ENGR 100  FRESHMAN ENGINEERING SEMINAR (0 credits)
Overview of the engineering field as well as major specific information. Information will be provided to help with transitional needs to UNL and the college of engineering (time management, study skills, and resources), involvement opportunities (student organizations, research, and study abroad, tours of engineering facilities for experiential learning, and interactive learning to increase business knowledge and skills).
Prerequisite(s)/Corequisite(s): Not open to non-degree graduate students.
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 EDUCATION (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 2910  SOPHOMORE ENGINEERING SPECIAL TOPICS (1-3 credits)
Topics vary.
ENGR 3000  CREATIVITY AND WRITING FOR ENGINEERS (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  INTRODUCTION TO NUCLEAR AND RADIATION ENGINEERING CONCEPTS (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  UTILIZATION OF NUCLEAR TECHNOLOGIES IN SOCIETY (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 graduate 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 EDUCATION (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 AND SOCIAL RESPONSIBILITY (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 worldwide. 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 EPSRCONNOMICS (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 EPSRCONNOMICS (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  
v 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)  
Survey of nuclear engineering concepts and applications. Nuclear reactions,  
radioactivity, radiation interaction with matter, reactor physics, risk and  
dose assessment, applications in medicine, industry, agriculture, and  
research. Cross-listed with MENG 4210.
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 EDUCATION (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.

ENGR 4600 PACKAGING ENGINEERING (3 credits)  
Investigation of packaging processes, materials, equipment and design.  
Container design, material handling, storage, packing and environmental  
regulations, and material selection. (Cross-listed with ENGR 8606)
Prerequisite(s)/Corequisite(s): CONE 2060, MENG 3210, MENG 3730

ENGR 4610 RFID SYSTEMS IN THE SUPPLY CHAIN (3 credits)  
Foundations of Radio Frequency Identification Systems (RFID). The  
fundamentals of how RFID components of tag, transponder, and antennae  
are utilized to create RFID systems. Best practices for implementation  
of RFID systems in common supply operations. (Cross-listed with ENGR 8616)

ENGR 4690 TECHNOLOGY, SCIENCE AND CIVILIZATION (3 credits)  
(Lect 2 Dis. 2) This course studies the development of technology as a  
trigger of change upon humankind, from the earliest tools of Homo Habilis  
to the advent of the radio telescope in exploring the creation of the universe.  
The course traces the paths from early science to development of the  
sciences and technologies that will dominate the new millennium. (8696 is  
for non SET students) (Cross-listed with ENGR 8696).
Prerequisite(s)/Corequisite(s): Senior or permission.

ENGR 4810 SUPPLY CHAIN OPTIMIZATION (3 credits)  
Foundations of supply chain network modeling. The concepts that  
support the economic and service trade-offs in supply chain and logistics  
management. Using decision support system (DSS) to design optimal  
logistics network models given data requirements and operational  
parameters. Using leading software packages to model problems arising in  
strategic management of logistics networks. (Cross-listed with ENGR 8816)

ENGR 4830 LOGISTICS IN THE SUPPLY CHAIN (3 credits)  
The process of planning, implementing and controlling the efficient,  
effective flow and storage of goods, services and related information from  
the point of origin to the point of consumption. Domestic transportation  
systems, distribution centers and warehousing, international logistics,  
logistic system controls, and reengineering logistics systems. (Cross-listed  
with ENGR 8836)

ENGR 4900 GLOBAL EXPERIENCES IN ENGINEERING (1-3 credits)  
Individual or group educational experience combining classroom lectures,  
discussions, and/or seminars with field and/or classroom studies in a  
foreign country. Choice of subject matter and coordination of on- and off-  
campus activities are at the discretion of the instructor.

ENGR 4910 SENIOR ENGINEERING SPECIAL TOPICS (1-3 credits)  
Topics vary.