

# ITE-Industrial Technology

## ITE135 - Digital Electronics

An introduction to the theory and application of logic gates, Boolean algebra, combinational logic, sequential logic, shift registers, counters, and arithmetic circuits. Laboratory experiments provide experiences with digital integrated circuits, circuit behavior and digital troubleshooting techniques. Laboratory exercises reinforce the theoretical concepts by providing hands-on experience with digital integrated circuits and digital troubleshooting equipment.

## ITE181 - Materials Technology I

A study of the theory and application of materials and materials testing used in a wide variety of industrial applications. Study includes the chemical, physical, mechanical and dimensional properties of metallic materials, plastics, and ceramics. Sufficient background in general chemistry is included to provide the proper foundation for the various concepts being presented in class.

## ITE215 - Computer-Aided Drafting (CAD) I

This course is an introduction to 2-D design and drafting using CAD. Students will create and manipulate basic geometric objects in order to create 2-D models. Experiences dealing with dimensioning, layers, and isometric drawing will also be incorporated. AutoCAD software will be used to teach this course.

## ITE250 - Introduction to Automation

This course provides a variety of introductory experiences in industrial automation. Instruction will include theoretical applications as well as practical, hands-on laboratory applications in robotics, automatic guided vehicles (AGVs), computer-aided drafting (CAD), machine vision, automatic identification and programmable logic controllers (PLCs). Students learn what automation is, its advantages and disadvantages, and how it is applied.

### **ITE305 - OSHA General Industrial Safety**

The purpose of the course is to provide instruction to entry-level workers and students on general safety and health. The course will be offered in either as a traditional “in-class” or an “on-line” teaching environment. Students enrolled in the traditional class/course (face to face) are eligible for an OSHA 30 hour General Industry Outreach Training card. Those enrolled in the “on-line” version of the course are not eligible. This course emphasizes hazard identification, avoidance and control. Topics covered include the following: introduction to OSHA, the OSHA Act/general duty clause, inspections, citations and penalties, record-keeping, walking and working surfaces, means of egress and fire protection, electrical hazards, personal protective equipment, respiratory protection, hearing protection, machine guarding, hazard communication, chemical safety, lockout/tagout, confined space hazards, welding brazing and cutting hazards, asbestos awareness, hazardous materials, industrial hygiene, and ergonomics.

### **ITE315 - CAD II**

This course is an extension of Computer-Aided Design into three-dimensional representations. Unlike traditional CAD that focuses on wire-frame and orthographic/isometric drawings, this course focuses on solid models of various components and assemblies. The concepts of rendering, animating and properties analysis are introduced.

### **ITE341 - Quality Control**

An introduction to the methods used in analyzing quality control, this course's topics include a study of the fundamentals of statistics and probability, the construction and use of control and attribute charts, the definition and use of acceptance criteria, and the use of computers in modern quality control operations. An overview of the role of the quality control department of a manufacturing facility will be presented.

### **ITE342 - Quality Planning and Analysis**

This course builds on the techniques learned in Quality Control and applies those techniques to an industrial organization in a practical way. The student will learn the basics of the six sigma approach to quality and the use of quality functional deployment to identify customer needs. Students will study how a quality plan can be developed and implemented. The course will apply quality to all aspects of the organization, including personnel, shop floor operations, the supply chain, and products and services.

### **ITE375 - Principles of Production**

An introduction to the methods used in analyzing the production flow from raw materials to the finished products. Topics covered include a study of operations types, operations layout, decision analysis, work measurements, production and inventory control, scheduling and waiting line analysis. An overview of the role of production management will be presented.

### **ITE376 - Technical Supervision**

This course builds upon the information presented in the Principles of Production course and brings the human factor into operations. The student will learn the basics of the supervision of technical operations with a focus on the shop floor. This course will include the basis for motivating employees and will identify some of the special problems associated with technical production and manufacturing.

### **ITE385 - Industrial Cost Estimating**

An introduction to the methods used to cost and budget a production organization, this course covers some accounting basics, cost accounting, the time value of money and cost estimating as related to industrial operations.

### **ITE420 - Production Analysis**

An introduction to the methods used in analyzing the production flow from raw materials to the finished product. Topics covered include a study of the major manufacturing processes, materials handling, plant layout, operations analysis, industrial engineering, inventory control and shipping. An overview of the role of production management as it relates to the various areas of an industrial environment will be presented.

### **ITE460 - Principles of Manufacturing**

An introduction to the methods used in manufacturing processes, this course includes a study of the manufacturing ability, fabricability and marketability of manufactured products. Problems encountered by production managers in changing raw materials into a consumable product are discussed. The use of personal computers for the solution of manufacturing problems is included.

### **ITE461 - Supply Chain Fundamentals**

A key item in the management of a manufacturing operation is the making of intelligent decisions. The manufacturing planning and inventory control systems provide the information to efficiently manage the flow of materials, effectively utilize people and equipment, coordinate internal activities with those of suppliers, and communicate with customers about market requirements. This course will provide an overview of the basic principles of production and inventory control, including MRP, JIT, master scheduling, capacity planning, demand management, and the integration of these basic principles.

### **ITE462 - Inventory Scheduling and Planning**

This course will be the second course taken by students in the general area of production and inventory control. Focus of this course is on the various techniques for material and capacity scheduling. Included will be detailed descriptions of material requirements planning (MRP), capacity requirements planning (CRP), inventory management practices, and procurement and supplier planning. Topics include recognizing techniques and

## Course Descriptions

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practices of inventory management, the mechanics of the detailed material planning process, the planning operations to support the priority plan, and the planning procurement and external sources of supply.

### **ITE471 - Project Management**

Operations and projects differ in that operations are ongoing while projects are temporary. A project, by its very nature, is also unique and requires particular knowledge of how the components combine to form an integrated whole. This course will introduce the student to the field of project management and will present an overview of the body of knowledge necessary for successful project management. The course will focus on the fundamental principles that cross the boundaries of projects and will demonstrate how project management techniques can be applied to a wide variety of disciplines. This course will also introduce the student to computer methods for solving project management problems.

### **ITE476 - Lean Enterprise**

Production systems consist of more than the machines that produce the consumer products. Other parts of the business operation contribute to the production and must be included in any discussion.

### **ITE481 - Concepts and Issues in Technology Management**

This course combines the elements of Technology Management, providing the participant with the opportunity to study concepts and issues typically encountered by an industrial technologist. This multi-disciplinary course is intended as an overview of Technology Management as a discipline with emphases on the operation and performance of technological systems in industry and their effect on people and the environment. Also, the potential and limitations of the future developments in technological systems and their use in industry is discussed. Diversified approaches will be used to explore some crucial contemporary industry concepts and issues including problem solving and role-playing in various industrial settings and situations.

### **ITE495 - Technology Management Internship**

Student interns work with an industrial organization which most nearly approximates their goals for employment. The intent of the internship is to provide students with practical work experience in an environment in which they will be dealing with practical problems requiring real solutions in a relative short time frame. Working with the Internship Center, advisor and department chairperson approval are required before course enrollment. Credit for this course shall be awarded as one academic credit for each 40 hours of internship work. During the internship, students will be limited to three weeks of activities in one discipline area. For the purposes of this internship, a discipline area is defined as an area of industrial work that would normally be taught by one undergraduate course.

### **ITE499 - Research Project**

This course is designed to provide supervised research experience in initiating, designing, analyzing, documenting and presenting original research in an area of interest to the student. This course is to be completed under the supervision and direction of a faculty member who will work with the student to develop an appropriate topic and methodology for investigation.