Engineering. B.S., Hardin-Simmons University; M.S., Texas A&M University; Ph.D., University of Illinois-Champaign; P.E.

Staff

Christine Rowland (2006). Academic Secretary—Engineering, Physics, Math, and Computer Science.

Objectives

1. Graduates will make contributions through engineering practice, graduate school, or other professional pursuits.
2.

Course Offerings in Engineering (EGR)

( ) Hours Credit; F–Fall, W–Winter; S–Spring; Su–Summer

101. Introduction to Engineering Design and Analysis (2) F
Provides an overview of the engineering profession, including technical and legal responsibilities, the design and analysis method, and application of the engineering process to problem solving.

105. Engineering Graphics (3) S
Graphical communication methods through one of the widely used software packages–ProE; covers 2-D projections and views, 3-D surface and solid modeling, and general concepts such as object dimensions and tolerances.

109. Introduction to Matlab and Computer Programming (2) S
Introduces computer programming using Matlab as a high-level programming language and Matlab as an engineering computational tool. Includes general computer programming principles and structures and the unique feature of Matlab, such as vector and matrix operations, with application to engineering.

210. Materials Engineering (3) S
Prerequisite: CHE 111, PHY 231.
Examines the structure of material at the atomic level, including how physical, thermal, and mechanical properties affect the behavior of materials.

240. Mechanical Engineering Fundamentals I: Mechanics (3) F
Prerequisites: MAT 212 and PHY 231
Introduces vector analysis of forces and torques. Examines rigid bodies and determinate structures at equilibrium. Covers kinematics of a particle and of a rigid body. Presents kinetic analysis using force-acceleration, work-energy, and impulse-momentum techniques.

250. Mechanical Engineering Fundamentals II: Thermo-fluid Dynamics I (4) S
Prerequisite: CHE 111, PHY 232; Corequisite: MAT 314.
Introduces macroscopic concepts of thermodynamics, including first and second laws, properties of a pure substance, and energy analysis; also introduces hydrostatics

385. Energy Conversion (3) F
Prerequisite: EGR 250.
Provides a comprehensive analysis of current energy systems, including fossil power plants, nuclear plants, and other forms of renewable energy sources; covers the Rankine cycle, steam generators, combustion, and turbines; presents information on the environmental impact of energy generation.

405. Electronic Circuit Analysis and Design (4) S
Prerequisite: EGR 262.
Introduces fundamental principles of electronics, including analysis and design techniques for circuits containing diodes, field effect transistors, and bipolar junction transistors. Includes weekly lab.

416. Physical Principles of Solid State Devices (3) S
Prerequisite: EGR 210 and 262.
Introduces concepts in material science and quantum physics, including modern theory of solids, magnetic and optical properties of materials, semi-conductors and semi-conductor devices, dielectric materials, and superconductivity.

450. Thermo-fluid Dynamics II (4) F
Prerequisite: EGR 250.
Covers the 2nd law of thermodynamics, reversible/irreversible processes, entropy, steady-flow devices, power and refrigeration cycles, conduction, convection, and radiation heat transfer, as well as an application of the Navier-Stokes equations to internal and external viscous fluid flows. Includes weekly lab.

456. Machine and Mechanism Theory and Design (3) S
Prerequisite: EGR 360.
Covers design, selection, and evaluation of mechanisms for various applications, including planar and spatial linkages, cams, gears, planetary and non-planetary gear systems,