ENGINEERING (EGR)

EGR 101 - Introduction To Engineering
Credit Hours: 1, **Contact Hours: 2**
Division: Science Math
This course is a general overview of the engineering profession with an emphasis on career exploration, basic skills development, and an introduction to the engineering design process through an experiential learning project. Recommended for all first-year engineering students and anyone considering a career in engineering. Group 2 course. Critical Thinking - Direct.
Recommended Prerequisite(s): ENG 111

EGR 111 - Introduction to Computer Science
Credit Hours: 3, **Contact Hours: 4**
Division: Science Math
An introductory course in computer science with emphasis on C/C++ programing. Topics include structured programming, control structures, functions, arrays, pointers, dynamic memory allocations, searching and sorting algorithms, file I/O, and top-down analysis of problems. Basic concepts of object-oriented programming will also be introduced. Group 2 course. Critical Thinking - Direct.
Required Prerequisite(s): MTH 111

Recommended Prerequisite(s): Placement into ENG 111

EGR 113 - Engineering Graphics I
Credit Hours: 3, **Contact Hours: 4**
Division: Science Math
This course introduces traditional and contemporary methods of graphical communication in the context of engineering design, including sketching, orthographic projection, dimensioning, and tolerancing. Students also utilize modern parametric design software to generate 3-D models and 2-D drawings to benchmark and refine designs, including the use of finite element analysis and 3-D printing. Group 2 course. Critical Thinking - Direct.
Recommended Prerequisite(s): ENG 111

EGR 131 - Elementary Surveying
Credit Hours: 5, **Contact Hours: 5**
Division: Science Math
This course is designed to satisfy the elementary surveying requirement for a student entering engineering. In this course students will learn the theory involved in plane and geometric surveying including both linear and angular measurement, differential leveling, trigonometric leveling, traverse computations, electronic distant measurements, GPS mapping, topographical mapping and the design of horizontal and vertical curves as related to construction surveys. Students are expected to perform lab experiments in which they demonstrate their knowledge of the concepts learned in lecture, incorporating the basic skill learned in lecture to field settings. Care, adjustment, and use of basic surveying instruments: leveling, taping, horizontal angle measurements, traverse surveys, use of EDM's, GPS usage, topographic mapping, and layout of horizontal curves. Computer software will be used throughout the semester. Group 2 course. Critical Thinking - Direct.
Required Prerequisite(s): MTH 122

Recommended Prerequisite(s): ENG 111

Corequisites: EGR 131L

EGR 131L - Elementary Surveying Lab
Credit Hours: 0, **Contact Hours: 0**
Division: Science Math
See EGR 131 for course description.
Corequisites: EGR 131

EGR 201 - Statics
Credit Hours: 3, **Contact Hours: 3**
Division: Science Math
This course addresses force systems in two and three dimensions and includes composition and resolution of forces and force systems, principles of equilibrium applied to various bodies, simple structures, friction, centroids, and moments of inertia. Vector algebra and first semester calculus is used throughout the course. Group 2 course. Critical Thinking - Direct.
Required Prerequisite(s): MTH 141

Recommended Prerequisite(s): ENG 111, MTH 142

EGR 202 - Mechanics of Materials
Credit Hours: 3, **Contact Hours: 3**
Division: Science Math
This course introduces the engineering behavior of real materials, including stress/strain at a point, principle stresses and strains, stress-strain relationships, determination of stresses and deformations in situations involving axial loading, torsional loading of circular cross sections, and flexural loading of prismatic members. Also covers stresses due to combined loading and buckling of columns. Vector algebra and differential calculus are used throughout this course. Group 2 course. Critical Thinking - Direct.
Required Prerequisite(s): EGR 201

Recommended Prerequisite(s): ENG 111, MTH 142

EGR 203 - Dynamics
Credit Hours: 4, **Contact Hours: 4**
Division: Science Math
This course introduces the principles of engineering dynamics, including kinematics and kinetics of particles, rigid bodies in translation, rotation, and plane motion. Principles of work and energy, impulse and momentum, and introductory vibrations will be covered. Group 2 course. Critical Thinking - Direct.
Required Prerequisite(s): EGR 201

Recommended Prerequisite(s): ENG 111, MTH 241

EGR 211 - Electrical Circuits I
Credit Hours: 3, **Contact Hours: 3**
Division: Science Math
This course will cover basic electrical concepts, resistive circuits, nodal and loop analysis techniques, superposition, Thevenin and Norton equivalents, maximum power transfer, capacitance and inductance, AC steady-state analysis, steady-state power analysis. Group 2 course. Critical Thinking - Direct.
Required Prerequisite(s): MTH 142, may be taken concurrently.

Recommended Prerequisite(s): ENG 111

EGR 220 - Engineering Practice I
Credit Hours: 2, **Contact Hours: 4**
Division: Science Math
Students develop the laboratory and computer skills necessary for success in engineering. Topics include benchmarking, prototyping, data acquisition devices and methods, data post processing and interpretation using engineering software, and use of finite element analysis methods. Group 2 course. Critical Thinking - Direct.
Required Prerequisite(s): EGR 113 and EGR 201 (both may be taken concurrently), ENG 111.

EGR 221 - Material Science
Credit Hours: 3, **Contact Hours: 3**
Division: Science Math
Introduction to the structure, processing, properties, and performance of engineering materials, including metals, polymers, glasses, ceramics, and composites. Presents case studies covering selection of materials, component design, and analysis of component failures. Group 2 course. Critical Thinking - Direct.
Required Prerequisite(s): MTH 122, ENG 111; CHM 150 may be taken concurrently.

EGR 232 - Introductory Thermodynamics
Credit Hours: 3, **Contact Hours: 3**
Division: Science Math
This course introduces concepts of energy, energy conversion, and mechanisms of heat and work transfer in processes and in cycles. It also covers the first and the second laws of thermodynamics. Group 2 course. Critical Thinking - Direct.
Required Prerequisite(s): MTH 141, PHY 221, PHY 221L, PHY 221R