

INDUSTRIAL TECH AND MGMT (INTM)

INTM 502

Fundamentals of Industrial Engineering

Industrial engineering concepts are introduced and the student prepared to perform basic engineering tasks, including design of workstations, cells and lines. Coverage includes time and motion studies, work measurement, ergonomics, route sheets, plant layout, site selection, equipment selection, MRP, JIT, etc. Scheduling techniques will be covered along with material control techniques. Management Information Systems (MIS) are introduced and options covered.

Lecture: 3 Lab: 0 Credits: 3

INTM 507

Construction Technology

Introduces the full range of technologies involved in construction of both new and modified facilities, including steel, concrete and timber construction as well as supporting specialties such as HVAC, electrical, plumbing, etc. The interactions between the various construction trades will be covered along with the role of the architects and engineers.

Lecture: 3 Lab: 0 Credits: 3

INTM 508

Cost Management

Accounting basics are introduced with primary emphasis on the costing and estimating procedures as used in industry. The objective of this course is to provide a good understanding of financial activities and hands-on experience in working with a variety of costing and accounting systems.

Lecture: 3 Lab: 0 Credits: 3

INTM 509

Inventory Control

Fundamentals of inventory control including inventory classifications, i.e. raw materials, work-in-process (WIP) and finished goods. Topics include inventory record keeping, inventory turnover, the 80/20 (or ABC) approach, external and internal lead times, excess/obsolete inventory, and inventory controls. Material Resource Planning (MRP) are included.

Lecture: 3 Lab: 0 Credits: 3

INTM 511

Industrial Leadership

Supervision and management practices are key to all components and sectors of industry. People are the key resources and their effective use is critical to a successful operation. As companies move to become high performance organizations, traditional management tools and techniques have to be reviewed and reconsidered. Skills covered include motivation, developing consensus, conflict avoidance and negotiations. Group dynamics along with handling of individual workers is critical.

Lecture: 3 Lab: 0 Credits: 3

INTM 514

Topics in Industry

This course provides overview of multiple industrial sectors and the influences that are forcing change. All aspects of industry are considered: history of industry, inventory, supply chain, e-commerce, management, manufacturing, industrial facilities, resource management, electronics and chemical industries, alternate energies, marketing, entrepreneurship, computers as tools, and other specialty areas.

Lecture: 3 Lab: 0 Credits: 3

INTM 515

Advanced Project Management

This course covers project management in the PMP framework and provides a structured approach to managing projects using Microsoft Project and Excel. Coverage includes creation of key project management charts (Gantt, Pert, CPM, timelines and resource utilization), basic statistics used in estimating task times, critical path generation in Excel and Project, project cost justification in Excel, SPC and acceptance sampling for machine, project analysis via simulation, and management of personnel, teams subcontractors and vendors. Case studies are utilized to demonstrate core concepts and dynamic scheduling.

Lecture: 3 Lab: 0 Credits: 3

INTM 516

Integrated Facilities Management

Integrated Facilities Management involves understanding processes and tools needed to successfully manage building systems, functions, and personnel in any type of building, complex of buildings, or physical environment. Course covers topics in facilities management ranging from routine maintenance to complex systems interactions and financial decisions. Students learn to assess issues of safety, human comfort, sustainable use of resources, building and infrastructure life cycles, and company objectives and develop solutions based on studying real problems in facilities management organizations.

Lecture: 3 Lab: 0 Credits: 3

INTM 518

Industrial Risk Management

Each year industrial companies are affected by critical incidents which cause disruptions in operations and significant monetary losses due to repairs and/or lost revenue. Whether it is a small fire, an extended electrical outage or an incident of a more serious magnitude, all company stakeholders-from the board of directors to the employees to the customers -are impacted. The key to understanding the complexities of industrial resiliency lies in focusing on the issues of preparedness: prevention, mitigation and control. This course is designed to prepare the student for managing a critical incident, including understanding risk and business impact, emergency preparedness, contingency planning and damage control.

Lecture: 3 Lab: 0 Credits: 3

INTM 520

Applied Strategies for the Competitive Enterprise

Course covers the application of proven management principles and operational practices. Learn how high performance companies create a competitive advantage despite economic challenges and a transitional customer base. Factors covered include strategy deployment, financial analysis, new product development, quality, customer service, and attaining market leadership. Case studies illustrate variable impacts on business situations.

Lecture: 3 Lab: 0 Credits: 3

INTM 522

Computers in Industry

Computers are ubiquitous in all industrial sectors. Management Information Systems (MIS) are available for even the most complex of industrial operations. The integration of MIS with operational specialties (such as order entry, production scheduling, quality control, shipping and invoicing) is discussed. A variety of Microsoft Excel tools are introduced and utilized to set up approaches for handling a variety of industrial situations.

Lecture: 3 Lab: 0 Credits: 3

INTM 530

Transportation

This course covers transportation practices and strategies for the 21st century. The role and importance of transportation in the economy and its relationship to the supply chain will be covered in detail. Transportation modes – trucks, rail, air, and water – will be examined for both domestic and global transportation. Costing and pricing strategies and issues will be discussed as well as security issues in domestic and international transportation.

Lecture: 3 Lab: 0 Credits: 3

INTM 531

Manufacturing Processes for Metals and Mechanical Systems

A broad range of manufacturing processes are studied including casting, forging, rolling, sheet metal processing, machining, joining, and non-traditional methods such as powder, EDM, and additive processes. Particular attention on interrelationships between manufacturing processes and properties developed in the work piece, both intended and unintended. Economic considerations and tradeoffs, as well as computer-integrated manufacturing topics, are also explored.

Lecture: 3 Lab: 0 Credits: 3

INTM 532

Manufacturing Processes for Electronics and Electrical Systems

The materials used in Electronic and Electrical (E&E) manufacturing will be reviewed including materials and components that are used to produce chips, PCBs, and wiring systems. Focus will be on the processes for producing the range of parts and products included in this broad sector. Automation for producing parts and assemblies will be covered. Techniques covered will include surface mounted technology (SMT), wave soldering, automation insertion, automated inspection, etc. The industrial structure that makes up this sector of manufacturing will be covered.

Lecture: 3 Lab: 0 Credits: 3

INTM 533

Chemical Manufacturing Processes in Industry

This course provides an overview of current and emerging chemical processes employed in the energy, food, drug, and plastics sectors. Current and future impacts of various manufacturing processes on society, environment, and sustainability are covered as are issues related to OSHA, EPA, FDA, USDA, and other regulatory systems. The various implications of recovery and reuse are explored as well as new non-polluting, zero-emissions processes and technologies. Students will gain an appreciable understanding of "how it's made" and the range of chemical processes and related technical challenges involved in manufacturing. A background in chemistry is not required.

Lecture: 3 Lab: 0 Credits: 3

INTM 540

Supply Chain Management

This course covers the full range of activities involved in the supply chain. This includes management tools for optimizing of supply chains, relationships with other parts of the organization, in-house versus third party approaches, and suitable performance measurements. Topics covered include Warehouse Management Systems (WMS), Transportation Management Systems (TMS), Advanced Planning and Scheduling Systems (APS) as well as cost benefit analysis to determine the most appropriate approach.

Lecture: 3 Lab: 0 Credits: 3

INTM 542

Warehousing and Distribution

This course covers warehouse layout and usage based on product requirement such as refrigeration, hazardous material, staging area, and value added activities. Processes covered include receiving, put-away, replenishment, picking, and packing. The requirement for multiple trailer/rail car loading and unloading is considered as well as equipment needed for loading, unloading and storage. Computer systems for managing the operations are reviewed. Emphasis is on material handling from warehouse arrival through warehouse departure.

Lecture: 3 Lab: 0 Credits: 3

INTM 543

Purchasing

Purchasing responsibilities, processes, and procedures are included. Topics covered include: supplier selection and administration, qualification of new suppliers, preparing purchase orders, negotiating price and delivery, strategic customer/vendor relationships, and resolution of problems. All aspects of Supplier Relation Management (SRM) are covered.

Lecture: 3 Lab: 0 Credits: 3

INTM 544

Export/Import

Internationalization of industry requires special expertise and knowledge, which must be taken into consideration throughout all interactions with overseas companies either as customers or suppliers. Topics covered include custom clearance, bonded shipping, international shipping options, import financing and letters of credit, customer regulations, insurance, import duties and trade restrictions, exchange rates, and dealing with different cultures.

Lecture: 3 Lab: 0 Credits: 3

INTM 545**Strategic International Business**

Organizational involvement in international business activities -- whether sourcing material and designs, expanding product sales and reach, or creating economies of scale and scope -- requires an understanding of various factors in international finance, marketing, and strategy. This course brings together these disciplines to explore financial factors that may add or transform risks, the necessary adjustments in the creation of global marketing strategy, and the strategies for creating and preserving a competitive advantage in the international arena.

Lecture: 3 Lab: 0 Credits: 3

INTM 546**Manufacturing and Logistics Information Systems**

This course provides an overview of manufacturing and supply chain information systems, tools, and techniques utilized for effective decision making. Current state-of-the-art and commercially available industrial software packages, such as MRP, WMS, TMS, APS, etc., will be used and their impact on management decision making analyzed.

Lecture: 3 Lab: 0 Credits: 3

INTM 547**Supply Chain Strategies**

The range of supply chain strategies to be considered when assessing a firm's internal and external supply chain network. Strategies involved in the end-to-end supply chain including product life cycle management (PLM), inventory optimization, network design optimization, management tools for optimizing supply chains, relationships with other parts of the organization, in-house versus third-party approaches, and suitable performance measurements.

Prerequisite(s): [(INTM 441) OR (INTM 540 with min. grade of C)]

Lecture: 3 Lab: 0 Credits: 3

INTM 559**Issues in Industrial Sustainability**

Examines the concept of sustainability and its application in the industrial environment. Identifies underlying stresses on natural and human environments and the resultant problems for business and society including legal, ethical, and political issues related to sustainability. Global warming, peak oil, and commodity pricing are considered as indicators of the need for improvements in sustainability. Industrial ecology will be discussed as well as strategies for developing sustainable practices in manufacturing, power generation, construction, architecture, logistics, and environmental quality. Coverage includes case studies on businesses that have developed successful sustainability programs.

Lecture: 3 Lab: 0 Credits: 3

INTM 560**Sustainability of Critical Materials**

This course explores the limitations in supply and the need for sustainable use of carbon and non-carbon-based materials such as oil, minerals, food, water, and other natural resources used by industry. Limitations in the global availability of such resources pose challenges to industry which will require careful consideration and planning to ensure continued prosperity for current and future generations. Course will cover strategies and options to mitigate anticipated shortages and optimize the use of non-renewable natural resources, review of fuel and raw material pricing, and cost/benefit analysis of sustainable development proposals. Technical analyses will be presented during class discussions, but a technical background is not required.

Lecture: 3 Lab: 0 Credits: 3

INTM 561**Energy Options in Industry**

Carbon-based fuels are a limited resource and within decades will be in very short supply. Associated energy costs will increase and industry will be required to incorporate alternate fuels and/or power sources, such as uranium (for nuclear power), hydroelectric, geothermal, wind, wave, solar, etc. This course presents such energy options and explores the anticipated impact on industry.

Lecture: 3 Lab: 0 Credits: 3

INTM 562**Special Topics in Sustainability**

This course allows the student to research and report on an industrial sustainability issue of interest and relevance to their career objectives. Topics may touch on industrial ecology, ethics, regulations, environment, resource use, alternative manufacturing methods, facilities, logistics, etc. This is the fourth course in a specialization in industrial sustainability.

Lecture: 0 Lab: 0 Credits: 3

INTM 594**Special Projects**

Special project.

Credit: Variable

INTM 597**Special Projects**

Independent study and project. Permission of instructor required.

Credit: Variable