ET - ENGINEERING TECHNOLOGY (ET)

ET 1XX. Eng Tech Elective. (1-3 Credits)

ET 100. Introduction to Engineering Technology. (3 Credits)
Introduction to Engineering Technology provides an introduction to the careers, philosophies, and industries related to engineering technology. This course is used to administratively advise students entering the Engineering Technology program. (Fall)

ET 150. Computer Aided Drafting and Design. (4 Credits)
This course facilitates student learning of the graphic language of technical drawing and communications, multi-view and pictorial technical drawings using freehand, manual, and computer aided drafting techniques using AutoCAD. Areas of focus include layer management, line-types, and colors, selection sets, object snap modes, Auto-Snap, polar tracking, object snap tracking, construction techniques, crafting and managing text objects, editing geometry, display control, and drawing inquiry methods. Three class periods; one two-hour laboratory per week. Prerequisite: MA 112 or 113 or 115. Course Fee. $50.00. (Spring)
Course Fees: $50

ET 200. Manufacturing Processes. (3 Credits)
A study of the manufacturing processes used to fabricate and form engineering materials into useful products. Includes laboratory experiences using common materials and basic processes. (Fall)

ET 201. Polymer Engineering. (4 Credits)
Polymer chemical structure, physics of polymers, and laboratory processing of polymers.Three class periods; on two-hour laboratory per week. Prerequisites: MA 112 and MA 113 or MA 115, Concurrent CH 311 CH 311L. (Spring)
Course Fees: $50

ET 210. Electricity/Electronics Fundamentals and Green Energy. (4 Credits)
This class provides a basic understanding of electricity, electrical components, electrical circuits, electrical measurements and calculations, and basic digital operations. Basic skills will also be obtained in the use of electrical tools, test instruments, and hands on soldering. Laboratory experiences using simplified circuitry and computer aided drafting/simulation software will enhance the understanding of major active device concepts. Experiments in green energy highlight emerging technology applications. Three class periods; one two-hour laboratory per week. Prerequisite: MA 112 or 113 or 115. Course Fee. $50.00. (Fall)
Course Fees: $50

ET 220. Digital Electronics. (3 Credits)
Fundamentals of digital electronics, including basic logic gates and boolean algebra and programmable digital device application. Prerequisite: MA 112 or 113 or 115 (Spring)

ET 300. Materials Science. (3 Credits)
The purpose of this course is to provide students an opportunity to become familiar with the properties of metallic, ceramic, organic, and composite materials. The knowledge and understanding of these properties will help them design safe products and structures. They will be able to follow standard procedures in determining the properties of materials and will be able to interpret the results of tests conducted in the laboratory. The knowledge, skills, and understanding developed during the course of study will influence their skills in material selection, production methods and inspection techniques. Prerequisites: CH 111, MA 112 or 113 or 115. (Spring)

ET 301. Mass and Energy Balance. (3 Credits)
Covers the fundamental and applied principles of stoichiometry, material and energy balances, thermophysics, thermochemistry and related topics. Prerequisites: MA 122, PH 241 or PH 251, CH 111, CH 111L, CH 112, CH 112L (FALL).

ET 310. Introduction to Solid Modeling. (3 Credits)
This course introduces students to manufacturing techniques using Computer Aided Design (CAD) and SolidWorks software to design and create drawings for parts, sub-assemblies, assemblies, and products. Prerequisite: ET 150, Concurrent MA 121. (Fall)

ET 320. Statics and Strength of Materials. (4 Credits)
This course explores the basic concepts of statics and the applied strength of materials on basic structural systems. The course opens with the study of coplanar force systems, moments, and the free body diagram. Next, the design properties of common materials (wood, steel, concrete) are mathematically discussed and applied to the design of a common truss, beams, columns, and complex trusses. Based on these analyses, materials are selected that are adequate to resist the applied loads. An emphasis is placed on selecting the most economical material member that meets all design requirements. Three class periods; one two-hour laboratory per week. Prerequisites: MA 122, PH 241. Course Fee. $50.00. (Fall)
Course Fees: $50

ET 320X. Statics and Strength of Materials. (3 Credits)
This course explores the basic concepts of statics and the applied strength of materials on basic structural systems. The course opens with the study of coplanar force systems, moments, and the free body diagram. Next, the design properties of common materials (wood, steel, concrete) are mathematically discussed and applied to the design of a common truss, beams, columns, and complex trusses. Based on these analyses, materials are selected that are adequate to resist the applied loads. An emphasis is placed on selecting the most economical material member that meets all design requirements. Not open to Engineering Technology Majors. Three class periods per week. Prerequisites: MA 122, PH 241. (Fall)

ET 330. Thermodynamics. (3 Credits)
This course explores the principles of thermal and mechanical energy. Focus areas include the study of energy transformations and thermodynamic relationship. Application of thermodynamic principles is studied in relation to engineering systems, basic principles, properties of substances, mass, energy, and entropy balances. Prerequisites: MA 122, CH 111, PH 241. (Fall)

ET 340. Power Transfer Technology. (3 Credits)
This course explores the principles of compressible and incompressible fluid statics and dynamics as applied to hydraulic and pneumatic pumps, motors, transmissions and controls. Includes laboratory experience. Prerequisites: MA 121, PH 241, Concurrent MA 122. (Spring)

ET 350. Robotics and Automated Manufacturing. (4 Credits)
This course provides a basic understanding of robotics, automated manufacturing equipment, computer integrated manufacturing systems, and the use of industrial robots. Computer programming background recommended. Three class periods; one two-hour laboratory per week. Prerequisites: ET 210, ET 220, ET 320, ET 340, CS 155. Course Fee. $50.00. (Fall)
Course Fees: $50

ET 360. Electrical Circuits and Devices. (3 Credits)
Electrical engineering circuit-analysis and devices. AC, DC, and transient circuit analysis techniques. Laboratory experience includes instrumentation. Prerequisites: ET 210, ET 220, PH 242, MA 122.

ET 370. Economics and Product Design. (3 Credits)
The purpose of this course is to expose students to elements that influence the cost of manufactured products, the process of determining manufacturing costs, cost justification, value analysis, cost reduction analysis, the time value of money, equivalence, measures of worth, economic selection rule for alternatives, income taxes, equipment depreciation, inflation, and uncertainty. Students will apply fundamentals relative to student developed product designs. Prerequisite: MA 112 or 113 or 115. (Spring)

ET 401. Principles of Chemical Engineering I. (4 Credits)
Theory and application of mass and heat transfer and fluid flow. A comprehensive treatment of transport processes for chemical operations. Prerequisites: ET 301, CH 341, CH 341L. (SPRING).

ET 403. Principles of Chemical Engineering II. (5 Credits)
Plant design including reactors, separations, and controls. Three class periods, 2 two-hour laboratories per week. Prerequisites: ET 401, CH 321, CH 321L, PH 242, Concurrent ET 411. (FALL).

ET 411. Process Modeling and Simulations. (2 Credits)
Mathematical modeling and simulation of selected chemical processes. Computer programming for numerical solutions and subroutines. Prerequisites: CS 155, Concurrent ET 403 (FALL).

ET 490. Independent Research. (1,2 Credits)
Independent research on individual projects under faculty supervision for selected students who have completed at least 60 credit hours with a minimum 3.0 overall scholastic average. Scheduled work and conferences require a minimum average of four hours per week per credit hour. May be repeated to a maximum of eight credit hours. Students must receive departmental approval prior to enrolling in this course. (Fall, Spring, Summer)

ET 495W. Engineering Tech Capstone. (4 Credits)
The capstone course is designed for students preparing for careers in engineering technology. Student teams will analyze engineering technology problems as a project, propose solutions, and present recommendations externally. Prerequisite: Senior Standing (Spring)