ENGR 801 Engineering Education Research Graduate Seminar I  
Description: Explore EER career paths; identify necessary knowledge, skills, and abilities; and plan an aligned graduate experience. Become familiar with the professional norms and ethical principles and practices related to research. Build one's academic community networks (e.g., DBER, engineering discipline). Develop oral communication skills appropriate for EER. Develop reflexive ability to make meaning of graduate experiences.  
Credit Hours: 1  
Max credits per semester: 1  
Max credits per degree: 1  
Grading Option: Graded  
Offered: FALL/SPR  

ENGR 810 Ergonomics  
Notes: Not open to students with credit in IMSE 315.  
Description: Introduction to the principles of ergonomics. Information processing, human output and control, workplace design and environmental conditions.  
Credit Hours: 3  
Max credits per semester: 3  
Max credits per degree: 3  
Grading Option: Grade Pass/No Pass Option  

ENGR 812 Occupational Safety-A Systems Analysis  
Prerequisites: MECH 321  
Credit Hours: 3  
Max credits per semester: 3  
Max credits per degree: 3  
Grading Option: Graded  

ENGR 815 Cognitive Ergonomics  
Prerequisites: ENGR 830 or permission  
Description: Human factors affecting work. Focus on humans: energy requirements, lighting, noise, monotony and fatigue, learning, simultaneous versus sequential tasks. Experimental evaluation of concepts.  
Credit Hours: 3  
Max credits per semester: 3  
Max credits per degree: 3  
Grading Option: Graded  

ENGR 817 Occupational Safety Hygiene Engineering  
Prerequisites: Senior standing.  
Description: Introduction to occupational hygiene engineering with emphasis on workplace environmental quality. Heat, illumination, noise, and ventilation.  
Credit Hours: 3  
Max credits per semester: 3  
Max credits per degree: 3  
Grading Option: Graded  

ENGR 823 Reliability Engineering  
Description: 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.  
Credit Hours: 3  
Max credits per semester: 3  
Max credits per degree: 3  
Grading Option: Graded  

ENGR 824 Unique Concerns of Engineering Education  
Description: 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).  
Credit Hours: 3  
Max credits per semester: 3  
Max credits per degree: 3  
Grading Option: Graded  

ENGR 830 Applied Statistics and Quality Control  
Prerequisites: MECH 321  
Description: 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.  
Credit Hours: 3  
Max credits per semester: 3  
Max credits per degree: 3  
Grading Option: Graded  

ENGR 832 Scheduling  
Description: The problem of scheduling several tasks over time, including measure of performance, single-machine sequencing, flow shop scheduling, the job shop problem and priority dispatching.  
Credit Hours: 3  
Max credits per semester: 3  
Max credits per degree: 3  
Grading Option: Graded
ENGR 833 Evidence-Based STEM Teaching Strategies  
**Description:** 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.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded  
**Offered:** FALL

ENGR 834 Framing STEM Education Research  
**Description:** Introduction to the basic types of research study designs (quantitative, qualitative, and mixed methods) through examples in STEM education. Learn to identify an educational problem in STEM education, pose a research question, and support the need for a study through literature review. Become familiar with how theories of learning and thinking are used to predict or explain research findings. Become familiar with the protection of human subjects and gain certification for human subjects research.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded  
**Offered:** FALL

ENGR 840 Discrete Event Simulation Modeling  
**Prerequisites:** CONE/BSEN 206 and MECH 321; CSCE 155A, CSCE 155E, CSCE 155H, CSCE 155N or CSCE 155T.  
**Description:** Development of simulation models of discrete systems. Model development, Monte Carlo techniques, random number generators, and output analysis.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded  
**Offered:** SPRING

ENGR 841 Computer Networks  
**Course and Laboratory Fee:** $15

ENGR 842 Theory in STEM Education Research  
**Description:** Introduction to theories relevant to STEM education research. Differentiate and connect the roles of theoretical and conceptual frameworks in STEM education research. Become familiar with how to read, discuss, synthesize, critique, communicate, and apply theory in the context of a STEM education research study.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded  
**Offered:** SPRING

ENGR 844 Communication of Research  
**Description:** This learning experience is designed to provide graduate level training on communication of research at the postsecondary level. Effective communication of research findings and research methods will be taught through the use of the latest research communication tools. Primary tasks include communication of research findings to a general audience and effective communication of the details of the research.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded

ENGR 845 Instructional Design  
**Description:** This learning experience is designed to provide graduate level training on instructional design at the postsecondary level. Instructional design and the development of learning objectives will be studied. The roles of assessment, instructional theories, and applications of instructional design will be studied. Primary tasks include developing a plan for instructional delivery of the course and assessments to measure student learning.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded

ENGR 860 Packaging Engineering  
**Prerequisites:** CONE/BSEN 206, MECH 321, MECH 373.  
**Description:** Investigation of packaging processes, materials, equipment and design. Container design, material handling, storage, packaging and environmental regulations, and material selection.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded

ENGR 861 Radio Frequency Identification  
**Description:** Fundamentals of how radio frequency identification (RFID) components of tag, transponder, and antennae are utilized to create RFID systems. Best practices for implementation of RFID systems in common supply chain operations.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded

ENGR 862 Supply Chain Optimization  
**Description:** Concepts of the economic and service trade-offs in supply chain and logistics management. Using decision support system (DSS) to design optimal logistics network model with given requirements and operational parameters using leading software packages to model problems arising in strategic management of logistics networks.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Grade Pass/No Pass Option

ENGR 863 Supply Chain Management  
**Description:** What is the role of supply chain management in the 21st century? How does it affect the competitiveness of companies? This course will provide an examination of the role of supply chain management in the new millennium.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded

ENGR 864 Supply Chain Engineering  
**Description:** 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, logistics system controls, and reengineering logistics systems.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded
ENGR 891 Special Topics in Engineering
Description: Subject matter in emerging areas of engineering and closely related areas which are not covered in other courses in the College of Engineering graduate programs. Topics, activities, and delivery methods vary.
Credit Hours: 1-6
Min credits per semester: 1
Max credits per semester: 6
Max credits per degree: 6
Grading Option: Grade Pass/No Pass Option

ENGR 895 Engineering Graduate Internship
Description: Apply theory learned in the classroom and experience hands-on applications through employment in industry. Gain practical application experience of engineering disciplines.
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 3
Grading Option: Pass No-Pass
Offered: SUMMER

ENGR 898 Independent Research in Engineering
Prerequisites: Permission
Description: Independent research work and written findings, other than thesis or dissertation work, in a selected area of engineering under the supervision and guidance of a College of Engineering faculty member.
Credit Hours: 1-6
Min credits per semester: 1
Max credits per semester: 6
Max credits per degree: 6
Grading Option: Grade Pass/No Pass Option

ENGR 899 Masters Thesis
Prerequisites: Admission to masters degree program and permission of major adviser
Description: Masters Thesis
Credit Hours: 1-10
Min credits per semester: 1
Max credits per semester: 10
Max credits per degree: 99
Grading Option: Grade Pass/No Pass Option

ENGR 906 Financial Engineering
Prerequisites: IMSE 806.
Description: Applications of principle and financial economics in industrial and systems engineering. Term structure of interest, capital asset pricing and other capital allocation models. Evaluation of real-options using binomial lattice, Black-Scholes and other pricing models.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded

ENGR 919 Determinants of Occupational Performance
Prerequisites: ENGR 815, 816 or permission
Description: 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.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded

ENGR 998 Advanced Independent Research in Engineering
Prerequisites: Admission to master's degree program and permission of major adviser
Description: Advanced independent research work and written findings, other than thesis or dissertation work, in a selected area of engineering under the supervision and guidance of a College of Engineering faculty member.
Credit Hours: 1-6
Min credits per semester: 1
Max credits per semester: 6
Max credits per degree: 6
Grading Option: Grade Pass/No Pass Option

ENGR 999 Doctoral Dissertation
Prerequisites: Admission to doctoral degree program and permission of supervisory committee chair
Description: Doctoral Dissertation
Credit Hours: 1-24
Min credits per semester: 1
Max credits per semester: 24
Max credits per degree: 99
Grading Option: Grade Pass/No Pass Option