ENGINEERING (ENGR)

Engineering Graduate Courses

ENGR 807 PROJECT MANAGEMENT (3 credits)
Project development, role of the project manager, project selection, project planning, budgeting and cost estimation, project scheduling, and project termination.

ENGR 810 ERGONOMICS (3 credits)
Introduction to the principles of ergonomics. Information processing, human output and control, workplace design and environmental conditions. Not open to students with credit in ISMG 3150.

ENGR 815 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.

ENGR 816 PHYSICAL ERGONOMICS (3 credits)
Human performance in work. Human response to various environmental and task-related variables with emphasis on physical and physiological effects.

ENGR 817 OCCUPATIONAL SAFETY HYGIENE ENGINEERING (3 credits)
Introduction to occupational hygiene engineering with emphasis on workplace environmental quality. Heat, illumination, noise, and ventilation.
Prerequisite(s): Senior standing or permission.

ENGR 823 RELIABILITY ENGINEERING (3 credits)
System and component reliability analyses of series, parallel and complex systems. Concepts of reliability, availability, and maintainability in design of systems. Methods of reliability testing and estimation.

ENGR 824 UNIQUE CONCERNS OF ENGINEERING EDUCATION (3 credits)
The purposes and contexts of engineering education will be illuminated through readings and discussions of its historical roots, current expressions, and future directions. Discussions will delve into the history and trajectory of engineering education and concerns that are uniquely engineering (e.g., engineering design, diversity and inclusion, and teaming).

ENGR 830 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.
Prerequisite(s): MECH 321.

ENGR 831 STOCHASTIC PROCESSES (3 credits)
Fundamentals of stochastic processes and their application in modeling production/inventory control, maintenance and manufacturing systems. Markov and semi-Markov chains, Poisson processes, renewal processes, regenerative processes and Markov decision processes.

ENGR 833 EVIDENCE-BASED STEM TEACHING STRATEGIES (3 credits)
This learning experience is designed to provide graduate level training on teaching at the postsecondary level. Evidence-based teaching methods applicable to Science, Technology, Engineering, and Mathematics (STEM) will be investigated and a learner-based pedagogy will be used to engage those in the course to experience STEM practices. The common element of problem solving is emphasized across all STEM disciplines allowing for discovery, exploration, and application of critical thinking skills. Primary tasks include developing a unit on Canvas that includes learning outcomes, lecture and activities, and assessments, a teaching philosophy, and engaging with technologies that support and enhance teaching and learning.

ENGR 840 DISCRETE EVENT SIMULATION MODELING (3 credits)
Development of simulation models of discrete systems. Model development, Monte Carlo techniques, random number generators, and output analysis.
Prerequisite(s): CONE 206; MECH 321 and CIST 1400 or CSCI 1620 or CSCI 2240 or permission

ENGR 860 PACKAGING ENGINEERING (3 credits)
Investigation of packaging processes, materials, equipment and design. Container design, material handling, storage, packing and environmental regulations, and material selection.
Prerequisite(s): CONE 206, MECH 321, MECH 373

ENGR 861 RFID SYSTEMS IN THE SUPPLY CHAIN (3 credits)
Foundations of Radio Frequency Identification Systems (RFID). The fundamentals of how RFID components of tab, transponder, and antennae are utilized to create RFID systems. Best practices for implementation of RFID systems in common supply operations.

ENGR 869 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. (869 is for non SET students.) (Cross-listed with ENGR 469).
Prerequisite(s): Senior or permission. (ENGR 869 is for non-SET students.)

ENGR 881 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.

ENGR 882 MATERIAL PLAN IN LOGISTIC SYSTEMS (3 credits)
Theory, practice and application of inventory, demand and supply planning techniques in multistage environments. Managing economies of scale, uncertainties, capacity constraints, and product availability in a supply chain. Integrated planning, supply chain coordination and technology enablers.
Prerequisite(s): MECH 321

ENGR 883 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.

ENGR 891 SPECIAL TOPICS IN ENGINEERING (1-6 credits)
Subject matter in emerging areas of engineering and closely related areas not covered in other courses within the College of Engineering graduate programs. Topics, activities, and delivery methods vary.

ENGR 901 TOTAL QUALITY MANAGEMENT USING SIX SIGMA TECHNIQUES (3 credits)
Introduction to advanced topics in Engineering Management and the foundations of Total Quality Management (TQM). Costs of quality, statistical tools, initiating change, advanced topics, and TQM in practice. Using DMAIC, DFSS, and CQPQ along with the other industry accepted Six Sigma Quality Techniques.

ENGR 905 ANALYSIS OF ENGINEERING MANAGEMENT (3 credits)
Continuation of concepts and principles of engineering management applied to production cases.

ENGR 906 FINANCIAL ENGINEERING (3 credits)
Applications of principle and financial economics in industrial and systems engineering. Term structure of interest, capital asset pricing and other capital allocation modes. Evaluation of real-options using binomial lattice, Black Scholes and other pricing models.

ENGR 919 DETERMINANTS OF OCCUPATIONAL PERFORMANCE (3 credits)
Focus on the individual in the industrial working environment. Emphasis on evaluation of fatigue, training, shift work, perception, vigilance, and work rest scheduling as they relate to the working environment.
Prerequisite(s): Permission.