ENGINEERING (EGR)

EGR 115. Engineering Graphics. (3 Credits)
Applies principles of orthographic projection, and multi-view drawings. Teaches descriptive geometry including relationships of points, lines, planes and solids. Introduces sectioning, dimensioning and computer graphic techniques. Includes instruction in Computer Aided Drafting. Lecture 1 hours. Laboratory 3 hours. Total 4 hours per week.

EGR 120. Introduction to Engineering. (2 Credits)
Introduces the engineering profession, professional concepts, ethics, and responsibility. Reviews hand calculators, number systems, and unit conversions. Introduces the personal computer and operating systems. Includes engineering problem solving techniques using computer software. Lecture 2 hours per week. Total 2 hours per week.

EGR 126. Computer Programming for Engineers. (3 Credits)
Introduces computers, their architecture and software. Teaches program development using flowcharts. Solves engineering problems involving programming in languages such as FORTRAN, PASCAL, or C++. Lecture 3 hours per week. Total 3 hours per week.

EGR 127. Introduction to Computer Programming. (2 Credits)
Introduces programming in a higher-level language such as FORTRAN, BASIC or PASCAL, or C++ on the microcomputer. Uses the operating system, packaged software and peripheral devices. Emphasizes engineering program problem solving Lecture 1 hour per week. Laboratory 2 hours per week. Total 3 hours per week.

EGR 130. Statics and Strength of Materials Engineering Tech. (5 Credits)
Presents principles and applications of free-body diagrams of force systems in equilibrium. Analyzes frames and trusses. Presents principles and applications to problems in friction, centroids and moments of inertia. Includes properties of materials, stress, strain, elasticity, design of connections, shear and bending in statically determinate beams, and axially loaded columns. Lecture 4 hours per week. Laboratory 2 hours per week. Total 6 hours per week. Prerequisites: MTH 154 or MTH 162 or equivalent.

EGR 140. Engineering Mechanics - Statics. (3 Credits)
Introduces mechanics of vector forces and space, scalar mass and time, including S.I. and U.S. customary units. Teaches equilibrium, free-body diagrams, moments, couples, distributed forces, centroids, moments of inertia analysis of two- force and multi-force members. Lecture 3 hours per week. Total 3 hours per week. Co-requisite: MTH 263.

EGR 206. Engineering Economics. (3 Credits)
Presents economic analysis of engineering alternatives. Studies economic and cost concepts, calculation of economic equivalence, comparison of alternatives, replacement economy, economic optimization in design and operation, depreciation, and after tax analysis. Lecture 3 hours per week. Total 3 hours per week.

EGR 245. Engineering Mechanics - Dynamics. (3 Credits)
Presents approach to kinematics of particles in linear and curvilinear motion. Includes kinematics of rigid bodies in plane motion. Teaches Newton's second law, work-energy and power, impulse and momentum, and problem solving using computers. Lecture 3 hours per week. Total 3 hours per week. Prerequisite: EGR 130 or EGR 140.

EGR 246. Mechanics of Materials. (3 Credits)
Teaches concepts of stress, strain, deformation, internal equilibrium, and basic properties of engineering materials. Analyzes axial loads, torsion, bending, shear and combined loading. Studies stress transformation and principle stresses, column analysis and energy principles. Lecture 3 hours per week. Total 3 hours per credit. Prerequisite: EGR 130 or EGR 140.

EGR 247. Mechanics of Materials Laboratory. (1 Credit)
Examines mechanical behavior of bars, rods, shafts, tubes and beams subjected to various types of loading. Introduces experimental stress analysis techniques, such as the use of strain gages and data reduction. Laboratory 2 hours per week. Total 2 hours per week. Prerequisite: EGR 130 or EGR 140.

EGR 248. Thermodynamics for Engineering. (3 Credits)
Studies formulation of the first and second law of thermodynamics. Presents energy conversion, concepts of energy, temperature, entropy, and enthalpy, equations of state of fluids. Covers reversibility and irreversibility in processes, closed and open systems, cyclical processes and problem solving using computers. Lecture 3 hours per week. Total 3 hours per week.

EGR 251. Basic Electric Circuits I. (3 Credits)
Teaches fundamentals of electric circuits. Includes circuit quantities of charge, current, potential, power and energy. Teaches resistive circuit analysis; Ohm's and Kirchhoff's laws; nodal and mesh analysis; network theorems; RC, RL and RLC circuit transient response with constant forcing functions. Teaches AC steady-state analysis, power, three- phase circuits. Presents frequency domain analysis, resonance, Fourier series, inductively coupled circuits, Laplace transform applications, and circuit transfer functions. Introduces problem solving using computers. Lecture 3 hours per week. Total 3 hours per week.

EGR 285. Capstone Project. (1 Credit)
Provides a capstone research project for the final semester of the program, focusing inquiry upon an area of interest to the student or area relevant to their prospective career field. May include problem-based research topics, internships, or other focused projects. Lecture 1 hour per week. Total 1 hour per week.