University of Tennessee, Chattanooga

2025-2026 Undergraduate Catalog

Course Descriptions

Contract All Courses |

Courses certified as satisfying General Education Requirements are identified in the course title with a two letter category abbreviation. General Education categories are listed below.

Writing and Communication (WC)   Humanities and Fine Arts (HF)   Natural Science (LL, LC & LB, NL)

Behavioral and Social Science (SB)   Quantitative Reasoning (QR)   Individual and Global Citizenship (CZ)

Education

ÆDUC 4500 - Teaching Strategies and Materials in Secondary and Middle Grades English

(3) Credit Hours

Curriculum and methods appropriate for secondary and middle grades English. Field component required. Fall semester. Prerequisites: Checkpoint 2 or Department Head approval. Laboratory/studio course fee will be assessed.

ÆDUC 4510 - Teaching Strategies and Materials in Secondary and Middle Grades Mathematics

(3) Credit Hours

Curriculum and methods appropriate for secondary and middle grades mathematics. Fall semester. Prerequisites: Checkpoint 2 or Department Head approval. Laboratory/studio course fee will be assessed.

ÆDUC 4520 - Teaching Strategies and Materials in Secondary and Middle Grades Social Science

(3) Credit Hours

Curriculum and methods appropriate for secondary and middle grades social science. Field component required. Fall semester. Prerequisites: Checkpoint 2 or Department Head approval. Laboratory/studio course fee will be assessed.

ÆDUC 4540 - Teaching Strategies and Materials in Secondary and Middle Grades Natural Science

(3) Credit Hours

Curriculum and methods appropriate for secondary and middle grades natural science. Spring semester. Prerequisites: Checkpoint 1 or Department Head approval.

⁂EDUC 4580 - Readings and History: Teaching English as a Second Language

(3) Credit Hours

In-depth study of the history of English as a Second Language instruction. This course will investigate the development and characteristics of various programs used in teaching English to limited English proficient (LEP) students. Additional study will focus on articles written by major researchers in this field. The central purpose of this course is to provide experience in identifying, analyzing, and discussing significant current issues in the field of English as a Second Language.

⁂EDUC 4590 - Strategies and Methods of Teaching English as a Second Language

(3) Credit Hours

Involves the study and application of second-language theories and cultural knowledge to ESL teaching methodology and curriculum design. In addition, explores various approaches which should benefit second-language learners and presents techniques of adjusting lessons to suit the needs of second-language learners and enhance their acquisition and use of English. Concentrates on assisting educators in the development of appropriate strategies for teaching speaking, writing, and grammar in ESL environments.

⁂EDUC 4600 - Strategies for Assessing Elementary Education Children

(3) Credit Hours

Designed to provide an overview of assessment and experiences in administering, analyzing, and reporting a variety of assessments, including diagnostic, formative, and summative assessments in K-5 classrooms. Fall and Spring semesters. Prerequisites: Checkpoint 2 or Department Head approval. Laboratory/studio course fee will be assessed.

⁂EDUC 4850 - Orientation to Schools for Counselors

(3) Credit Hours

For school counselor candidates without teaching experience. The orientation experience will be structured to provide observation, participation in, and analysis of classroom instruction; will also provide the candidate with teaching experiences and feedback regarding those experiences.

⁂EDUC 4995R - Departmental Thesis

(1-3) Credit Hours

A two-semester research or creative project resulting in a thesis under the supervision of a faculty member and with the

approval of the Honors College. On demand. Prerequisites: Student must coordinate with Honors College to submit a Thesis Contract to get registered for this course. Restricted to Sophomore standing or higher.

⌐EDUC 4997R - Research

(1-9) Credit Hours

Enables students to conduct independent research. On demand. Prerequisites: Student must coordinate with a specific faculty member to complete the Research contract to get registered for the course. Restricted to Sophomore standing or higher.

⌐EDUC 4998R - Individual Studies

(1-9) Credit Hours

Enables students to study selected topics in depth. On demand. Prerequisites: Student must coordinate with a specific faculty member to complete the Individual Studies contract to get registered for the course. Restricted to Sophomore standing or higher.

⌐EDUC 4999R - Group Studies

(1-9) Credit Hours

Department may have additional prerequisite requirements. On demand. Prerequisites: Department Head approval.

Electrical Engineering

⌐ENEE 1010 - Introduction to Electrical Engineering

(3) Credit Hours

Introduction to core electrical engineering concepts through experiential learning, and modeling, with a focus on electronics, robotics, communications, and energy systems. Modern analysis and design methods are discussed. Review of historical milestones, current trends, and future challenges. Fall and Spring semesters. Lecture 3 hours. Differential course fee will be assessed.

⌐ENEE 1999R - Special Projects

(1-9) Credit Hours

Individual or group projects. On demand. Prerequisites: Department Head approval. Differential course fee will be assessed. Differential course fee will be assessed.

⌐ENEE 2250 - Engineering Programming

(3) Credit Hours

Introduction to programming with a high-level language including basics of programming in MATLAB. Flowcharting, algorithm design, input/output, data types, files, decisions, loops, arrays. Application to engineering problems including matrix equations. Fall semester. Lecture 3 hours. Pre or Corequisites: MATH 2450
 or Department Head approval. Differential course fee will be assessed.

Effective Spring 2026.

ENEE 2700 - Electrical Circuits I

(3) Credit Hours

Introduction to analysis of electrical circuits. Fundamental electrical system components. Kirchhoff's laws. Resistive circuit analysis. Circuit theorems. Operational amplifiers. Response of first and second order circuits. Sinusoidal steady-state circuit analysis.Fall and Summer semesters.Lecture 3 hours.Pre or Corequisites: MATH 2450
 and PHYS 2310
 with a minimum grade of C if prerequisite or Department Head approval. Differential course fee will be assessed.

ENEE 2710L - Electrical Circuits I Laboratory

(1) Credit Hours

Introduction to laboratory instrumentation, measurement techniques, and electrical circuit elements. Laboratory experiments to support the introduction to DC circuit analysis, Kirchhoff's laws, network theorems, transient analysis, phasor and AC circuits analysis. Digital computer analysis of electrical circuits using such tools as PSPICE. Fall and Summer semesters. Laboratory 3 hours. Pre or Corequisites: ENEE 2700
 or Department Head approval. Laboratory/studio course fee will be assessed. Differential course fee will be assessed.

ENEE 2720 - Electrical Circuits II

(3) Credit Hours

LaPlace transforms. Transient response of dynamic circuits. Transformers. AC circuit analysis, AC power, three-phase circuits, frequency response (active and passive filters, bode plot), and two-port networks.Spring semester. Lecture 3 hours.Prerequisites: ENEE 2700,
 MATH 2450
, and PHYS 2310
 with a minimum grade of C or Department Head approval. Differential course fee will be assessed.

ENEE 2740 - Digital Electronics

(3) Credit Hours

Digital electronics for the Electrical Engineering student. Semiconductors, digital logic, logic design, digital devices. Analysis of digital circuits employing digital devices. Realization of digital devices with standard integrated circuit logic families. Spring semester. Lecture 3 hours. Prerequisites: ENEE 2700
 with a minimum grade of C or Department Head approval. Differential course fee will be assessed.

ENEE 2999R - Group Studies

(1-9) Credit Hours

On demand. Pre or Corequisites: Department Head approval. Department may have additional prerequisite requirements. Differential course fee will be assessed.

ENEE 3250 - Signals and Systems

(3) Credit Hours

Time, sequence and frequency domain analysis of linear continuous-time and discrete-time systems. Direct solution methods for differential and difference equations, impulse response, convolution. Laplace, Fourier and Z transform methods. State variables for discrete and continuous systems. Fall semester. Lecture 3 hours. Prerequisites: MATH 2450 with minimum grade of C or Department Head approval. Pre or Corequisites: ENEE 2720 with minimum grade of C or Department Head approval. Differential course fee will be assessed.

Effective Spring 2026.

ENEE 3340 - IEEE Robotics Hardware I

(1) Credit Hours

First course in a two-course series in which students will work in a team or teams to design, build, test, program, (and possibly compete with) a fully autonomous robot that meets the upcoming IEEE SoutheastCon Hardware Competition Rules. Students who meet additional parameters may be selected to travel and compete at the competition in spring. Projects are expected to be completed through preliminary design. The team design experience includes design methodology, concept generation, decision-making, technical project management, teamwork, written, and oral communication. Fall semesters. Lecture 1 hour. Pre or Corequisites: ENEE 3720 or Department Head approval. Differential course fee will be assessed.

Effective Spring 2026.

ENEE 3700 - Energy Conversion and Electronics

(3) Credit Hours

Three Phase circuits, Electric Power, Electro-mechanical Energy Conversion, Magnetic circuits, Transformers, rotating Electric machines. Semiconductors, Transistor Amplifiers, Digital Signals and Circuits. Spring semester. Lecture 3 hours. Prerequisites: ENEE 2700 with a minimum grade of C or Department Head approval. Differential course fee will be assessed.

ENEE 3720 - Analog Electronics

(3) Credit Hours

Analog electronics for the Electrical Engineering student. Semiconductors, transistor amplifiers, operational amplifiers.

Analysis of circuits employing semiconductor devices and amplifiers. Fall semester. Lecture 3 hours. Prerequisites: ENEE 2720
 with a minimum grade of C or Department Head approval. Pre or Corequisites: ENEE 3720L
 or Department Head approval. Differential course fee will be assessed.

ENEE 3720L - Analog Electronics Laboratory

(1) Credit Hours

Fundamental analog behavior of semiconductor devices and amplifiers for the electrical engineering student. Laboratory experiences and design projects. Fall semester. Laboratory 3 hours. Prerequisites: ENEE 2710L
 with a minimum grade of C or Department Head approval. Pre or Corequisites: ENEE 3720
 or Department Head approval. Laboratory/studio course fee will be assessed. Differential course fee will be assessed.

ENEE 3750 - Electromagnetic Fields and Waves

(3) Credit Hours

Elementary fields and waves, static electric and magnetic fields; potential and vector fields; Gauss's Law; Ampere's Law; line integrals; vector calculus methods; Biot-Savart law; time-varying electric and magnetic fields; Maxwell's equations.Fall semester. Lecture 3 hours.Prerequisites: ENEE 2700
, PHYS 2310
, and MATH 2550 or MATH 2560
, with minimum grades of C or Department Head approval. Differential course fee will be assessed.

ENEE 3770 - Advanced Electronics

(3) Credit Hours

Study of advanced concepts in electronics. Design of practical and ideal operational amplifier circuits for given transfer functions. Design of active filters. Design of non-linear and pulse shaping circuits. Basic concepts of programmable controllers. Spring semester. Lecture 3 hours. Prerequisites: ENEE 3720
 with a minimum grade of C or Department Head approval. Pre or Corequisites: ENEE 3790
 or Department Head approval. Differential course fee will be assessed.

ENEE 3770L - Advanced Electronics Laboratory

(1) Credit Hours

A series of projects in advanced electronics culminating in a major design project, all totally designed by the student. Spring semester. Laboratory 3 hours. Pre or Corequisites: ENEE 3770
 or Department Head approval. Laboratory/studio course fee will be assessed. Differential course fee will be assessed.

ENEE 3790 - Modern Control Systems Analysis and Design

(3) Credit Hours

Analysis and synthesis of feedback control systems for continuous and discrete time systems. Performance criteria. State-space, Routh-Hurwitz, root locus, Nyquist, and Bode methods for stability determination. Analytic and computer-aided techniques for design of systems to meet performance standards. Prerequisites: ENEE 3250
with a minimum grade of C or Department Head approval. Differential course fee will be assessed.

ENEE 3800 - Electrical Energy Conversion

(3) Credit Hours

Magnetic circuits and transformers. Rotating electrical machinery; DC machines, synchronous machines, induction motors. Fall semester.Lecture 3 hours. Prerequisites: ENEE 2720
with a minimum grade of C or Department Head approval. Pre or Corequisites: ENEE 3800L
or Department Head approval. Differential course fee will be assessed.

ENEE 3800L - Electrical Energy Conversion Laboratory

(1) Credit Hours

Experimental study of transformer and machine behavior. Design project included. Spring semester. Laboratory 3 hours. Pre or Corequisites: ENEE 3800
or Department Head approval. Laboratory/studio course fee will be assessed. Differential course fee will be assessed.

ENEE 3850 - Interdisciplinary Design Project I

(3) Credit Hours

First semester of the capstone interdisciplinary group design project in which students use their discipline-based knowledge in an interdisciplinary environment. Projects are expected to complete through preliminary design. The team design experience includes design methodology, concept generation, decision making, technical project management, quality and reliability engineering, concurrent engineering, teamwork, written and oral communication, and introduction to engineering ethics and professional responsibility. The projects incorporate technical activities applicable to the engineering disciplines of the College. Faculty from the disciplines support the course and students as technical advisors and aid in project selection. Fall and Spring semesters. Lecture 2 hours, project 2 hours. Prerequisites: ENEE 2250
or CPSC 1110
, ENEE 3720
with a minimum grade of C or Department Head approval. Registrant must be within three semesters of graduation. Pre or Corequisites: ENEE 3790
or Department Head approval. May be registered as CPEN 3850
, ENCE 3850
or ENME 3850
. Credit allowed in only one of the four courses. Differential course fee will be assessed.

ENEE 3999R - Group Studies

(1-9) Credit Hours

On demand. Pre or Corequisites: Department Head approval. Department may have additional prerequisite requirements. Differential course fee will be assessed.

⌁ENEE 4320 - Artificial Neural Network Design

(3) Credit Hours

Introduction to fundamental neural network architectures and learning rules. Supervised and unsupervised learning of feedforward and recurrent associative memory networks, perceptron layers, associative and competitive networks. Application to practical engineering problems in the areas of classification, pattern recognition, function approximation and control systems such as design of neuro-controllers. Implementation issues. Spring semester. Lecture 3 hours. Prerequisites: ENEE 2250
 or CPSC 1110
, MATH 2560
 or Department Head approval. Differential course fee will be assessed.

⌁ENEE 4330 - Fuzzy Logic and Intelligent Controls Application

(3) Credit Hours

Fundamentals of fuzzy logic systems and introduction to fuzzy control. Design and implementation of fuzzy controllers as well as issues of stability in fuzzy control. Brief introduction to artificial neural networks that are used in control applications such as fuzzy neuro-controllers. Background of classical control methodologies will be reviewed briefly. Fall semester. Lecture 3 hours. Prerequisites: ENEE 2250
 or CPSC 1110
, and ENEE 3790
 or Department Head approval. Differential course fee will be assessed.

⌁ENEE 4340 - IEEE Robotics Hardware II

(3) Credit Hours

The second course of a two-course series in which students will work in a team or teams to design, build, test, program, (and possibly compete with) a fully autonomous robot that meets the upcoming IEEE SoutheastCon Hardware Competition Rules. Students who meet additional parameters may be selected to travel and compete at the competition in Spring. The project requires students to illustrate their discipline knowledge in an interdisciplinary environment. Oral and written presentation of progress and results. Spring semesters.Lecture 3 hours. Prerequisites: ENEE 3340
 or Department Head approval. Differential course fee will be assessed.

Effective Spring 2026.

⌁ENEE 4350 - Robotics and Controls Research I

(3) Credit Hours

Interesting and challenging projects are assigned in the area of robotics, power electronics, and controls. A programming background is required. Python programming will be introduced and taught with the first project involving using python programming to fly and control a drone. Two projects are expected to be completed and demonstrated during the semester. Projects are mostly hands-on and involve designing, programming, debugging, and testing skills. Written and

oral communication skills will be developed through documentation of research using technical reports and the creation of a final poster for peer presentation. Faculty and sometimes the students come up with project ideas before the second project is assigned. Spring semester. Lecture 1 hour, project 4 hours. Prerequisites: ENEE 2250
 or CPSC 1110
, ENEE 3720
 and ENEE 3790
 or Department Head approval. Differential course fee will be assessed.

ENEE 4500 - Electrical Engineering Design Project

(3) Credit Hours

Capstone electrical engineering design experience; design of an electrical component or system. Consideration of engineering standards and realistic constraints that include most of the following considerations: economic, environmental, sustainability, constructability, ethical, health and safety, social, and political. Oral presentations and written design report required. Spring semester. Lecture 2 hours, design laboratory 2 hours. Prerequisites: ENEE 3850
 or Department Head approval. Differential course fee will be assessed.

ENEE 4600 - Power Electronics

(3) Credit Hours

Introduces power semiconductor devices and power electronic converters, including single-phase and three-phase ac/dc rectifiers, ac voltage controllers, ac/dc converters and dc/ac inverters. Prerequisites: ENEE 3720
 with a minimum grade of C or Department Head approval. Pre or Corequisites: ENEE 3790
 or Department Head approval.Differential course fee will be assessed.

ENEE 4600L - Power Electronics Laboratory

(1) Credit Hours

Performance of experiments in the following areas: Buck Converter, Switching Characteristic of MOSFET and Diode, Boost Converter, Buck-Boost Converter, Voltage-Mode Control, Peak Current Mode Control, Flyback Converter, and Forward Converter. Pre or Corequisites: ENEE 4600
 or Department Head approval. Laboratory/studio course fee will be assessed. Differential course fee will be assessed.

ENEE 4620 - Protective Relaying

(3) Credit Hours

Protection fundamentals. Generator protection, transformer, reactor and shunt capacitor protection bus, motor, line protection and pilot protection. On demand. Lecture 3 hours. Prerequisites: ENEE 4720
 or equivalent with minimum grade of C or Department Head approval. Senior elective. Differential course fee will be assessed.

ENEE 4630 - Setting and Testing Digital Relays

(3) Credit Hours

Calculate protective relay settings for different microprocessor-based protective relays. Introduce test equipment and test procedures for testing modern microprocessor-based multifunction relays used for a transmission system. Configure and operate test equipment (60Hz voltage and current signals, as well as digital representations of those signals), calculate test quantities, make connections between relay and test set, and analyze results including all available sources of fault records. Spring semesters.Prerequisites: ENEE 4620
 or Department Head approval. Differential course fee will be assessed.

ENEE 4670 - Smart Distribution Systems

(3) Credit Hours

The course covers theory and practical application methods available in the industry for the protection of distribution systems and includes smart grid applications for protection and control. Fall semester. Pre or Corequisites: ENEE 4720
 with a minimum grade of C or Department Head approval. Differential course fee will be assessed.

ENEE 4710 - Embedded Systems

(4) Credit Hours

Introduction to field programmable gate arrays (FPGAs) and microprocessors. Programming with hardware description language (HDL), C, and assembly language. Embedded systems principles, input and output, and serial communication protocols. Design of programs for basic data acquisition and control using the FPGA and microprocessor as system components. Review of number systems and digital logic. Spring semester. Lecture 3 hours, projects 3 hours. Prerequisites: ENEE 2250
 or CPSC 1110
, and ENEE 2740
 or CPEN 3700
, all with minimum grades of C, or Department Head approval. Laboratory/studio course fee will be assessed. Differential course fee will be assessed.

ENEE 4720 - Power System Analysis and Design

(3) Credit Hours

Power Systems component modeling, transmission lines, machines, transformers. Load flow analysis, symmetrical components, symmetrical and unsymmetrical fault analysis. Spring semester. Lecture 3 hours. Pre or Corequisites: ENEE 3800
 with minimum grade of C or Department Head approval. Differential course fee will be assessed.

ENEE 4720L - Power Simulation Laboratory

(1) Credit Hours

Computation of transmission lines parameters, formation of Bus Admittance and Impedance matrices, network solution methods, one-line diagrams and power flow simulation, balanced and unbalanced fault analysis, relay coordination, substation grounding design, renewable energy simulation, harmonic analysis and filter design. ETAP and other power

simulator softwares will be used. Laboratory 3 hours. Pre or Corequisites: ENEE 4720
 or Department Head approval. Laboratory/studio course fee will be assessed. Differential course fee will be assessed.

ENEE 4735 - Power System Optimization

(3) Credit Hours

This course introduces different optimization problems in power system operations including economic dispatch, unit commitment, optimal power flow, and state estimation. It also covers the optimal operation of microgrids, virtual power plants, and distributed energy resources in the concept of operation of smart grids. Spring semester. Lecture 3 hours. Prerequisites: ENEE 4720
 with a grade of a C or better or Department Head approval. Differential course fee will be assessed.

ENEE 4745 - Communication Networks

(3) Credit Hours

Definitions and basic concepts of digital communications networks services. OSI and TCP/IP layered architecture models. Digital transmission fundamentals, error detection, and correction. Optical transport networks. Datalink layer, media access control, and local area networks. Packet-switching networks, traffic management, and routing algorithms. Internet protocols using TCP & UDP. Fall semester. Prerequisites: ENEE 2740
 and ENEE 2250
 with a minimum grade of C or Department Head approval. Differential course fee will be assessed.

ENEE 4750 - Analog Communications

(3) Credit Hours

Definitions and basic concepts of analog and digital modulation techniques. Global and societal effects of communications technology. Transmission of signals through linear filters, time-bandwidth relationships. Amplitude, frequency, and pulse modulation techniques described and analyzed. Periodic sampling and the Nyquist sampling criterion. Applications of probability to error rates and noise probabilities. OSI Model. Fall semester. Lecture 3 hours. Prerequisites: ENCE 2220
 and ENEE 3250
 with minimum grades of C or Department Head approval. Differential course fee will be assessed.

ENEE 4750L - Analog Communications Laboratory

(1) Credit Hours

Definitions and basic concepts of analog communication techniques applications. Introduction and reinforcement of the following concepts: amplitude and angle based modulation and demodulation, time and frequency representation of analog signals, use of measurement equipment (i.e., oscilloscope, function generator, and spectrum analyzer), and application of Nyquist Sampling Theorem for conversion from analog to digital. Fall semester. Laboratory 3 hours. Pre or Corequisites: ENEE 4750
 or Department Head approval. Laboratory/studio course fee will be assessed. Differential course fee will be assessed.

ENEE 4760 - Digital Communications

(3) Credit Hours

Analysis, design, modeling and simulation of modern digital communication systems. Transformation between analog (continuous) and digital (discrete) domains at baseband level; bandpass signals. Signal transmission and reception over an Additive White Gaussian Noise (AWGN) source (waveform) coding. Channel (bit-level) coding, e.g., block, cyclic, convolutional, etc., and decoding techniques. Methods of synchronization at the carrier, symbol, and frame rates are examined. Multiplexing and multiple access networking techniques and brief introduction to spread spectrum system analysis. Spring semester. Lecture 3 hours. Pre or Corequisites: ENEE 3250
 and ENCE 2220
 or Department Head approval. Differential course fee will be assessed.

ENEE 4790L - Linear Controls and Drives Laboratory

(1) Credit Hours

Introduction to components in an electrical drive system, building real-time control system using Matlab/Simulink interface, PI and dual loop algorithm as applied to servomotor position control, state variable feedback control application, and experiments tailored toward electric drives systems such as open-loop speed control and characterization of dc-motor; dc motor speed control under load and control of induction and permanent magnet ac motors. Fall semester. Laboratory 3 hours. Prerequisites: ENEE 3790
 and ENEE 3800
 with minimum grades of C or Department Head approval. Laboratory/studio course fee will be assessed. Differential course fee will be assessed.

ENEE 4800 - Electronic Instrumentation

(3) Credit Hours

Basic principles of operation of commonly used sensors. Signal conditioning and grounding considerations. Introduction to programming of virtual instruments using software such as LabVIEW. Specification and design of systems to acquire, condition, display, and control using data from multiple sensors and programmable controllers. Statistical error analysis. Semester group design project included. Spring semester. Lecture 3 hours. Prerequisites: ENEE 2250
 or CPSC 1110
, and ENEE 3720
 or Department Head approval. Laboratory/studio course fee will be assessed. Differential course fee will be assessed.

ENEE 4820 - Digital Signal Processing

(3) Credit Hours

Fundamentals of discrete time signals, systems, and modern digital processing algorithms. This includes: linear shift-invariant systems, digital networks, digital filter design methods, discrete transforms, discrete random signal concepts, quantization effects, and homomorphic signal processing. Spring semester. Lecture 3 hours. Prerequisites: ENEE 3250
 with a minimum grade of C or Department Head approval. Differential course fee will be assessed.

ENEE 4850 - Interdisciplinary Design Project II

(3) Credit Hours

Second semester of the capstone interdisciplinary group design project in which students use their discipline-based knowledge in an interdisciplinary environment. Completion of the detailed and final design phases of the engineering project initiated in ENCE/ENEE/ENME/CPEN 3850 including building a model, testing, evaluation, and reporting the design result. Projects require students to illustrate their discipline knowledge in an interdisciplinary environment. Specific discipline aspects of the project are supported by representative faculty acting as technical advisors. Oral and written presentation of progress and results. Ethics and professional responsibility and the global and societal impact of engineering decisions are covered. Fall and Spring semesters. Lecture 1 hour, project 4 hours. Prerequisites: CPEN 3850
/ENCE 3850
/ENEE 3850
/ENME 3850
 with a minimum grade of C; must have been taken in the immediately preceding semester or Department Head approval. May be registered as CPEN 4850
, ENCE 4850
 or ENME 4850
. Credit allowed in only one of the four courses. Differential course fee will be assessed.

ENEE 4900 - Fundamentals of Engineering and Professionalism

(1) Credit Hours

Review of topics covered on the afternoon session of the Fundamentals of Engineering exam. Topics in engineering ethics and professionalism using case studies, and invited speakers from the profession and related fields. Spring semester. Pre or Corequisites: ENEE 3850
 or Department Head approval. Differential course fee will be assessed.

ENEE 4995R - Departmental Thesis

(1-3) Credit Hours

A two-semester research or creative project resulting in a thesis under the supervision of a faculty member and with the approval of the Honors College. On demand. Prerequisites: Student must coordinate with Honors College to submit a Thesis Contract to get registered for this course. Restricted to Sophomore standing or higher. Differential course fee will be assessed.

ENEE 4997R - Research

(1-9) Credit Hours

Enables students to conduct independent research. On demand. Prerequisites: Student must coordinate with a specific faculty member to complete the Research contract to get registered for the course. Restricted to Sophomore standing or higher. Differential course fee will be assessed.

ENEE 4998R - Individual Studies

(1-9) Credit Hours

Enables students to study selected topics in depth. On demand. Prerequisites: Student must coordinate with a specific faculty member to complete the Individual Studies contract to get registered for the course. Restricted to Sophomore standing or higher. Differential course fee will be assessed.

ENEE 4999R - Group Studies

(1-9) Credit Hours

Department may have additional prerequisite requirements. On demand. Differential course fee will be assessed.

Engineering Management

ETEM 1000 - Engineering Technology Management Seminar I

(1) Credit Hours

Focus on engineering technology management major and university customs. At the completion of the course, students should be able to apply critical thinking, note-taking, communication, and college survival skills. Also students will have a greater understanding of engineering technology management and what is needed to succeed after college. Lecture 1 hour. Differential course fee will be assessed.

ETEM 1320 - Introduction to Material Science and Technology

(3) Credit Hours

Introduction to engineering materials and methods for the applications to engineering and construction. Broad spectrum of basic materials and their technical properties are introduced.Lecture 3 hours.Differential course fee will be assessed.

ETEM 1999R - Special Projects

(1-9) Credit Hours

Individual or group projects. On demand. Prerequisites: Department Head approval. Differential course fee will be assessed.

ETEM 2999R - Group Studies

(1-9) Credit Hours

Pre or Corequisites: Department Head approval. Department may have additional prerequisite requirements. Differential course fee will be assessed.

ETEM 3520 - Cost Estimation and Analysis for Engineering Management

(3) Credit Hours

Introduction to financial statements, accounting and financial metrics, and cash flow diagrams for engineering management. Justification of technical and capital projects using the time value of money concepts such as equivalent annual cost/worth, rate-of-return, present worth, and benefit-cost ratios. Computer applications are emphasized. Replacement analysis; impacts of depreciation, income taxes, and inflation/deflation. Current practices will be presented.Lecture 3 hours.Pre or Corequisites: ENCE 2220
, MATH 2100
, or DATA 2130
 or Department Head approval.Credit not allowed for both ETEM 3520 and ENCE 3520
.Differential course fee will be assessed.

ETEM 3550 - Project Management and Practice

(3) Credit Hours

Introduction to the identification, selection, and planning of projects. Specific topics include: definition of project and program, project leader selection, project goals, team selection, organizational structure, work breakdown structures (WBS), scheduling, PERT/Gantt charts, critical path method (CPM), budgeting, decision analysis, risk management, and the monitoring and control of projects. MS Project Management software is applied. Lecture 3 hours. Prerequisites: DATA 2130
, MATH 2100
, or ENCE 2220
 with a minimum grade of C or Department Head approval. Pre or Corequisites: ENCE 3520
 or ETEM 3520
 or Department Head approval. Differential course fee will be assessed.

ETEM 3580 - Materials Management

(3) Credit Hours

This course presents methods for planning, scheduling, and sourcing of materials to support production and operation effectiveness. It includes an introduction to production planning, purchasing processes, master scheduling schemes, material requirements planning (MRP), enterprise and capacity requirement planning and material forecasting methods.Lecture 3 hours.Prerequisites: ETEM 1320
 and ETEM 3550
 with a minimum grade of C or Department Head approval. Differential course fee will be assessed.

ETEM 3870 - Introduction to Logistics Management

(3) Credit Hours

This course is an introduction to logistics in transportation and distribution channels. It offers a description of logistics operations in transportation, concepts of facilities and methods used in supply chain. Third party logistics, fleet management, physical distribution and a number of other concepts are introduced. The course includes highlights on the transportation and distribution business in a local and global scenario.Lecture 3 hours.Prerequisites: ETEM 1320
 and ETEM 3550

or Department Head approval. Differential course fee will be assessed.

ETEM 3999R - Group Studies

(1-9) Credit Hours

Pre or Corequisites: Department Head approval. Department may have additional prerequisite requirements. Differential course fee will be assessed.

ETEM 4050 - Engineering Management Principles

(3) Credit Hours

Classroom lecture with emphasis on experiential exercises involving case studies, literature critiques, team projects, written reports and oral presentations. Quantitative and qualitative problem solving techniques will be utilized. Junior standing or Department Head approval. Differential course fee will be assessed.

ETEM 4100 - Data Analytics with Alteryx (QR)

(3) Credit Hours

The course content includes data extraction, data cleaning, data profiling, designing data processing pipelines including data transformation and standardization models, probability and regression models, the application of AI models (supervised and unsupervised learnings) including the use of Naïve Bayes, Support Vector Machine, K-Means Approach, K Nearest Neighbor, Neural Networks and Decision Trees. In addition, students will learn various prompt engineering techniques.This course will use a widely recognized industry tool called "Alteryx". After successful completion of the course, students will be able to (1) perform data munging and exploratory data analysis, (2) apply the basics of ETL (Extract-Transform-Load) process, (3) perform both supervised and unsupervised learning experiments to make predictions on real-world based on historical data, (4) communicate business insights using real data, in both written and oral presentations, (5) construct writing, problem-solving, design, technical writing prompts with the help of prompt engineering.Spring semester. Junior standing. Differential course fee will be assessed.
General Education Category: Quantitative Reasoning

ETEM 4500 - Engineering Management Design and Lean Six Sigma

(3) Credit Hours

Propose, design, and implement an engineering management project that will analyze, integrate and synthesize the Lean Six Sigma concepts, framework, and tools. Independent research will be performed to develop projects in preparation for a formal final report and presentation.Lecture 1.5 hours, project 1.5 hours. Prerequisites: ETEM 3550 or ENIE 3500 or Department Head approval. Differential course fee will be assessed.

ETEM 4540 - Value Management

(3) Credit Hours

Introduces Value Engineering concepts and demonstrates the application of techniques which maximize the value of

products, processes, construction, or services. Topics covered include functional analysis, functional costing, generation of alternative designs, evaluation of alternative designs, lifecycle cost analysis, proposal preparation, and presentations. Project required. Lecture 3 hours. Prerequisites: ENCE 3520
 or ETEM 3520
 with a minimum grade of C, or Department Head approval.Differential course fee will be assessed.

⌐ETEM 4560 - Quality Improvement

(3) Credit Hours

Introduction to quality control concepts, control charts, product specifications, process control, acceptance sampling systems, and total quality management (TQM), which is widely used in industry to improve product and service quality, and reduce costs. Lecture 3 hours. Prerequisites: DATA 2130
, MATH 2100
, or ENCE 2220
 with a minimum grade of C; or Department Head approval. Differential course fee will be assessed.

⌐ETEM 4590 - Facilities Management

(3) Credit Hours

Methods of designing new facilities and expanding or renovating existing facilities. Planning facility layout, facility location, and activities are presented. Topics such as analysis of work space, work flow, material handling systems, facility planning data collection methods, process flow-charting, the supply chain management, and economics are covered. Lecture 3 hours. Prerequisites: ETEM 3520
 or ENCE 3520
 with minimum grades of C or Department Head approval. Differential course fee will be assessed.

⌐ETEM 4960R - Engineering Technology Management Internship

(3) Credit Hours

Work experience in engineering management. Evaluation and reports required. Internships should be coordinated with the prior consent of an advisor by aligning with a local business. Lecture 1 hour, laboratory 2 hours. Junior standing or Department Head approval. Differential course fee will be assessed.

⌐ETEM 4995R - Departmental Thesis

(1-3) Credit Hours

A two-semester research or creative project resulting in a thesis under the supervision of a faculty member and with the approval of the Honors College. On demand. Prerequisites: Student must coordinate with Honors College to submit a Thesis Contract to get registered for this course. Restricted to Sophomore standing or higher. Differential course fee will be assessed.

⌐ETEM 4997R - Research

(1-9) Credit Hours

Enables students to conduct independent research. On demand. Prerequisites: Student must coordinate with a specific faculty member to complete the Research contract to get registered for the course. Restricted to Sophomore standing or higher. Differential course fee will be assessed.

ETEM 4998R - Individual Studies

(1-9) Credit Hours

Enables students to study selected topics in depth. On demand. Prerequisites: Student must coordinate with a specific faculty member to complete the Individual Studies contract to get registered for the course. Restricted to Sophomore standing or higher. Differential course fee will be assessed.

ETEM 4999R - Group Studies

(1-9) Credit Hours

Department may have additional prerequisite requirements. On demand. Differential course fee will be assessed.

English

ENGL 1010 - Rhetoric and Composition I (WC)

(3) Credit Hours

The principles and practice of effective reading and writing. Frequent themes, exercises, selected readings. Attention to individual problems of grammar and usage. In rare instances exemption from English 1010 may be recommended by the department. Every semester.
General Education Category: Writing and Communication

ENGL 1011 - Rhetoric and Composition I with Writing Tutorial (WC)

(4) Credit Hours

The principles and practice of effective reading and writing. Frequent themes, exercises, selected readings. Attention to individual problems of grammar and usage. Includes one hour writing tutorial. Every semester. ENGL 1010 and ENGL 1011 are equivalent courses. Credit is not allowed in both courses after one has been successfully completed with a grade of C or better.
General Education Category: Writing and Communication

ENGL 1020 - Rhetoric and Composition II (WC)

(3) Credit Hours

Review of competencies stressed in ENGL 1010

with emphasis on the extended essay; use of research matter in writing; attention to diction, figurative and symbolic language, relationship of style and meaning. Every semester. Prerequisites: ENGL 1010
 or ENGL 1011
 or UHON 1010
 with minimum grade of C or placement; or Department Head approval.
General Education Category: Writing and Communication

ENGL 1130 - Western Humanities I (HF)

(3) Credit Hours

A historical approach to the pivotal ideas, systems of thought, and creations of the Western world from antiquity to approximately 1600 C.E. Emphasis on matters of literary structure, style, and content. Pre or Corequisites: ENGL 1010
 or ENGL 1011
 or ENGL 1020
 or UHON 1010
 and UHON 1020
 or Department Head approval.
General Education Category: Humanities and Fine Arts

ENGL 1150 - Western Humanities II (HF)

(3) Credit Hours

A historical approach to the pivotal ideas, systems of thought, and creations of the Western world from approximately 1600 C.E. to the present. Emphasis on matters of literary structure, style, and content. Pre or Corequisites: ENGL 1010
 or ENGL 1011
 or ENGL 1020
 or UHON 1010
 and UHON 1020
 or Department Head approval.
General Education Category: Humanities and Fine Arts

ENGL 1310 - Values in 20th-Century American Fiction (HF)

(3) Credit Hours

A study of contemporary values as reflected in selected twentieth century American novels and short stories from World War I to the present. On demand.
General Education Category: Humanities and Fine Arts

ENGL 1330 - Introduction to Literature (HF)

(3) Credit Hours

Readings from poetry, fiction, and drama to demonstrate how the writer selects from ideas, experience, and language and combines these elements to speak of and to the human condition. On demand.
General Education Category: Humanities and Fine Arts

ENGL 1999R - Special Projects

(1-9) Credit Hours

Individual or group projects. Maximum credit 4 hours for B.A. in English or B.S., Secondary Education in English. On demand. Prerequisites: Department Head approval.

ENGL 2010 - Introduction to Literary Analysis

(3) Credit Hours

An introduction to critical concepts and skills required in the field of literary studies; approaches to analyzing and interpreting literary texts, genre forms and critical terminology, and research methods. Emphasis on close reading and careful critical writing. Must be completed within the first 21 hours of major course work. Fall and Spring semesters. Pre or Corequisites: ENGL 1020
 or Department Head approval.

ENGL 2020 - Writing in the 21st Century (WC)

(3) Credit Hours

Building on the rhetorical and writing work of ENGL 1020, this course investigates how writing and communication function in the world today. Specific attention is paid to sending messages to different audiences and working collaboratively. Prerequisites: ENGL 1020
 or UHON 1020
 with minimum grade of C or placement or Department Head approval.
General Education Category: Writing and Communication

ENGL 2050 - Introduction to Rhetorical Analysis

(3) Credit Hours

An introduction to rhetorical studies with an emphasis on rhetorical history, rhetorical analysis and rhetorical practice. Topics include natural and comparative/cultural rhetoric, the rhetoric of ancient Greece, and definition of rhetoric, past and present. Practice will include rhetorical analysis of texts and analysis of the rhetorical principles of purpose, situation, genre and audience. Must be completed within the first 21 hours of major course work. Pre or Corequisites: ENGL 1020
 or Department Head approval.

ENGL 2060R - Topics in Literature (HF)

(3) Credit Hours

Special topics course focusing on literary topics. The actual topic to be studied will be specified in the schedule of classes. Pre or Corequisites: ENGL 1020
 or Department Head approval.
General Education Category: Humanities and Fine Arts

ENGL 2070R - Topics in Rhetoric (HF)

(3) Credit Hours

Special topics course focusing on rhetoric. The actual topic to be studied will be specified in the schedule of classes. Pre or Corequisites: ENGL 1020
 or Department Head approval.
General Education Category: Humanities and Fine Arts

ENGL 2080R - Topics in Intellectual Inquiry (HF)

(3) Credit Hours

Special topics course. The actual topic to be studied will be specified in the schedule of classes. Pre or Corequisites: ENGL 1020
 or Department Head approval.
General Education Category: Humanities and Fine Arts

ENGL 2130 - Survey of American Literature (HF)

(3) Credit Hours

Selected readings in major works of American literature from the colonial period to the present, with emphasis on historical, cultural and formal developments. Must be completed within the first 21 hours of major course work. Fall and Spring semesters. Pre or Corequisites: ENGL 1020
 or Department Head approval.
General Education Category: Humanities and Fine Arts

ENGL 2230 - Survey of British Literature (HF)

(3) Credit Hours

Selected readings in major works of British literature from the middle ages to the present, with emphasis on historical, cultural and formal developments. Must be completed within the first 21 hours of major course work. Fall and Spring semesters. Pre or Corequisites: ENGL 1020
 or Department Head approval.
General Education Category: Humanities and Fine Arts

ENGL 2280 - Children's Literature (HF)

(3) Credit Hours

A survey and evaluation of some of the best literature for children, with special attention to literature for preschool and elementary school years. Pre or Corequisites: ENGL 1020
 or UHON 1020
 or Department Head approval.
General Education Category: Humanities and Fine Arts

ENGL 2290 - Literature for the Adolescent

(3) Credit Hours

A survey and evaluation of literature whose primary audience is the adolescent, with special attention to the usefulness of such literature in secondary education. Spring semester. Pre or Corequisites: ENGL 1020
 or UHON 1020
 or Department Head approval.

ENGL 2510R - Popular Fiction (HF)

(3) Credit Hours

Science fiction or detective fiction or other type of popular fiction, one or another of which will be studied for its literary merit: the type of popular fiction to be studied in any particular section will be specified in the schedule of classes. On demand.
General Education Category: Humanities and Fine Arts

ENGL 2520 - African-American Literature (HF)

(3) Credit Hours

Readings will be largely fiction with supportive critical works and some poetry and drama to examine the development of African-American literature from the 1850's to the present. Figures may include Harper, Chestnutt, Washington, DuBois, Hurston, Wright, Ellison, Brooks, Baldwin, Walker, and Morrison. Spring semester. May be registered as HUM 2520
. Credit not allowed in both ENGL 2520 and HUM 2520
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General Education Category: Humanities and Fine Arts

Contract All Courses |