

B.S. in Industrial Technology Program

COURSE DESCRIPTIONS

IT 100 (1) Introduction to Industrial Technology. A survey of the technology field as it relates to the academic background and opportunities for industrial technology graduates.

IT 300 (3) Internship/Industrial Experience. Prerequisite: Junior standing or approval of academic advisor. This course provides a supervised practical work experience with an approved industrial enterprise, coordinated by employer, faculty, and student.

IT 490 (3) Capstone Course. Prerequisite: Senior standing. This course is designed to give student experience in real work applications through project in business and industry that will encompass all the different subject areas covered in an area related to the student's concentration.

ITC 400 (3) Technical Seminar. Prerequisite: Senior standing. An inter-departmental course where application of technical and occupational skills and knowledge are emphasized. Experience in using a variety of techniques at various levels and areas of supervision both on and off campus.

ITD 114 (3) Computer-Aided Drafting. The fundamentals of planning and drawing, orthographic projections, graphical and technical analysis, visualization, delineation, and communication of special problems. Computer-aided drafting (CAD) will be used as a tool to solve the various problems.

ITD 316 (3) Electrical and Electronic Design. Prerequisite: ITD 114. A study of the types of electrical and electronic drawings and their uses. Topics include building, wiring diagrams, electronics wiring diagrams, pictorial drawings, graphs and charts.

ITE 111 (3) Basic Electronics. Prerequisite: MATH 111. An introductory study of laws, theorems, concepts, and principles of electricity and electronics.

ITEL 111 (1) Freshman Lab I. A laboratory course which covers the basic electric quantities, Ohms law, power, resistors, series and parallel circuits, current and voltage divider, voltage and current sources, power measurement, internal resistance, and maximum power transfer.

ITE 112 (3) Intermediate Electronics. Prerequisite: ITE 111. A study of DC/AC current, resistance, magnetism, inductance, capacitance, transformers, etc.

ITEL 112 (1) Intermediate Electronics Lab. Prerequisite: ITEL 111. A laboratory course which covers network analysis, measurement of DC and AC current and voltage, power in AC circuits, resonance, RL circuits, RC circuits, and RLC circuits.

ITE 221 (3) Device and Circuits. Prerequisite: ITE 111 & 112. Current flow in doped semiconductors, PN junctions, bipolar junction transistors, and single stage amplifiers. Emphasis is placed on current control with PN Junction, and on recognition of and characteristic of the three basic amplifier configurations.

ITEL 221 (1) Device and Circuits Lab. Prerequisite: ITE 111 & 112. A laboratory course which studies oscilloscope operation, oscilloscope voltage calibration and frequency measurements, characteristics of an inductance, characteristics of a series RC circuits, RC time constants, characteristics of a capacitor, characteristics of a series RLC circuit, RF signal generator, parallel resonant circuit, diodes, and characteristics of amplifiers.

ITE 338 (3) Digital Logic. Prerequisite: ITE 111 & 112. A study of number systems, logic gates, Boolean algebra, Karnaugh map, combinational circuits and sequential circuits, flip flops, counters, etc.

ITEL 338 (1) Digital Logic Lab. Prerequisite: ITE 111 & 112. A laboratory course which covers logic gates, integrated circuit, half-adder circuit, full-adder circuit, and Karnaugh map.

ITE 438 (3) Programmable Logic Controller (PLC). Prerequisite: ITE 338 or Instructor's Permission. This course provides practical experience on PLC's through its operation, programming, and uses in the control of production, manufacturing, industrial, and other processes.

ITE 449 (3) Network Theories. Prerequisite: ITE 338. A study of computer networks and analysis of the behavior of networks.

ITEL 449 (1) Network Lab. Prerequisite: ITEL 338. This course provides practical instruction on the networks connection and trouble shooting. Students will be introduced to telecommunications cabling technology and learn the systems used for distribution of data communications. This course will cover identification and application of appropriate connectors, cable types, safety concerns, and testing of systems.

ITE 450 (3) Analog Communication System. Prerequisites: ITE 221, MATH 221. Study of complete communications systems selected from broadcast radio, broadcast television, closed circuit television or radar, AM, FM and phase-shift modulation and demodulation techniques.

ITE 452 (3) Fiber Optics & Communication. Prerequisites: ITE 221, 338 and MATH 221. This course prepares students to understand the principles of fiber optics, practical experience on the troubleshooting of the fiber-optic communication networks and systems, system components, applications of fiber optics in data and network communication systems.

ITE 465 (3) Microprocessor and Application. Prerequisites: ITE 221, 338. Logical organization of single-chip microprocessors, their timing and interface requirements. Applications in the control of external devices.

ITE 466 (3) Microprocessor Troubleshooting. Prerequisites: ITE 221, 338. This course is designed for senior standing students to study professional techniques in microprocessor troubleshooting. Students will learn how to write sample programs for use in troubleshooting, troubleshoot bus, processor, and I/O failures by analyzing signals, and design testable microcomputer.

ITE 475 (3) Microprocessor Software/Hardware Interfacing. Prerequisites: ITE 221, 338. This course is designed for senior standing students with an overview of microcomputer systems in software, hardware, and interface. Basic microcomputer hardware design at chip level, software programming at the machine language level, and interface to sensors, actuators, and external devices will be introduced.

ITE 476 (3) Real Time System Design. Prerequisites: ITE 221, ITE 338. The topics of this course include the general concepts of real-time systems, design and implementation techniques and specific examples. The instruction is divided into three parts. The first introduces the general concepts of real-time systems, the design and implementation process, with emphasis on the techniques useful for real-time applications. The third part is a detailed examination of specific system organization and their appropriate implementation techniques.

ITEM 301 (3) Principles of Emergency Management. The course introduces basic theory of emergency management. It identifies the roles of federal, state, local government, and community in case of emergency. The course also discusses disaster prevention, mitigation, recovery, technology support, and litigation issues.

ITEM 302 (3) Introduction to Incident Command System. This course covers the emergency management practices used by responders during an emergency. The structure and responsibilities of the Incident Command System, the management of facilities, and typing of resources are covered in this class. The National Incident Management System (NIMS) principles are also included in this course.

ITEM 303 (3) Community Emergency Response Team. This course provides students with the skills required by Federal Emergency Management Agency (FEMA) to serve as a Community (Citizen) Emergency Response Team (CERT) member within their society. Students will also be required to complete Community Emergency Response Team training, which will provide them with basic skills needed for immediate response in the aftermath of disasters. By working

together, CERT members can assist in saving lives and protecting property by using the basic techniques learned from this course.

ITEM 304 (3) Internship. Prerequisites: ITEM 301, 302, or approval by instructor. The internship is designed primarily for students who have had little exposure to the field of emergency management. Students will file their placement (with the assistance and approval of the instructor) at national laboratories or DHS's funded COE laboratories to gain hands-on practical experience with a public, private, or nonprofit organization that has significant emergency management responsibilities.

ITEM 401 (3) Application of Emergency Management Computer Technology. The purpose of this course is to develop an in-depth understanding and practical knowledge of the most frequently used software such as WISER, HAZUS, and CAMEO, which were designed by Federal Government agencies. This course will enable students to effectively use a computer in an emergency. The students can apply this skill to analyze, predict, and prevent an emergency incident.

ITEM 402 (3) Basic GIS and Remote Sensing. This course introduces the theory and techniques of Geographic Information System (GIS) and remote sensing and their application to environmental analysis. Topics include the concepts of remote sensing, characteristics of spectromagnetic waves, types of remotely sensed data, sensor types, the theory of photogram metric techniques, and digital image analysis for acquisition of geographical information. Several lab activities involve the following learning the basics of ERDAS imagine, data acquisition through internet search for satellite images, importing datasets, band characteristics, and visual presentation.

ITEM 403 (3) Disaster Management. The course explores important functions to be performed before, during, and after disaster strikes. It also identifies the strategies, tools, challenges, and concerns relevant to the emergency manager and others involved in disaster management. The theoretical basis of emergency management will be the central focus of the course, but practical knowledge, skills and abilities relating to planning will also be addressed throughout the semester. Students are expected to think critically about controversial issues and policies pertaining to the emergency and disaster arenas.

ITEM 404 (3) Special Project. This course includes the following emergency management concepts: program planning and management, financial planning, and management, managing information, managing people and time, personality types, leadership styles, followership styles, decision-making skills, team-building skills and group dynamics, community-building skills, intergovernmental relationships, negotiating skills, communication skills, emergency management ethics, and professionalism.

ITHM 300 (3) Principles of Hazardous Materials Management. Prerequisite: CHEM 141. An introductory survey course for the hazardous materials management program. Provides firm foundation on basic hazardous materials management principles. Topics include definition of

hazardous materials, regulatory overview, technology for storage and disposing hazardous materials, air and water quality Issues Industrial hygiene and hazardous waste management.

ITHM 301 (3) Regulatory Framework for Toxic and Hazardous Substances. Prerequisites: ITHM 300, CHEM 141. A study of legislation and regulations surrounding hazardous materials and toxic waste. A study of major legislative/regulatory areas which include: RCRA, TSCA, OSHA, HMTA, CERCLA, and EPA.

ITHM 302 (3) Technologies for Storage, Treatment and Disposal of Hazardous Materials. Prerequisites: ITHM 300, CHEM 141. A study of basic principles of hazardous waste management. Methods of treatment and disposal. A comprehensive look at the technologies and related issues in hazardous waste management.

ITHM 402 (3) Industrial Hygiene. Prerequisites: ITHM 300, CHEM 141. An overview of occupational health hazards, their recognition, evaluation, and control. Emphasis on how industries are regulated and how occupational health standards are promulgated.

ITHM 405 (3) Risk Assessment in Hazardous Materials Management. Prerequisites: ITHM 300, CHEM 141. Examines the risk assessment process and its application in various situations, ranging from setting hazardous facilities to regulation and control of toxic substances in the environment. Risk analysis methods and their interaction with social economic and political factors.

ITMA 105 (3) Industrial Safety and Management. Designed to emphasize the importance of safety in an industrial community.

ITMA 325 (3) Industrial Psychology. Prerequisite: PSY 201. Designed to acquaint students with the study of human behavior as it relates to production of goods and services of our society. A study of psychology as it relates to the employees of American industries.

ITMA 410 (3) First-Line Supervision and Foremanship. A management development course for business, industrial, and institutional supervisors. The topics covered include motivation, leadership, decision- making and supervisory skills.

ITMA 420 (3) Labor and Industrial Relations. Prerequisite: ITMA 325. Discussions of who individuals, groups, and organizations in unions, management, and government act as they do in industrial relations with emphasis on psychological and sociological factors.