotient rings. Fields and construction of fields from polynomial rings.

Textbook: Abstract Algebra: Theory and Applications (2017 edition) by Tom Judson.

A **Math 133**, *Linear Algebra*, Fall 2019, Rosalie Bélanger-Rioux

Linear transformations, matrices and vectors, linearindependence, subspaces and bases. Determinants, eigenvalues and eigenvectors, diagonalization. Study of linear systems of equations, their solutions, and the underlying structure of these problems.

Textbook: W. K. Nicholson, Linear Algebra with Applications, Open Edition. Lyryx Learning Inc. Base Textbook, Version 2019, Revision A.

Misc

A **Chem 120**, *General Chemistry 2*, Winter 2020, Mitchell Huot, Paul Wiseman, Sam Lewis Sewall, Pallavi Sirjoosingh

Chemistry 120 aims to provide you with an introduction to the quantitative aspects of fundamental chemical principles, such as gas laws, thermodynamics, kinetics, solubility, equilibrium, and acids/base.

Textbook: The Molecular Nature of Matter and Change (2nd Canadian Edition) by Silberberg, Amateis, Lavieri, and Venkateswaran

Harvard

Math and Stats

A **Math 21b**, *Linear Algebra and Differential Equations*, Spring 2019, Janet Chen

Matrices and related topics such as linear transformations and linear spaces, determinants, eigenvalues, and eigenvectors. Applications include dynamical systems including nonlinear systems, data fitting, ordinary and partial differential equations, and Fourier series.

Textbook: Math 21a is Multivariable Calculus: Concepts and Contexts by James Stewart

A **Math 21a**, *Multivariable Calculus*, Fall 2018, Janet Chen

Extending single variable calculus to higher dimensions. Develops methods for solving optimization problems with and without constraints.

Textbook: Linear Algebra with Applications by Otto Bretscher

Physics

A **Physics 101**, *Foundations of Theoretical Physics* , Spring 2019, Jacob Barandes

A comprehensive, fast-paced introduction to the conceptual and mathematical foundations of modern theoretical physics that starts from the very beginning of the subject, with an integrated, first-principles approach to its five major areas: analytical dynamics, statistical mechanics, relativity, fields, and quantum theory. Examples will be drawn from many areas of physics, including Newtonian mechanics, electromagnetism, particle physics, general relativity, and quantum information.

Textbook: None

Montgomery College

Math and Stats

A **Econ 202**, *Principles of Economics II*, Fall 2018

Topics include supply and demand, elasticity, government controls, market failure, production, business costs, profit maximization, and market structures.

Textbook: None

A **Bsad 210**, *Statistics for Business and Economics*, Fall 2018

The meaning and role of statistics in business and economics, frequency distributions, graphical presentations, measures of central tendency and dispersion, probability, discrete and continuous probability distributions, inferences pertaining to means and proportions, regression and correlation, time series analysis, and decision theory will be discussed.

Textbook: None