

ENGR COURSES

Opposite each course title are three numbers such as 3-2-4. The first number indicates the number of regular classroom hours for the course each week; the second number indicates the number of laboratory hours per week; and the third number indicates the hours of credit awarded for the successful completion of the course. Listed in parentheses at the end of each course description is the term(s) that the course is normally offered. F=Fall, S=Spring, and M=Summer.

The college reserves the right to cancel or delete any course with insufficient enrollment.

Courses

ENGR 1105. Introduction to Engineering. 3-0-3 Units.

Introduction to the basic skills of engineering, including engineering design and problem solving, the fields and functions of engineering, including measurements and estimation, units, dimensions, vectors, Newton's laws, and other physical phenomenon common to many engineering problems. .

Prerequisites: MATH 1113 and Pre or Corequisite: ENGL 0999, unless exempt.

ENGR 1108K. Engineering Graphics. 2-3-3 Units.

Theory and application of the design process, using conventional drafting as well as computer assisted design, spatial analysis, projection theory, sketching, creative design, and geometric dimensioning. Development and interpretation of drawings and specifications. Pre or Corequisite: ENGL 0999, unless exempt.

Corequisites: MATH 2253.

ENGR 2205. Statics. 3-0-3 Units.

A study of elements of statics in two and three dimensions, free-body diagrams, distributed loads, centroids, and friction. (FS) Prerequisite coursework must be been successfully completed within the past three terms. Pre or Corequisites: MATH 2254

Prerequisites: MATH 2253 and PHYS 2211K with a grade of C or better. Corequisites: ENGL 0999, unless exempt.

ENGR 2240. Dynamics. 3-0-3 Units.

Kinematics and kinetics of particles and rigid bodies, work-energy and impulse-momentum concepts and principles.(S)

Prerequisites: A grade of "C" or better in ENGR 2205.

ENGR 3072K. Electrical Energy Systems. 3-3-4 Units.

The study of energy sources. This course introduces non-renewable and renewable/sustainable energy sources, the processes, costs, and environmental impact of converting to electric energy, the delivery and control of electric energy, and electromechanical systems.(F)

Prerequisites: Completion of two circuit analysis courses.

ENGR 3131K. Strength of Materials. 3-3-4 Units.

The study and mathematical modeling of the mechanical behavior of materials under load. Emphasis will be on the elastic conditions of equilibrium, compatibility and material behavior. Includes study of stress and strain in columns, connectors, beams, eccentrically-loaded members, as well as introduction to statically indeterminate members.(S)

Prerequisites: MATH 2254 and a grade of "C" or better in ENGR 2205.

ENGR 3301K. Circuits I. 3-3-4 Units.

This course introduces basic circuit analysis including resistive circuits, voltage and current sources, analysis methods, network theorems, energy storage elements, and AC steady-state analysis. Techniques for analyzing resistive networks are heavily emphasized. In addition, the physical mechanisms of capacitance and inductance are examined along with analysis of transient responses in circuits containing resistors, capacitors, and inductors. Laboratory exercises reinforce the theoretical concepts presented in class and provide various opportunities to become proficient with standard instrumentation used in electrical engineering.(F)

Prerequisites: PHYS 2211K.

ENGR 3302K. Circuits II. 3-3-4 Units.

A continuation of basic Circuit Analysis I which focuses on RC, RL, and RLC circuits, mutual inductance, series and parallel resonance, two-port networks frequency response, AC power including power factor correction, as well as three phase circuits. Simulation is heavily emphasized using state of the art software such as PSPICE.(S)

Prerequisites: ENGR 3301K and PHYS 2212K.

ENGR 3317. Industrial Econ & Fin Analysis. 3-0-3 Units.

Students will compare service and manufacturing projects and investments based on their economic value, quantify costs and benefits; analyze projects using present worth, annual worth, and rate of return methods, study simple and compound interest. This course also introduces basic financial accounting concepts, including balance sheets, income statements, change of financial condition, etc.

Prerequisites: MATH 2253.

ENGR 3343K. Fluid Mechanics. 3-3-4 Units.

This course introduces the fundamentals of fluid statics and dynamics, including hydrostatic forces on submerged plates, continuity of fluid flow and fluid flow principles. The applications of turbulent and laminar flow in conduits are emphasized. The system approach is practiced in analyzing the applications of flow measuring devices, piping, pumps, and turbines. (F)

Prerequisites: A grade of "C" or better in ENGR 2205.

ENGR 3410. Thermodynamics. 3-0-3 Units.

Introduces the fundamentals of thermodynamics, including the concept of energy and the laws governing the transfers and transformations of energy. Emphasis is placed on thermodynamic properties and the first and second law analysis of systems and control volumes. Integration of these concepts into the analysis of basic power cycles is introduced.(F)

Prerequisites: PHYS 2211K.

ENGR 3420. Industrial & Envir Safety. 3-0-3 Units.

Introduces the application of safety techniques and principles to identify and correct unsafe situations and practices. Includes the study of system safety, failure modes and effects analysis, fault tree analysis, preliminary hazard analysis, hazardous materials and practices, OSHA, health, and personal protection.(F even-numbered years)

ENGR 4000. Special Topics in Engineering. 1-1-1-4 Unit.

This course will be used to supplement other courses with additional work at a more advanced level. The detailed content may vary from year to year. Course may be repeated for credit when topic differs.(Offered as Needed)

Prerequisites: A 'C' or better in ENGR 2205 and permission of instructor.

ENGR 4101. Materials Science&Engineering. 3-0-3 Units.

Introduces the study of metals, ceramics, polymers, and composites as related to material selection in design and manufacturing. Topics will include atomic structure and bonding, crystal structure and defects, mechanical properties and failure, diffusion, dislocation and strengthening, alloying, phase diagrams and transformations/heat treatment, polymers, ceramics and glasses, and composites.(F)
Prerequisites: CHEM 1211K and PHYS 2211K.

ENGR 4440. Heat Transfer. 3-0-3 Units.

Introduces the fundamentals and applications of heat transfer. Topics include conduction, convection, and radiation. Students will explore steady state and transient conduction in one and multiple dimensions, forced and free convection with boundary layer theory, radiation properties and radiative heat transfer among black and non-black bodies. Students will calculate heat transfer rates, heating/cooling times, and design of heat exchangers.(S)
Prerequisites: ENGR 3410 and ENGR 3343.

ENGR 4456. Intro to Systems Engineering. 3-0-3 Units.

Introduces students to the concepts needed for successful system planning, designing and building process. Topics will include bringing large-scale systems to completion on schedule and on budget, modeling and cost estimating techniques, risk and variability.

ENGR 4860. Engineering Internship. 0-0-1-4 Unit.

A structured out of the classroom experience in a supervised setting that is related to the student's major and career interests. Practical experience is combined with scholarly research under the guidance of faculty and the internship supervisor. Internship sites must be secured in advance of the semester of the placement and must be approved by the student's advisor and internship coordinator. Note: Students may enroll multiple times in this course for a total of four credit hours. Prerequisite: 90 credit hours and permission of the instructor

ENGR 4900. Capstone. 3-0-3 Units.

This course provides comprehensive design experience for students working in small groups and is a culmination of the engineering technology education. Topics covered will include design specifications, evaluation of design alternatives, technical reports and oral presentations. This course may also include topics such as intellectual property, industry standards and conventions, reliability, engineering ethics and current topics in the field of engineering technology. (S - as needed) Go to the DSC website > Academics > School & Departments > School of Arts & Sciences > STEM Forms and fill out the appropriate form for this course.
Prerequisites: Senior standing, Instructor approval, Department Chair approval.