ENGR 1133 Engineering Graphics
0.3 Credit Hours. 0.2 Lecture Hours. 0.3 Lab Hours.
Introduction to engineering graphics and visualization including sketching, line drawing, simple wire-frame and solid modeling. Development and interpretation of drawings and specifications for product realization.
Cross Listing(s): ENGR 1133H.

ENGR 1133H Engineering Graphics
0.3 Credit Hours. 0.2 Lecture Hours. 0.3 Lab Hours.
Introduction to engineering graphics and visualization including sketching, line drawing, simple wire-frame and solid modeling. Development and interpretation of drawings and specifications for product realization.
Cross Listing(s): ENGR 1133.

ENGR 1731 Computing for Engineers
0.3 Credit Hours. 0.2 Lecture Hours. 0.2 Lab Hours.
Foundations of computing with an introduction to design and analysis of algorithms and an introduction to design and construction of programs for engineering problem-solving.
Prerequisite(s): Prior or concurrent enrollment in MATH 1441 or MATH 1113.
Cross Listing(s): ENGR 1731H.

ENGR 1731H Computing for Engineers
0.3 Credit Hours. 0.2 Lecture Hours. 0.2 Lab Hours.
Foundations of computing with an introduction to design and analysis of algorithms and an introduction to design and construction of programs for engineering problem-solving.
Prerequisite(s): MATH 1441.
Cross Listing(s): ENGR 1731.

ENGR 1732 Program Design for Engineers
3 Credit Hours. 2 Lecture Hours. 2 Lab Hours.
This course will introduce engineering students to applications for engineering problem-solving and object-oriented programming principles in Electrical and Computer Engineering using standard (ANSI) C and C++. An introduction to interfacing with FORTRAN is also given.
Prerequisite(s): A minimum grade of "C" in ENGR 1731.
Cross Listing(s): ENGR 1732H.

ENGR 1732H Program Design for Engineers
3 Credit Hours. 2 Lecture Hours. 2 Lab Hours.
This course will introduce engineering students to applications for engineering problem-solving and object-oriented programming principles in Electrical and Computer Engineering using standard (ANSI) C and C++. An introduction to interfacing with FORTRAN is also given.
Prerequisite(s): A minimum grade of "C" in ENGR 1731.
Cross Listing(s): ENGR 1732.

ENGR 2121 Solid Modeling and Analysis
1 Credit Hour. 0 Lecture Hours. 3 Lab Hours.
The course is intended to develop a working skill in parametric solid modelling software. In addition to creating solid models, students will develop a basic proficiency in structures and thermal analysis software.
Prerequisite(s): A minimum grade of "C" in all of the following: ENGR 1133 and prior or concurrent enrollment in ENGR 3233.
Corequisite(s): ENGR 3233.

ENGR 2131 Electronics and Circuit Analysis
0.3 Credit Hours. 0.2 Lecture Hours. 0.2 Lab Hours.
This course introduces electric circuit elements, electronic devices, digital systems, and analysis of circuits containing such devices in order to provide students with the fundamental knowledge of electrical engineering principles and applications. Basic concepts of laboratory practice and instruments in the analysis of elementary electrical circuits will be covered in this course.
Prerequisite(s): PHYS 2212 and PHYS 1114 or Permission of Instructor.
ENGR 3233 Mechanics of Materials
3 Credit Hours. 3 Lecture Hours. 0 Lab Hours.
Definition and analysis of stress and strain, mechanical properties of materials, axially loaded members, torsion of circular sections, bending of beams, transformation of stress and strain, design of beams, and buckling of columns.
Prerequisite(s): MATH 2243 and MATH 3230 and a minimum grade of "C" in ENGR 2231.

ENGR 3235 Fluid Mechanics
3 Credit Hours. 3 Lecture Hours. 0 Lab Hours.
The course includes fundamentals of fluid statics and fluid dynamics for incompressible fluids, fluid properties, static and dynamic forces, Bernoulli's equation, pipe flow and losses, open channel flow and flow measurement. The course also includes methods, procedures and the use of equipment to measure standard fluid properties and phenomena.
Prerequisite(s): MATH 2243 and MATH 3230 and a minimum grade of "C" in ENGR 2231.
Cross Listing(s): ENGR 3235H.

ENGR 3235H Fluid Mechanics (Honors)
3 Credit Hours. 3 Lecture Hours. 0 Lab Hours.
The course includes fundamentals of fluid statics and fluid dynamics for incompressible fluids, fluid properties, static and dynamic forces, Bernoulli's equation, pipe flow and losses, open channel flow and flow measurement. The course also includes methods, procedures and the use of equipment to measure standard fluid properties and phenomena.
Prerequisite(s): MATH 2243 and MATH 3230 and a minimum grade of "C" in ENGR 2231.
Cross Listing(s): ENGR 3235.

ENGR 3310 Circuit Analysis Lab
1 Credit Hour. 0 Lecture Hours. 2 Lab Hours.
Laboratory experimentations to enhance understanding of analytical principles developed in ENGR 2334 (Circuit Analysis). Design and implementation of analog circuits (DC and AC). Proficiency with standard electronic instrumentation including multimeters, oscilloscopes, dual power supplies, and function generators. Simulation tools are used to verify experimental results.
Prerequisite(s): A minimum grade of "C" in all of the following: ENGR 2334 and prior or concurrent enrollment in EENG 3335 or permission of instructor.

ENGR 3431 Thermodynamics
3 Credit Hours. 3 Lecture Hours. 0 Lab Hours.
Thermodynamic properties, state postulate, work interactions, steady-state and transient energy and mass conservation, entropy and the second law. First and Second Law analysis of thermodynamic systems. Gas cycles and vapor cycles.
Prerequisite(s): PHYS 2211.
Cross Listing(s): ENGR 3431H.

ENGR 3431H Thermodynamics (Honors)
3 Credit Hours. 3 Lecture Hours. 0 Lab Hours.
Thermodynamic properties, state postulate, work interactions, steady-state and transient energy and mass conservation, entropy and the second law. First and Second Law analysis of thermodynamic systems. Gas cycles and vapor cycles.
Prerequisite(s): PHYS 2211.
Cross Listing(s): ENGR 3431.