

ENGR 110 Intro to Science and Engineering (GE) 3 (FWS)

Students in this course will investigate careers in science and engineering, and will research the educational pathways to those careers. In addition, students will learn techniques for becoming a successful student in science and engineering majors.

ENGR& 111 Engineering Graphics I (SE) 5 (FW)

This course studies the principles of mechanical drawings: geometric construction, orthographic projection, sectional views, auxiliary views, isometric and oblique drawings, dimensions, threads, fasteners, and lettering. This software is used by engineers to communicate proposed designs and new ideas.

ENGR& 112 Engineering Graphics II (SE) 5 (WS)

This course uses computer software to draft parametric models in three dimensions. This course covers file management methods, rapid prototyping, and 2D drawing development techniques.

PREREQUISITE: Instructor permission.

ENGR 201 Materials Science (NS) 5 (F)

An introduction to Materials Science that includes the atomic, molecular, and crystalline structures of materials and their relationship to electrical, mechanical, thermal, and chemical properties, as well as an introduction to materials processing and fabrication techniques.

PREREQUISITE: PHYS& 221, CHEM& 161 with grades of 2.0 or higher

ENGR 202 Logic Circuits (NS) 5 (W)

An introduction to methods, skills and theoretical knowledge needed to design, simulate, and build combinational logic circuits and basic sequential circuits. Using industry relevant CAD tools and design technologies, students will learn through homework and projects to design and implement a collection of combinational and sequential circuits. Upon completion, students will apply the same tools prevalent in industry and their transferrable skills to many applications today. NS

PREREQUISITES: MATH& 151 with grades of 2.0 or higher, and one of the following programming courses (CS 111, CS& 131, CS& 141), or instructor permission.

ENGR& 204 Electrical Circuits (NS) 5 (S)

Introduction to basic circuits and systems concepts. Development of mathematical models of components including resistors, sources, capacitors, inductors and operational amplifiers. Solutions of first and second order linear differential equations associated with basic circuit forms. Steady state sinusoidal excitation and phasors.

PREREQUISITES: MATH& 152, PHYS& 223 with grades of 2.0 or higher, and one of the following programming courses (CS 111, CS& 131, CS& 141), or instructor permission.

ENGR 205 Electrical Circuits Lab (NS) 1 (S)

Laboratory applications of electrical circuit principles and instrumentation. Measurement of transient and steady-state responses of electrical circuits.

COREQUISITE: ENGR& 204

ENGR& 214 Statics (NS) 5 (F)

Statics is the study of objects which are either at rest or moving with constant velocity. Students in this course will learn to apply mathematics and physical science to the analysis of the forces and moments acting on these objects, developing engineering problem-solving skills in the process. Topics studied will include the following: vector notation and operations; equilibrium of particles and rigid bodies; moments of forces; couples; trusses and frames; shear and moment diagrams; applications of friction; center of gravity, centroids, and moments of inertia.

COREQUISITE: MATH& 152

PREREQUISITES: MATH& 151, PHYS& 221 with grades of 2.0 or higher.

ENGR& 215 Dynamics (NS) 5 (S)

Dynamics is the study of the accelerated motion of particles and rigid bodies. The study of the motion in this course will deal with kinematics (the mathematical description of the motion) and kinetics (the analysis of the forces causing the motion). Vector notation and operations will be used extensively in this course, and calculus will be used regularly.

PREREQUISITES: ENGR& 214, PHYS& 221, and MATH& 152 with grades of 2.0 or higher.

ENGR& 224 Thermodynamics (NS) 5 (W)

Thermodynamics is the science of energy. This course introduces the basic principles of thermodynamics from a macroscopic point of view and applies them to engineering systems such as heat pumps, engines, power plants, and refrigeration. Topics include property tables, equations of state, first and second laws of thermodynamics, analysis of closed and open systems, power and refrigeration cycles.

COREQUISITE: CHEM& 162

PREREQUISITE: MATH& 152, PHYS& 221

ENGR& 225 Mechanics of Materials (NS) 5 (W)

An introduction to the concepts of stress, strain, deformation, and failure theory in solid materials. Applies mechanics of materials concepts to structural and machine elements such as rods, shafts, and beams. These elements are analyzed in tension, compression, bending, torsion, and shear.

PREREQUISITES: ENGR& 214, MATH& 152 with grades of 2.0 or higher

ENGR 240 Applied Numerical Methods (NS) 5 (S)

This course includes application of the following methods: elements of error analysis, real roots of an equation, polynomial approximation by finite difference and least square methods, interpolation, quadrature, numerical solution of ordinary differential equations, and numerical solutions of systems of linear equations. The student should expect to program a computer in addition to using a graphing calculator.

PREREQUISITES: MATH& 163 with grades of 2.0 or higher, or instructor permission