

# ENGINEERING (ENGR)

## **ENGR 1201 Introduction to Engineering 2 Credits (1 Lec, 3 Lab)**

This is an introduction to the engineering profession with emphasis on technical communication and team-based engineering design.

Note: Some mechanical engineering programs will accept the course ENGR 1201 for transfer credit and as applicable to the engineering major, while others will accept the course for transfer credit only. The student is advised to check with the school to which he or she wants to transfer for specific applicability of this course to the engineering major.

Prerequisite(s): Reading level 7, MATH 1314 or higher

Course Type: Academic

## **ENGR 1304 Engineering Graphics I 3 Credits (2 Lec, 2 Lab)**

Engineering Graphics I introduces computer-aided drafting, using CAD software and sketching to generate two- and three-dimensional drawings based on the conventions of engineering graphical communication.

Topics include spatial relationships, multi-view projections and sectioning, dimensioning, graphical presentation of data, and fundamentals of computer graphics.

Prerequisite(s): MATH 1314 or higher

Course Type: Academic

## **ENGR 2105 Electrical Circuits I Laboratory 1 Credit (0 Lec, 3 Lab)**

In the laboratory component of Circuits I, students conduct experiments supporting theoretical principles presented in ENGR 2305 involving DC and AC circuit theory, network theorems, time, and frequency domain circuit analysis. Students are introduced to principles and operations of basic laboratory equipment and to writing laboratory reports.

Prerequisite(s): Math level 9

Co-requisite(s): ENGR 2305

Course Type: Academic

## **ENGR 2301 Engineering Mechanics - Statics 3 Credits (3 Lec, 0 Lab)**

This course introduces the basic theory of engineering mechanics, using calculus, involving the description of forces, moments, and couples acting on stationary engineering structures; equilibrium in two and three dimensions; free-body diagrams; friction; centroids; centers of gravity; and moments of inertia.

Prerequisite(s): PHYS 2325 and PHYS 2125

Course Type: Academic

## **ENGR 2302 Engineering Mechanics - Dynamics 3 Credits (3 Lec, 0 Lab)**

This course is a study of basic theory of engineering mechanics, using calculus, involving the motion of particles, rigid bodies, and systems of particles; Newton's Laws; work and energy relationships; principles of impulse and momentum; application of kinetics and kinematics to the solution of engineering problems.

Prerequisite(s): ENGR 2301

Course Type: Academic

## **ENGR 2304 Programming for Engineers 3 Credits (3 Lec, 1 Lab)**

This course introduces programming principles and techniques for matrix and array operations, equation solving, and numeric simulations applied to engineering problems and visualization of engineering information; platforms include spreadsheets, symbolic algebra packages, engineering analysis software, and laboratory control software.

Prerequisite(s): MATH 2413, Math level 9

Course Type: Academic

## **ENGR 2305 Electrical Circuits I 3 Credits (3 Lec, 0 Lab)**

Circuits I introduces the principles of electrical circuits and systems, including basic circuit elements (resistance, inductance, mutual inductance, capacitance, independent and dependent controlled voltage, and current sources); the topology of electrical networks; Kirchhoff's laws; node and mesh analysis; DC circuit analysis; operational amplifiers; transient and sinusoidal steady-state analysis; AC circuit analysis; first- and second-order circuits; Bode plots; and use of computer simulation software to solve circuit problems.

Prerequisite(s): PHYS 2326, PHYS 2126, Math level 9

Co-requisite(s): ENGR 2105, MATH 2320

Course Type: Academic

## **ENGR 2308 Engineering Economics 3 Credits (3 Lec, 0 Lab)**

The student will utilize methods for determining the comparative financial desirability of engineering alternatives; will be provided the basic tools required to analyze engineering alternatives in terms of their worth and cost, an essential element of engineering practice. The student is introduced to the concept of the time value of money and the methodology of basic engineering economy techniques. The course will address some aspects of sustainability and will provide the student with the background to enable them to pass the Engineering Economy portion of the Fundamentals of Engineering exam.

Prerequisite(s): MATH 2413, Reading level 7, Math level 9

Course Type: Academic