ENG 101 Introduction to Engineering
Description: Introductory course for students who may be considering engineering as a major or career path. It covers the basics of engineering, including problem-solving, design, and analysis.
Credit Hours: 1
Min credits per semester: 1
Max credits per semester: 1
Max credits per degree: 1
Format: LEC

Prerequisite for: ENGR 200
ACE: ACE 6 Social Science ACE 9 Global/Diversity

ENGR 10 Freshman Engineering Seminar
Description: An overview of the engineering field and the skills needed to succeed in engineering. It covers topics such as teamwork, communication, and problem-solving.
Credit Hours: 1
Min credits per semester: 0
Max credits per semester: 0
Max credits per degree: 0
Format: LEC

ENGR 20 Sophomore Engineering Seminar
Description: An overview of career opportunities in engineering and construction management. It focuses on internships, cooperative education, and career placement.
Credit Hours: 1
Min credits per semester: 1
Max credits per semester: 1
Max credits per degree: 1
Format: LEC

ENGR 100 Interpersonal Skills for Engineering Leaders
Description: A course that teaches students the skills needed to lead in an engineering environment. It covers topics such as communication, teamwork, and leadership.
Credit Hours: 3
Min credits per semester: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

ENGR 200 Professionalism and Global Perspective
Description: A course that teaches students the skills needed to succeed in an engineering environment, including cultural awareness, teamwork, and communication.
Credit Hours: 3
Min credits per semester: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

ENGR 250 Engineering Cooperative Education
Description: A course that teaches students the skills needed to succeed in an engineering environment, including cooperative education, internships, and teamwork.
Credit Hours: 12
Min credits per semester: 12
Max credits per semester: 12
Max credits per degree: 12
Format: LEC

ENGR 191 Freshman Engineering Special Topics
Description: Topics vary.
Credit Hours: 1-3
Min credits per semester: 1
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

ENGR 291 Sophomore Engineering Special Topics
Description: Topics vary.
Credit Hours: 1-3
Min credits per semester: 1
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

ENGR 301 Introduction to Nuclear and Radiation Engineering Concepts
Description: A course that teaches students the history of nuclear development, basic concepts of radiation and radioactive waste management.
Credit Hours: 1
Min credits per semester: 1
Max credits per semester: 1
Format: LEC

Prerequisite for: ENGR 402, MECH 421, MECH 821, ENGR 421

ENGR 300 Principles of Nuclear Engineering
Description: A course that teaches students the principles of nuclear engineering.
Credit Hours: 3
Min credits per semester: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

ENGR 402; MECH 421, MECH 821, ENGR 421
ENGR 310 Utilization of Nuclear Technologies in Society
Description: The applications of nuclear science to society and the fundamental radiation principles utilized in these applications.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC
Prerequisite for: ENGR 411; MECH 421, MECH 821, ENGR 421

ENGR 320 Leadership, Management and Ethics
Prerequisites: ENGR 200
Description: 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.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC
ACE: ACE 6 Social Science ACE 8 Civic/Ethics/Stewardship

ENGR 350 Engineering Cooperative Education
Prerequisites: Junior standing; permission of College of Engineering Dean's Office and department chair of student's engineering major.
Notes: Special approval is required to take course for credit. All students in engineering participating in cooperative education must register each term prior to commencing work. P/N only.
Description: Cooperative education work in a regularly established cooperative education work-study program in any engineering curriculum.
Credit Hours: 12.00
Max credits per semester: 12
Max credits per degree: 12
Format: FLD

ENGR 391 Junior Engineering Special Topics
Description: Topics vary.
Credit Hours: 1-3
Min credits per semester: 1
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

ENGR 400 Professional Ethics and Social Responsibilities
Prerequisites: Must have senior standing and Professional Admission.
Notes: Best taken during final semester prior to graduation.
Description: Professional relations, personal requirements, civic responsibilities, and ethical obligations for engineering practice. Legal registration of engineers and architects. Subprofessional and professional services. Changing conditions in engineering practice. Requirements for placement in engineering.
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Format: LEC
Offered: FALL/SPR

ENGR 402 Energy Systems and Resources
Prerequisites: ENGR 301.
Description: 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.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

ENGR 410 Radiation Protection and Shielding
Prerequisites: MECH401/801/ENGR 421.
Description: Basic principles and concepts of radiation protection and shield design. Dosi-metric units and response functions, hazards of radiation doses, radiation sources, basic methods for dose evaluation, and shielding design techniques for photons and neutrons.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

ENGR 411 Nuclear Reactor Theory
Prerequisites: ENGR 310.
Description: Introduction to neutron diffusion theory, neutron moderation, neutron thermalization, and criticality condition of nuclear reactor.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC
Prerequisite for: ENGR 412

ENGR 412 Nuclear Reactor Analysis
Prerequisites: ENGR 411.
Description: Group diffusion method, multiregional reactors, heterogeneous reactors, reactor kinetics, and change in reactivity.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

ENGR 420 Nuclear Reactor Engineering
Prerequisites: MECH 421/821/ENGR 421.
Description: The physics governing nuclear reactors and the design principles for commercial nuclear power plants. Reactor designs currently operating in the power industry.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

ENGR 421 Elements of Nuclear Engineering
Crosslisted with: MECH 421, MECH 821
Prerequisites: ENGR 300 or 301 or 310; MATH 208/208H; and PHYS 212/212H
Description: 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.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC
Prerequisite for: ENGR 410; ENGR 420
ENGR 447 Multi-disciplinary Engineering Capstone
Prerequisites: Senior standing, professional admission to an engineering program, and instructor permission.
Description: Definition, scope, analysis, synthesis, and the design for the solution of a comprehensive engineering problem in any major area of engineering, with emphasis on multi-disciplinary engineering problems.
Credit Hours: 2-6
Min credits per semester: 2
Max credits per semester: 6
Max credits per degree: 6
Format: LEC

ENGR 450 Engineering Cooperative Education
Prerequisites: Senior standing; permission of College of Engineering Dean's Office and department chair of student's engineering major.
Notes: Special approval is required to take course for credit. Pass/No Pass only. All students in engineering participating in cooperative education must register each term prior to commencing work. Pass/No Pass only.
Description: Cooperative education work in a regularly established cooperative work-study program in any engineering curriculum.
Credit Hours: 12.00
Max credits per semester: 12
Max credits per degree: 12
Format: FLD

ENGR 469 Technology, Science and Civilization
Prerequisites: Senior standing
Description: Study of 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. Tracing paths from early science to development of the sciences and technologies that dominate the new millennium.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC
ACE: ACE 8 Civic/Ethics/Stewardship

ENGR 490 Global Experiences
Prerequisites: Permission.
Notes: Choice of subject matter and coordination of on- and off-campus activities are at the discretion of the instructor.
Description: Individual or group educational experience combining classroom lectures, discussions, and/or seminars with field and/or classroom studies in a foreign country.
Credit Hours: 1-3
Min credits per semester: 1
Max credits per semester: 3
Max credits per degree: 12
Format: FLD
ACE: ACE 9 Global/Diversity

ENGR 491 Senior Engineering Special Topics
Description: Topics vary.
Credit Hours: 1-3
Min credits per semester: 1
Max credits per semester: 3
Max credits per degree: 3
Format: LEC