

Engineering (ENGR)

ENGR 106 **W,Sp** **3 credits** **ENGINEERING PROBLEMS** **NS**

Introduces engineering and the engineering professions. Emphasizes analysis of actual engineering problems at the mathematical and reasoning levels of introductory students. Within this analytical framework, tools and concepts such as measurement theory, error analysis, dimensional analysis, metric units, systems of modeling, engineering design, and principles of elementary physics are incorporated. (Formerly known as ENGR 121)

Prerequisite: High school or 100-level physics or chemistry, or instructor permission. Concurrent enrollment in MATH& 142(was MATH 113).

ENGR&121 **F,W,Sp** **1-3 credits** **ENGINEERING GRAPHICS I** **E**

Involves students in communicating design ideas, developing visualization abilities, and analyzing engineering data through the use of graphical techniques and practices. Includes free-hand sketching, use of drafting instruments, line work, lettering, orthogonal projection, pictorials, basic dimensioning, and an introduction to computer-aided design modeling. (Formerly known as ENGR 111)

Prerequisite: None

ENGR&122 **F,W,Sp** **1-3 credits** **ENGINEERING GRAPHICS II** **E**

Involves students in the use of graphical techniques and practices applied towards engineering design and analysis. Includes dimensioning and tolerancing, descriptive geometry, production of working drawings, advanced computer-aided design modeling, and an introduction to parametric solid modeling. (Formerly known as ENGR 112)

Prerequisite: ENGR& 121 (was ENGR 111) or instructor permission.

ENGR&123 **F,W,Sp** **1-3 credits** **ENGINEERING GRAPHICS III** **E**

Involves students in the use of parametric solid modeling towards design on three-dimensional part and assembly models. Includes creating part and assembly drawings from 3D models, modifications throughout the design process, and comparing the many parametric solid modeling software packages available.

Prerequisite: ENGR& 121 (was ENGR 111) and ENGR& 122 (was ENGR 112) or instructor permission.

ENGR&204 **Sp** **6 credits** **ELECTRICAL CIRCUITS** **E**

Provides application of fundamental electrical principles in designing engineering solutions associated with linear circuit analysis, mathematical models of electrical components and circuits; sources, resistors, capacitors, inductors, operational amplifiers, and associated simple differential equations.

Prerequisites: PHYS 222, MATH& 152 and computer literacy.

ENGR 205 **F** **5 credits** **DESIGN OF LOGIC CIRCUITS** **E**

Covers the design, analysis, and implementation of combinational logic circuits. Introduces sequential logic circuits.

Prerequisites: MATH& 141

ENGR 206 **W** **5 credits** **MICROPROCESSOR SYSTEMS** **E**

Covers microprocessor/microcontroller system architecture, instruction sets, interfacing, assembly and C language programming.

Prerequisites: CS 270, ENGR 205

ENGR 210 **5 credits** **ENVIRONMENTAL PHYSICS OF ENERGY** **NS**

Solicits student descriptions of energy production, patterns of use, and the challenges posed by dwindling energy resources using the language of physics: work, power, energy, heat, and the Conservation of Energy Principle. Students explore the physical/technological bases of current/proposed technologies, along with current scientific discussions of environmental effects such as global warming and radiation. Students cannot receive credit for both ENGR 210 and PHYS 210.

Prerequisite: Algebraic, writing, and presentation skills; a previous distribution science course (e.g. PHYS& 100) would be helpful.

ENGR&214 **F** **5 credits** **STATICS** **E**

Engages student use of vector algebra and the sweeping power of a few fundamental principles to design real engineering solutions to problems involving discrete and distributed forces, resultants, equations of equilibrium, moments about points and lines, centroids, moments of inertia, and the principle of virtual work. (Formerly known as ENGR 122)

Prerequisites: MATH& 151 and either PHYS& 221 or ENGR 106.

