Industrial Engineering Courses

Courses

IE 5191. Individual Studies.
Individual Studies (0-0-1) Individual variable-credit research, design or analysis on advanced phases of industrial engineering problems conducted under the direct supervision of a faculty member. A maximum of 3 credit hours may be applied towards the M.S. Degree. Prerequisite: Department approval.
Department: Industrial Engineering
1 Credit Hour
1 Total Contact Hour
0 Lab Hours
0 Lecture Hours
1 Other Hour

IE 5194. Graduate Research.
Graduate Research (0-0-1) Individual variable-credit research of contemporary topics in Industrial Engineering. Prerequisite: Department approval.
Department: Industrial Engineering
1 Credit Hour
1 Total Contact Hour
0 Lab Hours
0 Lecture Hours
1 Other Hour

IE 5195. Graduate Seminar.
Graduate Seminar (1-0) Lectures and discussions of various topics in industrial engineering by faculty, graduate students, and speakers from industry and other institutions. Required for all non-thesis graduate students each semester in the graduate program. This seminar will be counted only once towards graduate degree requirements.
Department: Industrial Engineering
1 Credit Hour
1 Total Contact Hour
0 Lab Hours
1 Lecture Hour
0 Other Hours

IE 5291. Comprehensive Integrat of IE.
Comprehensive Integration of Industrial Engineering (0-0-2) This course is designed to prepare the non-thesis student for the written and oral components of the final comprehensive examination. Key technical concepts, methodologies, and issues in the core subject areas will be taken in the student's final semester in the non-thesis M.S. program. If the student fails the exam (and thus the course), the student can re-enroll for IE 5291 the following semester, up to a total of three semester attempts. Prerequisite: Department approval.
Department: Industrial Engineering
2 Credit Hours
2 Total Contact Hours
0 Lab Hours
0 Lecture Hours
2 Other Hours

IE 5294. Graduate Research.
Graduate Research (0-0-2) Individual variable-credit research of contemporary topics in Industrial Engineering. Prerequisite: Department approval.
Department: Industrial Engineering
2 Credit Hours
2 Total Contact Hours
0 Lab Hours
0 Lecture Hours
2 Other Hours
IE 5316. Advanced Work Design.
Advanced Work Design (3-0) This course will focus on the theoretical and practical issues concerning the design of work. It will provide a thorough coverage of the principles of industrial safety, plant layout and design, and methods engineering from a productivity and quality man-machine system perspective. The course will consist of lectures, class discussions, and student projects.

 Department: Industrial Engineering

3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours

IE 5330. Industrial Statistics.
Industrial Statistics (3-0) Industrial Statistics techniques such as generating functions, multivariate transformations, modes of convergence, limit theorems, parametrical statistical models, sufficiency, estimation, confidence intervals, hypothesis testing, optimal tests, and large sample theory. A strong emphasis is placed on the application of statistical techniques to industrial problems. Prerequisite: Department approval and IE 3330.

 Department: Industrial Engineering

3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours

Advanced Concepts in Safety Engineering (3-0) Survey of industrial safety engineering topics to include hazard control principles, tools and machines, materials handling, noise and vibration, chemicals, ventilation, hazardous waste, personal protective equipment risk assessment, facility development process and safety, risk management and assessment, system safety, and accident investigation and analysis. This course will consist of lectures and class discussions. A semester project is an integral part of this course. Prerequisite: IE 3332 or IE 4332 or department approval.

 Department: Industrial Engineering

3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours

IE 5341. Adv Production/Inven Control.
Advanced Production and Inventory Control (3-0) This course emphasizes inventory management for production planning and includes topics in inventory control, forecasting, lot sizing, dispatching, scheduling, releasing, kitting, MRP and just-in-time models. Strong emphasis on the solution and research of existing production and inventory control problems.

 Department: Industrial Engineering

3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours

IE 5351. Linear and Combin Optimiz Meth.
Linear and Combinatorial Optimization Methods (3-0) Deterministic operations research techniques such as linear programming and its extensions, duality theory, sensitivity analysis, network related models, integer programming, and dynamic programming. Applications include production planning and project networks such as PERT/CPM.

 Department: Industrial Engineering

3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours
IE 5352. Design/Analysis Indust Exprmnt.
Design and Analysis of Industrial Experiments (3-0) Investigation of statistical sampling methods, hypothesis testing procedures, and design of experiments. Both parametric and non-parametric procedures are included. Prerequisite: IE 4385.

Department: Industrial Engineering
3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours
Prerequisite(s): (IE 4385 w/C or better)

IE 5354. Advanced Engineering Economy.
Advanced Engineering Economy (3-0) Capital budgeting, deterministic investment analysis, probabilistic engineering economy, manufacturing cost models, utility theory, and computer applications to engineering economy. Prerequisite: BE 2326 or department approval.

Department: Industrial Engineering
3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours

IE 5355. Management of Technology.
Management of Technology (3-0) This course emphasizes the tools, techniques, concepts and theories of managing an organization in a technological environment. Treated are the relevant issues concerning strategic planning, information management, reengineering of the corporation, integrating of emerging technologies and concurrent engineering. Prerequisite: Department approval.

Department: Industrial Engineering
3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours

IE 5356. Probabilistic Optimization Methd.
Probabilistic Optimization Methods (3-0) Probabilistic operation research techniques such as stochastic programming, markov decisions models, queueing theory, and system reliability theory. Prerequisite: IE 4392 or department approval.

Department: Industrial Engineering
3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours

IE 5357. Computer Simulation Appli.
Computer Simulation Applications (3-0) An introduction to the concepts of simulation methodology as applied to the design and analysis of industrial systems. Specialized computer simulation language is applied to an industrial analysis or design term project.

Department: Industrial Engineering
3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours

Survey of Operations Research (3-0) An overview of advanced deterministic and probabilistic operations research techniques will be the main emphasis of this course. Topics to be covered include the formulation and solution of linear, dynamic, and integer programming as well as analysis of queueing systems. The course will consist of lectures and class discussions. Prerequisites: IE 3389 and IE 4392.

Department: Industrial Engineering
3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours
Advanced Ergonomics and Process Design (3-0) This course emphasizes the tools, techniques, concepts, and theories of ergonomics and human performance criteria for work in the manufacturing environment. Emphasis is on the design and evaluation of workstations, man-machine systems and processes. Prerequisite: Department approval.
Department: Industrial Engineering
3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours

IE 5385. Advanced Quality Control.
Advanced Quality Control (3-0) This course covers current advances in quality control. The emphasis of the course is on continuous quality improvement. The course will concentrate on advanced quality control topics including, but not limited to, process, capability analysis, philosophies of quality management, advanced statistical process control, quality costs and automated quality control.
Department: Industrial Engineering
3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours

IE 5387. Quality Engineering.
Quality Engineering (3-0) Topics such as quality organization, quality assurance, quality policies and objectives, quality information systems, metrology, inspection and testing, quality planning, quality function development and supplier quality assurance. Quality standards and legal issues with respect to quality such as torts, negligence, contracts will also be addressed. A semester project is an integral part of this course. Prerequisite: Department approval.
Department: Industrial Engineering
3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours

The course introduces fundamental concepts of green energy and environmentally conscious (benign) manufacturing. This course also acquaints students with the energy and environmental issues surrounding product and process design decisions. Identification and development of strategies, techniques, and methods that can be used to make more environmentally responsible decisions are discussed. The life cycle assessment of (LCA) is implemented and illustrated with software and case studies.
Department: Industrial Engineering
3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours

IE 5390. Special Topics Industrial Engr.
Special Topics in Industrial Engineering (3-0) Advanced topics of contemporary interest in industrial engineering. May be repeated for credit when topic varies. Prerequisite: Department approval.
Department: Industrial Engineering
3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours

IE 5391. Individual Studies.
Individual Studies (3-0) Individual variable-credit research, design or analysis on advanced phases of industrial engineering problems conducted under the direct supervision of a faculty member. A maximum of 3 credit hours may be applied towards the M.S. degree. Prerequisite: Department approval.
Department: Industrial Engineering
3 Credit Hours
3 Total Contact Hours
0 Lab Hours
3 Lecture Hours
0 Other Hours
IE 5394. Graduate Research.
Graduate Research (0-0-3) Individual variable-credit research of contemporary topics in industrial engineering. Prerequisite: Department approval.
Department: Industrial Engineering
3 Credit Hours
3 Total Contact Hours
0 Lab Hours
0 Lecture Hours
3 Other Hours

IE 5396. Graduate Projects.
Graduate Projects (0-0-3) Individual research, design or analysis on advanced phases of industrial engineering problems conducted under the direct supervision of a faculty member. Prerequisite: Department approval.
Department: Industrial Engineering
3 Credit Hours
3 Total Contact Hours
0 Lab Hours
0 Lecture Hours
3 Other Hours

IE 5397. Graduate Projects.
Graduate Projects (0-0-3) Individual research, design or analysis on advanced phases of industrial engineering problems conducted under the direct supervision of a faculty member. Prerequisites: IE 5396 and department approval.
Department: Industrial Engineering
3 Credit Hours
3 Total Contact Hours
0 Lab Hours
0 Lecture Hours
3 Other Hours

IE 5398. Thesis.
Thesis (0-0-3)
Department: Industrial Engineering
3 Credit Hours
3 Total Contact Hours
0 Lab Hours
0 Lecture Hours
3 Other Hours

Thesis (0-0-3) Prerequisite: IE 5398.
Department: Industrial Engineering
3 Credit Hours
3 Total Contact Hours
0 Lab Hours
0 Lecture Hours
3 Other Hours
Prerequisite(s): (IE 5398 w/P or better)

IE 5594. Graduate Research.
Graduate Research (0-0-5) Individual variable-credit research of contemporary topics in Industrial Engineering. Prerequisite: Department Approval.
Department: Industrial Engineering
5 Credit Hours
5 Total Contact Hours
0 Lab Hours
0 Lecture Hours
5 Other Hours
IE 5694. Graduate Research.
Graduate Research (0-0-6) Individual variable-credit research of contemporary topics in industrial engineering. Prerequisite: Department approval.
**Department:** Industrial Engineering

**6 Credit Hours**

**6 Total Contact Hours**
0 Lab Hours
0 Lecture Hours
6 Other Hours