

Engineering - ENGR

Courses

ENGR 1100 ENGINEERING ORIENTATION (0) LEC. 1. SU. Introduction to the College of Engineering and its resources, exploration of engineering careers, orientation to campus resources and facilities, and assistance with academics and transition to college. Course may be repeated with change in topics.

ENGR 1110 INTRODUCTION TO ENGINEERING (2) LEC. 1. LAB. 3. Introduction to engineering design, engineering teams, graphical presentation, technical writing, oral presentation. May count either ENGR 1110 or ENGR 1113.

ENGR 1410 ENGINEERING SUCCESS STRATEGIES (1) LEC. 1. Topics and engagement with engineering academic support strategies, academic integrity and ethics, professional development skills, engineering learning strategies, inclusive engineering teaming, inclusion and diversity, effective technical communication techniques, career exploration strategies, and exploration of engineering challenges. Explores a variety of academic, personal development, and career exploration activities intended to build a sense of community with underrepresented engineering and computer science students.

ENGR 2010 THERMODYNAMICS (3) LEC. 3. Pr. (CHEM 1030 or CHEM 1033 or CHEM 1110 or CHEM 1117) and (MATH 1620 or MATH 1623 or MATH 1627 or MATH 1720) and (P/C PHYS 1600 or P/C PHYS 1607). Principles and applications of thermodynamics to engineering problems.

ENGR 2030 FUNDAMENTALS OF 3D PRINTING (2) LEC. 1. LAB. 3. Introductory level practical aspects of 3D printing, including: model file generation, computer aided design (CAD), slicing, and hands-on printing. Overview of 3D printing technologies and practical troubleshooting.

ENGR 2050 STATICS (3) LEC. 3. Pr. (PHYS 1600 or PHYS 1607) and (P/C MATH 2630 or P/C MATH 2633 or P/C MATH 2637). Principles of vectors, forces, moments, free body diagrams, force systems, 2-D and 3-D equilibrium, friction, geometric properties of plane areas.

ENGR 2070 MECHANICS OF MATERIALS (3) LEC. 3. Pr. (ENGR 2050 or ENGR 2053) and P/C MATH 2650. Minimum grade of C or better in ENGR 2050. Principles of stress and strain; stress-strain relationships; uniaxially loaded members; torsion; bending; beam shear; shear, moment and thrust diagrams; transformed sections; column buckling.

ENGR 2077 HONORS MECHANICS OF MATERIALS (3) LEC. 3. Pr. Honors College. MATH 2650 and ENGR 2050 or ENGR 2053. Minimum grade of C or better in ENGR 2050. Principles of stress and strain; stress-strain relationships; uniaxially loaded members; torsion; bending; beam shear; shear, moment and thrust diagrams; transformed sections; column buckling.

ENGR 2100 FUNDAMENTALS OF ENGINEERING MECHANICS (3) LEC. 3. Pr. P/C PHYS 1600 or P/C PHYS 1607. Basic principles of two-dimensional force systems, free body diagrams, concepts of stress and strain, centroids of composite areas, kinematics and kinetics of particles and rigid bodies.

ENGR 2200 INTRODUCTION TO THERMODYNAMICS, FLUIDS AND HEAT TRANSFER (3) LEC. 3. Pr. (CHEM 1030 or CHEM 1033) and (PHYS 1610 or PHYS 1617). Principles and applications of thermodynamics, fluids and heat transfer.

ENGR 2350 DYNAMICS (3) LEC. 3. Pr. ENGR 2050 or ENGR 2053. Fundamental principles of dynamics including kinematics and kinetics of particles, kinematics and kinetics of rigid bodies, mass moments of inertia, three-dimensional dynamics of rigid bodies, and simple harmonic motion.

ENGR 2700 NUCLEAR POWER OPERATIONS, SYSTEM AND CAREERS (1) LEC. 1. SU. Pr. P/C MATH 1610 or P/C MATH 1613 or P/C MATH 1617. Overview of nuclear power generation systems including civilian and government career options.

ENGR 3510 INTRODUCTION TO BUSINESS AND ENGINEERING (3) LEC. 3. Principles of business and engineering issues in new product and business development.

ENGR 3520 INTEGRATING BUSINESS AND ENGINEERING THEORY WITH PRACTICE (3) LEC. 2. LAB. 3. Case study problems from business and engineering practice.

ENGR 3560 LEADERSHIP FOR BUSINESS AND ENGINEERS (1) LEC. 1. Overview of leadership concepts and skills.

ENGR 3710 BASIC NUCLEAR I: NUCLEAR AND MECHANICAL SYSTEMS (4) LEC. 3. LAB. 1. Pr. P/C ENGR 2700 and (P/C PHYS 1500 or P/C PHYS 1600 or P/C PHYS 1607). Multidisciplinary course teaching fundamental nuclear and mechanical principles as they are utilized in the nuclear power generation industry.

ENGR 3720 BASIC NUCLEAR II: MATERIALS, ELECTRIC, ELECTRONICS (4) LEC. 3. LAB. 2.5. Pr. ENGR 2700 and (PHYS 1500 or P/C PHYS 1600 or P/C PHYS 1607). Multidisciplinary course teaching fundamental electronic and electrical theory and materials theory as practiced in nuclear power generation industry.

ENGR 3920 INTERNSHIP IN ENGINEERING (0) INT. SU. Professional work experience in an engineering position. Students participating in ENGR 3920 are expected to work in a fulltime, 40 hour/week, engineering job. Course may be repeated for a maximum of 10 credit hours.

ENGR 3970 SPECIAL TOPICS: ENGINEERING, TECHNOLOGY AND SOCIETY - SPAIN (1-4) AAB/LLB. Special topics of interest within a global engineering context. Course may be repeated for a maximum of 9 credit hours.

ENGR 4710 ADVANCED REACTOR OPERATIONS I: HEALTH AND SAFETY (3) LEC. 3. Pr. P/C ENGR 2700. Advanced safety topics within regulatory and training structure of nuclear power industry.

ENGR 4720 ADVANCED REACTOR OPERATIONS II: SAFE OPERATIONS (4) LEC. 3. LAB. 1. Pr. ENGR 3710 or ENGR 3720. Nuclear power plant operations are discussed in detail, with a strong emphasis on safety compliance and industry's safety culture. Topics include the NRC's regulatory processes, operator licensing, reactor design certifications, reactor licensing, reactor oversight, enforcement, reactor modes of operation, plant refueling, spent fuel storage, and plant decommissioning. There is a heavy emphasis on integrated plant systems and operations. Industry leaders discuss current topics.

ENGR 4721 ADVANCED REACTOR PLANT OPERATIONS II: LAB (1) LAB. 2.5. Pr. P/C ENGR 4710. Nuclear power plant operations are discussed with a strong emphasis on safety compliance and industry's safety culture. Focus is hands-on practical factors.

ENGR 5540 ENTREPRENEURSHIP AND STRATEGIC MANAGEMENT OF TECHNOLOGY AND INNOVATION (4) LEC. 4. Pr. (BUSI 3510 or ENGR 3510) and (BUSI 3520 or ENGR 3520). Acceptance into the BET minor program. Develop student skills for starting a new business and making strategic decisions concerning technology.

ENGR 5550 PRODUCT/PROCESS DESIGN AND DEVELOPMENT I (2) LEC. 2. Must be in BET minor program. Processes to develop and present design proposal for cooperating industry. Credit will not be given for both BUSI 5970 and ENGR 5970.

ENGR 5560 PRODUCT/PROCESS DESIGN AND DEVELOPMENT II (3) LEC. 1. LAB. 6. Pr. (BUSI 5540 or ENGR 5540) and (BUSI 5550 or ENGR 5550). Must be accepted into BET minor. Cross-functional team design projects for sponsoring industry.

ENGR 6000 ADVANCED ENGINEERING ANALYSIS (3) LEC. 3. Pr. MATH 2660. Analytical solutions of linear and nonlinear problems involving transcendental equations, ODEs/PDEs, Taylor/Fourier/asymptotic series, functional expansions, power series, and approximation methods. May count either ENGR 6000 or ENGR 6006.

ENGR 6540 ENTREPRENEURSHIP AND STRATEGIC MANAGEMENT OF TECHNOLOGY AND INNOVATION (4) LEC. 4. Develop student skills for starting a new business and making strategic decisions concerning technology.

ENGR 6550 PRODUCT/PROCESS DESIGN AND DEVELOPMENT I (2) LEC. 2. Develop student skills for starting a new business and making strategic decisions concerning technology.

ENGR 6560 PRODUCT/PROCESS DESIGN AND DEVELOPMENT II (3) LEC. 3. Pr. (BUSI 5540 or ENGR 6540) and (BUSI 5550 or ENGR 6550). Cross-functional team design projects for sponsoring industry.

ENGR 7920 INTERNSHIP IN ENGINEERING (0) INT. SU. Professional work experience in an engineering position. Course may be repeated for a maximum of 10 credit hours.

ENGR 7940 MASTER OF ENGINEERING PROGRAM ASSESSMENT (0) IND. SU. The course will require that students describe how well the program helped them to attain the outcomes that they articulated in their application to the program. In addition to a reflective description, students will provide examples of work that demonstrate the skills or knowledge that they gained as part of the degree program. These work examples will then be evaluated using a standardized rubric for program assessment purposes, only.

ENGR TECH ENGINEERING TECH ELECTIVE (3) LEC. 3. Transfer Only Equivalency for Engineering Courses. Course may be repeated with change in topics.