

Suggested Courses for ME Students Interested in Industrial and Systems Engineering

Technical Electives:

A limit of 6 credits of List #2 technical electives can be used to satisfy the 15 credits of technical electives required to earn a BSME degree. There is no limit in List #1 technical electives. Be sure to consult the current list of approved technical electives for the year in which you plan to graduate to make sure the courses listed below are valid technical electives.

List #2 Technical Electives:

ISE 2014 – Engineering Economy (2 credits)

Concepts and techniques of analysis for evaluating the worth of products, systems, structures, and services in relation to their cost. Economic and cost concepts, calculating economic equivalence, comparison of alternatives, replacement economy, economic optimization in design and operations, and after-tax analysis. Pre C- or better in: ENGE 1024 or ENGE1215.

ISE 2204 – Manufacturing Processes (3 credits)

****May be major-restricted; you may need to fill out the ISE force-add form on their website to attempt to add this course****

Survey of manufacturing processes including casting, forming, machining, welding, joining, and non-traditional processes such as laser-beam and electrical-discharge machining. Basic structure of metals, physical, and mechanical properties and their relationship to manufacturing. Process planning and the effect of plans on cost, safety, and the environment. Impact of product design on manufacturability: design for manufacture, assembly, etc. Also include topics in inspection and testing, jigs and fixtures, and numerical control. Pre C-or better in: ENGE 1104 or ENGE 1114 or ENGE1216.

List #1 Technical Electives:

ISE 3004 – Industrial Cost Control (3 credits) Spring only.

Fundamentals of general and cost accounting practices applied to manufacturing and service organizations. Cost accounting, standard cost determination, cost and budgetary control systems. Pre C-or better in: ISE 2014 or ME 2024.

ISE 3614 – Introduction to Human Factors Engineering (3 credits) Fall only.

****May be major-restricted; you may need to fill out the ISE force-add form on their website to attempt to add this course****

Investigation of human factors, ergonomics, and work measurement engineering, with emphasis on a systems approach toward workplace and machine design. Discussion of basic human factors research and design methods, design/evaluation methods for work systems and human machine interactions, human information processing, visual and auditory processes, display and control design, and effects of environmental stressors on humans. Pre C- or better in: (ISE 2204 or ISE 2214), STAT 4105, ISE 2034.

ISE 4004 – Theory of Organization (3 credits) Fall only.

****ISE tends to offer 2 CRN's for the same course – one for ISE majors only and the other for everyone else – be sure to request the correct CRN; if you do not receive this course through course request, you may need to fill out the ISE force-add form on their website to attempt to add this course****

A theory of cooperative behavior in formal organizations, including the structure and elements of formal organizations. The executive process and the nature of executive responsibility also are examined. This course is available to Seniors only.

ISE 4015,4016: Management Systems Theory, Applications, and Design

****May be major-restricted; you may need to fill out the ISE force-add form on their website to attempt to add this course****

Systems approach to management, domains of responsibility, structured and synergistic management tools,

management system model, contextual frameworks, information portrayal, automation objectives model, evaluation, shared information processing, information modeling. A management process for definition, measurement, evaluation and control, the organization as an information processor, corporate culture, scoping agreements, schemas and management elements, structured design.

ISE 4264 – Industrial Automation (3 credits) Spring only.

****Must also add 0 credit lab section****

A survey of the various technologies employed in industrial automation. This includes an emphasis on industrial applications of robotics, machine vision, and programmable controllers, as well as an investigation into problems in the area of CAD/CAM integration. Examination of the components commonly employed in automation systems, their aggregation and related production process design. Laboratory work is required. Pre C- or better in: ISE2204 or ISE2214.

ISE 4304 – Global Issues in Industrial Management (3 credits) (Also Area 7) Spring only.

Industrial management topics of current interest explored from a global perspective. Current domestic and international challenges resulting from a global marketplace and the proliferation of information and technology. Industrial management and organizational performance, total quality management, business process re-engineering, leadership, organizational change, role of communication and information, and ethics. Examination and comparison across international boundaries. This course is available to Seniors only.

Curriculum for Liberal Education Electives:

ECON 2005 – Principles of Economics (microeconomics) (3 credits) (Area 3) (NOT a tech elective)

Consumer behavior and demand, firm behavior and supply, price determination and market equilibrium under varying industry structure. Applications to labor and financial markets.

ECON 2006 – Principles of Economics (macroeconomics) (3 credits) (Area 3) (NOT a tech elective)

Measuring aggregate economic activity, macroeconomic problems (such as unemployment and inflation), the monetary system, effects and limitations of monetary and fiscal policies.

ISE 4304 – Global Issues in Industrial Management (3 credits) (Area 7) (List #1 Technical Elective)

Industrial management topics of current interest explored from a global perspective. Current domestic and international challenges resulting from a global marketplace and the proliferation of information and technology. Industrial management and organizational performance, total quality management, business process re-engineering, leadership, organizational change, role of communication and information, and ethics. Examination and comparison across international boundaries. This course is available to Seniors only. Offered Spring only.