ENGINEERING (ENGR)

ENGR 1201. Introduction to Engineering. 2 Hours.
This course provides an introduction to the engineering profession. Information on the different disciplines of engineering will be presented. Professional and ethical aspects of engineering are covered. An introduction to problem solving and the engineering design process with the utilization of various computer applications are covered. Various forms of technical communication are emphasized. Prerequisite or Corequisite: MATH 1314 or MATH 2413.

This course is an introduction to computer-aided drafting. Emphasis is placed on drawing setup, creating and modifying geometry, adding text and dimensions, using levels, coordinate systems, and plot/print scale. Technical drawing skills including freehand sketching, text, orthographic projection, dimensioning, sectional views, and other viewing conventions will be developed.

ENGR 2301. Engineering Mechanics I - Statics. 3 Hours.
This course covers the principles of engineering mechanics in statics including force systems, moments of inertia, vector mechanics and analysis of structures. Prerequisite: PHYS 2325.

ENGR 2302. Engineering Mechanics II - Dynamics. 3 Hours.
This course covers the principles of engineering mechanics in dynamics including Newton’s laws, kinetic and potential energy, linear and angular momentum, work, impulse, and inertia properties. Prerequisite: ENGR 2301.

ENGR 2303. Principles of Engineering I: Statics and Dynamics. 3 Hours.
This course examines the unified presentation of conservation principles applied to engineering mechanics and systems in statics and dynamics. Topics include force systems, moments of inertia, vector mechanics, Newton’s laws, kinetic and potential energy, linear and angular momentum, work, impulse, and inertia properties. Prerequisite: MATH 2413, PHYS 2325, and PHYS 2125.

ENGR 2305. Electric Circuits I. 3 Hours.
This course focuses on the fundamental concepts of engineering with special emphasis on electrical engineering. It includes the concepts of current, voltage, power, and energy, Kirchhoff’s current and voltage laws, resistance, capacitance, inductance, series, and parallel combinations of circuit elements. Basic techniques such as superposition and node voltage analysis are introduced. Prerequisite: MATH 2313, MATH 2413, or instructor permission. Prerequisite or Corequisite: PHYS 2326 or instructor permission.

ENGR 307. Probability and Random Processes. 3 Hours.
This course introduces students to the fundamental principles of probability and random processes. While helping students to develop their problem-solving skills, the course strives to motivate students with practical applications from various engineering areas that demonstrate the relevance of probability theory to engineering practice. Topics covered in this course include probability theory, discrete and continuous random variables and statistical description, statistical characterization of sequence of random variables, and stationary random processes. Prerequisite: MATH 2415.

ENGR 315. Engineering Computations. 3 Hours.
This course covers numerical methods and their use for solving computational problems in engineering. The course is devoted to mathematical essentials and software utilization of the following numerical methods: solving nonlinear equations, solving systems of linear algebraic equations, interpolation, curve fitting, numerical differentiation, numerical integration, and optimization. Engineering applications of the numerical techniques are also considered. Prerequisite: MATH 2413 and COSC 1315.

ENGR 333. Principles of Engineering II: Thermodynamics and Fluids. 3 Hours.
This course examines theory and application of energy methods in engineering, conservation principles to investigate "traditional" thermodynamics, and internal flow fluids. Topics include the Laws of Thermodynamics, entropy, refrigeration, fluid properties, momentum, and heat transfer. Prerequisite: PHYS 2325 and PHYS 2125. Prerequisite or Corequisite: MATH 2413.

ENGR 389. Independent Study. 1-3 Hours.
This course provides individual instruction. Students may repeat the course when topics vary.

ENGR 431. Engineering Internship I. 3 Hours.
The course provides experience in an engineering service, industrial, or research setting. The program provides engineering experience during the last two years of an undergraduate academic career. During this period, students can complete at least one semester of work consisting of a 20 hour work week. Prerequisite: Junior standing and approval of STEM Dean.

ENGR 432. Engineering Internship II. 3 Hours.
This course provides the second phase of the experience in engineering service, industrial, or research setting. The program provides engineering experience during the last two years of an undergraduate academic career. During this period students can complete at least one semester of work consisting of a 20 hour work week. Prerequisite: ENGR 431 and approval of STEM Dean.

ENGR 499. Independent Research. 1-6 Hours.
Independent research in Engineering conducted by a student under the guidance of a faculty member of his or her choice. The student is required to maintain a research journal and submit a project report by the end of the semester and potentially make an oral presentation on the project. SCH and hours are by arrangement and, with a change in content, this course may be repeated for credit. Prerequisite: Consent of instructor.
ENGR 599. Independent Research. 1-6 Hours.
Independent research in Engineering conducted by a student under the guidance of a faculty member of his or her choice. Credits and hours are by arrangement and, with a change in content, this course may be repeated for credit. Prerequisite: Consent of instructor.