ENGINEERING (ENGR)

ENGR 200 SOPHOMORE ENGINEERING SEMINAR (0 credits)
Overview of career opportunities in engineering and construction management. Emphasizes internships, cooperative education and career placement.
Prerequisite(s)/Corequisite(s): Not open to non-degree graduate students.

ENGR 1000 INTERPERSONAL SKILLS FOR ENGINEERING LEADERS (3 credits)
Establishes a foundation in communication and leadership skills that is needed for engineering students to be successful in their academic endeavors and future career opportunities. Introduction to the principles and practices of positive interpersonal relationships for leadership development. Self-awareness, awareness of others, effective interpersonal communication, and the building of trust relationships as a basis for understanding and developing leadership.
Prerequisite(s)/Corequisite(s): Not open to non-degree graduate students.

ENGR 1010 INTRODUCTION TO ENGINEERING (3 credits)
Students will examine relevant and practical industrial and commercial engineering applications to gain necessary engineering skills that will help them succeed as a student as well as a professional engineer. A variety of engineering disciplines will be highlighted and discussed, as well as topics in the underlying physical, chemical, and biological scientific principles and processes related to each topic. The class will use a specified focus area that involves real world applications to aid in the conceptualization and learning of the course material. Students will develop engineering problem solving skills; gain expertise and experience using modern engineering and computational tools; and emulate an engineering team atmosphere - each of which can be applied to a profession engineering environment.

ENGR 1910 FRESHMAN ENGINEERING SPECIAL TOPICS (1-3 credits)
Topics vary.

ENGR 2000 PROFESSIONALISM & GLOBAL PERSPECTIVE (3 credits)
Enhance essential professional skills for personal and team success through investigating issues in a global context. Explore in-demand professional aptitudes (self-awareness, emotional intelligence, teamwork, communication, and workplace interaction expectations). Through industry/community interaction, explore cultural and business norms and the application of broader perspectives to identify issues/solutions responsive and adaptive to their global context.

ENGR 2500 ENGINEERING COOPERATIVE EDUC (1-12 credits)
Cooperative education work in a regularly established cooperative education work-study program in any engineering curriculum. Special approval is required to take course for credit hours. C/N only.
Prerequisite(s)/Corequisite(s): Sophomore standing; permission of College of Engineering Dean's Office and department chair of student's engineering major. All engineering students participating in cooperative education must register each term prior to commencing work.

ENGR 2910 SOPHOMORE ENGINEERING SPECIAL TOPICS (1-3 credits)
Topics vary.

ENGR 3000 CREATIVITY & WRITING FOR ENGNRS (3 credits)
Writing technical engineering reports; creative thinking and brainstorming applied to a real engineering problem with individual solutions submitted in report form.
Prerequisite(s)/Corequisite(s): ENGL1160 and Sophomore

ENGR 3010 INTRO NUCLEAR/RAD ENGR CONCPTS (1 credit)
History of nuclear development, basic concepts of radiation and radioactivity, radioactive waste management, global warming, and the impact of nuclear power plants. Industrial applications, health, and nuclear medicine. Job opportunities at power plants, graduate school, and national laboratories. Tour of the University of Texas nuclear research reactor and demonstration experiments. (Requires off-campus travel.)
Prerequisite(s)/Corequisite(s): Not open to non-degree students

ENGR 3100 UTILZTN OF NUCLEAR TECH SOC (3 credits)
The applications of nuclear science to society and the fundamental radiation principles utilized in these applications.
Prerequisite(s)/Corequisite(s): Not open to non-degree students

ENGR 3200 LEADERSHIP, MANAGEMENT, AND ETHICS (3 credits)
Explore professional leadership, ethics, project management tools and skills, and how to successfully implement and respond to change. In a team based environment, enhance essential professional skills for personal and team success by developing and presenting a responsive proposal considering: client needs, basic project controls and scheduling. Learn about personal styles, motivation and effectively implementing change. Examine ethical dilemmas regarding principles, stewardship, and civics from ethical, legal, and expediency perspectives.
Prerequisite(s)/Corequisite(s): Not open to non-degree graduate students.

ENGR 3500 ENGINEERING COOPERATIVE EDUC (1-12 credits)
Cooperative education work in a regularly established cooperative education work-study program in any engineering curriculum. Special approval is required to take course for credit hours. C/N only.
Prerequisite(s)/Corequisite(s): Junior standing; permission of College of Engineering Dean’s Office and department chair of student’s engineering major. All engineering students participating in cooperative education must register each term prior to commencing work.

ENGR 3910 JUNIOR ENGINEERING SPECIAL TOPICS (1-3 credits)
Topics vary.

ENGR 4000 PROFESSIONAL ETHICS&SOC RSPNSBLY (1 credit)
Discussions on professionalism and ethics of engineering practice; problems encountered by new graduates.
Prerequisite(s)/Corequisite(s): Senior

ENGR 4020 ENERGY SYSTEMS AND RESOURCES (3 credits)
Energy as a critical component of civilization. The critical role of energy from the economic and political point of view world wide. Energy resources available, the technology to use the resources, the economics of energy production, the environmental consequences of energy use, and energy policy.
Prerequisite(s)/Corequisite(s): ENGR3010, not open to nondegree students

ENGR 4050 ANALYSIS OF ENGINEERING MANAGEMENT (3 credits)
General concepts and principles of engineering management applied to cases. (Cross-listed with ENGR 8056)
Prerequisite(s)/Corequisite(s): CONE 2060

ENGR 4070 PROJECT MANAGEMENT (3 credits)
Project development, role of the project manager, project selection, project planning, budgeting and cost estimation, project scheduling, and project termination. (Cross-listed with ENGR 8076)

ENGR 4100 RADIATION PROTECTION AND SHIELDING (3 credits)
Basic principles and concepts of radiation protection and shield design. Dosimetric units and response functions, hazards of radiation doses, radiation sources, basic methods for dose evaluation, and shielding design techniques for photons and neutrons.
Prerequisite(s)/Corequisite(s): MENG 4010 or 8016 or ENGR 4210
ENGR 4110 NUCLEAR REACTOR THEORY (3 credits)
Introduction to neutron diffusion theory, neutron moderation, neutron thermalization, and criticality condition of nuclear reactor.
Prerequisite(s)/Corequisite(s): ENGR 3100, not open to nondegree students

ENGR 4120 NUCLEAR REACTOR ANALYSIS (3 credits)
Group diffusion method, multiregional reactors, heterogeneous reactors, reactor kinetics, and change in reactivity.
Prerequisite(s)/Corequisite(s): ENGR 4110, not open to nondegree students

ENGR 4150 COGNITIVE ERGONOMICS (3 credits)
Human factors affecting work. Focus on humans: energy requirements, lighting, noise, monotony and fatigue, learning, simulations versus sequential tasks. Experimental evaluation of concepts. (Cross-listed with ENGR 8156)
Prerequisite(s)/Corequisite(s): ENGR 4300 or permission.

ENGR 4160 PHYSICAL ERGONOMICS (3 credits)
Human performance in work. Human response to various environmental and task-related variables with emphasis on physical and physiological effects. (Cross-listed with ENGR 8166)
Prerequisite(s)/Corequisite(s): ENGR 4300 or permission

ENGR 4170 OCCUPATIONAL SAFETY HYGIENE ENGINEERING (3 credits)
Introduction to occupational hygiene engineering with emphasis on workplace environmental quality. Heat, illumination, noise, and ventilation. (Cross-listed with ENGR 8176)
Prerequisite(s)/Corequisite(s): Senior standing or permission

ENGR 4200 NUCLEAR REACTOR ENGINEERING (3 credits)
The physics governing nuclear reactors and the design principles for commercial nuclear power plants. Reactor designs currently operating in the power industry.

ENGR 4210 ELEMENTS OF NUCLEAR ENGINEERING (3 credits)
Prerequisite(s)/Corequisite(s): MATH 1970, PHYS 2120, and ENGR 3010 or 3100

ENGR 4300 APPLIED STATISTICS AND QUALITY CONTROL (3 credits)
Systematic analysis of processes through the use of statistical analysis, methods, and procedures; statistical process control, sampling, regression, ANOVA, quality control, and design of experiments. Use of software for performing a statistical analysis. (Cross-listed with ENGR 8306).
Prerequisite(s)/Corequisite(s): MENG 3210.

ENGR 4400 DISCRETE EVENT SIMULATION MODELING (3 credits)
Development of simulation models of discrete systems. Model development, Monte Carlo techniques, random number generators, and output analysis. (Cross-listed with ENGR 8406)
Prerequisite(s)/Corequisite(s): CONE 2060, MENG 3210 and CIST 1400 or CSCI 1620 or CSCI 2240 or permission

ENGR 4410 ENGINEERING ECONOMY (3 credits)
Economic factors involved in the comparison of engineering alternatives and the techniques of equipment selection and replacement.
Prerequisite(s)/Corequisite(s): Senior

ENGR 4500 ENGINEERING COOPERATIVE EDUC (0-12 credits)
Cooperative education work in a regularly established cooperative education work-study program in any engineering curriculum. Special approval is required to take course for credit hours. C/N only.
Prerequisite(s)/Corequisite(s): Senior standing; permission of College of Engineering Dean's Office and department chair of student's engineering major. All engineering students participating in cooperative education must register each term prior to commencing work.