Industrial & Systems Engineering (ISE)

ISE 224 - INTRO INDUSTRIAL & SYSTEMS
Semester Hours: 3
Overview of industrial engineering concepts. Includes history and development of classical industrial engineering; documentation and computational methods; basic work methods and measurement; manufacturing systems; and economic decision analysis. Prerequisites: Either MA 172, 201, 238, or 244.

ISE 321 - ENGINEERING ECONOMY
Semester Hours: 3

ISE 324 - WORK DESIGN
Semester Hours: 3
Principles of methods analysis and ergonomics to fit a task and workstation to the human operator including work measurement and tools, work sampling, job analysis, anthropometric data, and workplace design. Laboratory exercises focus on the implementation of lean principles. (Same as PY 324) Prerequisites: ISE 390 or PY 300.

ISE 327 - MANAGEMENT SYSTEMS ANALYSIS
Semester Hours: 3
Formal organization structures and functions. Analysis of organization planning leading toward the accomplishment of goals. Techniques for making decisions within formal organizations, together with ethical constraints. Emphasis on technical writing. Prerequisite: ISE 390.

ISE 340 - OPERATIONS RESEARCH
Semester Hours: 3
Fundamental methods, models and computational techniques of operations research. Linear programming including transportation, assignment of simplex algorithms. Queuing theory. Prerequisite: ISE 390.

ISE 390 - PROB & ENGR STATISTICS I
Semester Hours: 3
Engineering uses of probability, discrete and continuous probability distributions including the binomial, Poisson, hypergeometric, normal, uniform, lognormal, and exponential distributions. Statistical sampling, distributions of means, variances, and proportions. Hypothesis testing and confidence intervals. Prerequisite: MA 201.

ISE 391 - PROB/ENGR STAT II
Semester Hours: 3
Continuation of ISE 390 with regression analysis, analytics of variance, and nonparametric statistics. Introduction to design of engineering experiments, and computer-based solution of large-scale problems. Prerequisite: ISE 390.

ISE 402 - INDUSTRIAL & ORGANIZA PSY
Semester Hours: 3
Application of basic principles of learning, motivation, and perception to typical industrial and organizational problems. Senior standing. (Same as PY 402/502).

ISE 403 - HUMAN FACTORS PSYCHOLOGY
Semester Hours: 3

ISE 423 - INTR STATISTICAL QUALITY CONTR
Semester Hours: 3
Introduces statistical theory and techniques to control quality of manufacturing products. Provides a solid foundation in Statistical Quality Control. The Six Sigma methodology is also introduced in this course. Students can take the certification exam to earn Green Belt in Six Sigma. Prerequisite: ISE 391.
ISE 426 - DSGN & ANALY OF EXPERIM
Semester Hours: 3

Advanced topics in statistical experiments with emphasis on the design aspect. Factorial designs, including fractional replication and confounding. Includes computer laboratory exercises. (Same as ISE 526). Prerequisite: ISE 391.

ISE 428 - SYSTEMS ANALYSIS & DESIGN I
Semester Hours: 3

Philosophy and methods of industrial and non-industrial systems analysis and design. Methods of systems definition, analysis, simplification, evaluation, and optimization. Design project required. Ethics and technical writing are emphasized. Senior Standing. Prerequisites: ISE 124, ISE 321, ISE 340, and ISE 391.

ISE 429 - SYS ANALYSIS/DESIGN II
Semester Hours: 3

Continuation of design project begun in ISE 428. Prerequisite: ISE 428.

ISE 430 - MANUF SYS & FACILITIES DESIGN
Semester Hours: 3

Modern manufacturing systems design with emphasis on facility location and plant layout. Includes classical systems, just-in-time systems, principles of integrated manufacturing systems design, and an analysis of process flow and productivity, and available space to determine facility layout. (Same as ISE 530).

ISE 433 - PROD & INVENTORY CONTROL SYS
Semester Hours: 3

Inventory models including classical optimal economic order quantity models, manufacturing resource planning systems, production scheduling, material requirements, and purchase order control. Emphasis on manufacturing system revisions, continuous process improvement, and implementation of lean principles. Prerequisite: ISE 390.

ISE 437 - ELECTRONICS MANUF PROCESSES
Semester Hours: 3

Concepts, facilities, and technology utilized in the manufacture of electronic components and products. Includes printed wiring board fabrication and component mounting methods, automation, quality and reliability, product testing, and economic issues. Senior Standing. (Same as ISE 537).

ISE 439 - SELECTED TOPICS/ISE
Semester Hours: 1-3

ISE 447 - INTRO TO SYSTEMS SIMULATION
Semester Hours: 3

Philosophy and elements of digital, discrete-event simulation. Emphasis on modeling and analysis of stochastic systems, including probabilistic models, output analysis, and the use of simulation software. (Same as ISE 547) Prerequisites: CPE 112 and ISE 391.

ISE 497 - IND & SYS ENGR INTERNSHIP
Semester Hours: 1-3

Active involvement in an engineering project in an engineering enterprise, professional organization or government agency that has particular interest and relevance to the student. Junior/senior standing and Approval of Engineering Faculty Advisor.