

INDUSTRIAL TECHNOLOGY



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Assistant Professor and Coordinator of Industrial Technology

Dr. Raj Desai is an electrical engineer and the coordinator and founding faculty member of the Bachelor of Science in Industrial Technology program in the School of Business. His research interests are in the areas of innovation, applied technology, and distance education. He has a wide range of teaching experience at community colleges and universities accredited by the National Association of Industrial Technology (NAIT).

Administered by the School of Business, Industrial Technology is a field of study designed to prepare technical and/or management oriented professionals for employment in business, industry, education, and government. Industrial Technology is primarily involved with the management, operation, and maintenance of complex technological systems.

Students pursuing a Bachelor of Science (B.S.) in Industrial Technology degree receive a broad based general Industrial Technology education. Students develop not only their technical skills but their personality, cooperativeness, innovativeness, concern for the organization, communication skills and dependability. The program's objective is to equip its graduates to meet the new and emerging challenge of a modern high technology society.

Degree Requirements

The minimum total credits required for a BS degree in Industrial Technology is **121**.

General Education Core Courses

44 Credits

General Education Requirements are 44 semester credit hours as outlined in the U. T. Permian Basin Undergraduate Catalog on pages 63-64. In meeting these requirements, students should meet the Mathematics requirement with courses MATH 1324, 1325 or higher. Students should meet the science requirement with physics and chemistry (PHYS 1301, 1101 and CHEM 1311, 1111 or equivalent).

They would include the following courses:

- English Composition, 6 credits, ENGL 1301, 1302
- Literature, 3 credits, ENGL 2322, 2323, 2327, or 2328
- U.S. History, 6 credits, HIST 1301, 1302
- U.S. and State Government, 6 credits, PLSC 2305, 2306
- Lab Sciences, 8 credits, PHYS 1301, 1101, and CHEM 1311, 1111 or equivalent
- Mathematics, 6 credits, MATH 1324/1325 or MATH 2412 / 1325 or MATH 2412/2413 or higher
- Oral Communication, 3 credits
- Visual and Performing Arts, 3 credits
- Social Sciences, 3 credits, ECON 2301

Computer Use:

Industrial Technology Majors obtain skills in using computers in problem solving in COSC 1335, a required lower division course. ITEC 2200 will develop skills in computer aided design.

Industrial Technology Lower Division

Required Courses

20 Credits

- ACCT 2301 - Principles of Financial Accounting
- COSC 1335 - Computers and Problem Solving
- ITEC 2200 - Computer Aided Design
- ITEC 2301 - AC/DC Circuits
- ITEC 2302 - Material Science

ITEC 2337 - Economic Analysis
MNGT 2301 - Introduction to Statistics

Industrial Technology Major Upper Division Required Course **12 Credits**

ITEC 3380 - Managing Technology
ITEC 4380 - Total Quality Management
ITEC 3303 - Production Planning and Control
ITEC 3305 - Safety, Health, and the Environment

Industrial Technology Major Elective Courses **33 Credits**

Choose 11 courses from the following:

Industrial Technology

ITEC 3310 - Manufacturing Technology
ITEC 4304 - Programmable Logic Controllers
ITEC 4305 - Industrial Ergonomics

Management (Choose a minimum of 2 courses)

MNGT 3302 - Inferential Statistics
MNGT 3310 - Management Concepts and Organization Theory
MNGT 3312 - Human Resource Management
MNGT 3340 - Production and Operations Management
MNGT 4340 - Operations Analysis and Control

Psychology

PSYC 4306 - Industrial and Organizational Psychology

Petroleum Technology

PTEC 3301 - Petroleum Fundamentals
PTEC 3302 - Petroleum Fluids and Natural Gas Technology
PTEC 3304 - Drilling Technology
PTEC 4301 - Petroleum Production Technology
PTEC 4302 - Pipeline Technology
PTEC 4304 - Wireline, Mud Logging and Core Analysis
Free Electives **8 Credits**
Capstone Industrial Technology
ITEC 4392 - Internship **3 Credits**

Total Credits 120 Credits

Course Listing

ITEC 2200 Computer Aided Design (1-3)

Provides an understanding of Computer-Aided Drafting principles and practice. Students will utilize the software command structure of a popular CAD program. Crosslisted with BE 1205.

ITEC 2301 AC/DC Circuits (3)

Principles of electrical circuits, generator, and motors. Introduction to electronics and introduction to microprocessors for data acquisition. Prerequisite: MATH 1324 or equivalent or consent of instructor. Crosslisted with BE 2377.

ITEC 2302 Material Science (3)

Study of materials (Metals, Ceramics, and Polymers) of industrial significance. Relationship between microscopic structure and properties. Crosslisted with BE 2303.

ITEC 2337 Economic Analysis (3)

The study of the systematic evaluation of the costs and benefits associated with proposed technical projects. Prerequisite: MATH 1324. Crosslisted with BE 2326.

ITEC 3303 Production Planning and Control (3)

Study of production planning and control, inventory control, and project management. Crosslisted with MNGT 3340.

ITEC 3305 Safety, Health, and the Environment (3)

This course is a study of the problems involved in developing an integrative safety, health and environmental program for an industrial or commercial establishment. It involves safety, health, and environmental education, safe worker practices, recognition and elimination of health hazards, machinery guards, in plant traffic, material handling and emergency treatment for industrial accidents.

ITEC 3310 Manufacturing Technology (3)

Survey of manufacturing processes for metals and polymers. Casting, deformation, sheet metal, machining, and polymer processing. Corequisite ITEC 2302 or consent of instructor.

ITEC 3380 Managing Technology (3)

Study of leadership, management, and technology in industry and society. Implications of technology and technological change on business. Crosslisted with MNGT 3380.

ITEC 4304 Programmable Logic Controllers (3)

The study of programmable logic control systems and implementation within an industrial setting. Prerequisite: ITEC 2301 or equivalent or consent of instructor.

ITEC 4305 Industrial Ergonomics (3)

The study of the design of systems in which human beings work. Study of the methods for the design and selection of safe and efficient work systems. Prerequisite: ITEC 3305.

ITEC 4380 Total Quality Management (3)

This course covers the principles of quality management to include basic probability and statistics concepts, control charts for attributes and variables, sampling plans, quality audits and cost. Crosslisted with MNGT 4380.

ITEC 4392 Internship (3)

Field learning experience in industry consisting of a minimum of 225 hours (15 hours per week for 15 weeks of the semester) for 3 credit hours. For Industrial Technology majors only. Prerequisites: Senior standing or permission of instructor.

PTEC 3301 Petroleum Fundamentals (3)

An introduction to petroleum industry technology, equipment usage, and operating procedures.

PTEC 3302 Petroleum Fluids and Natural Gas Technology (3)

Study of the basics of physical and chemical makeup of hydrocarbon mixtures, how the mixtures are affected by temperature and pressure, and the techniques for accurate measurement of petroleum products (based on API Petroleum Measurement Standards). Math 1324 or equivalent or consent of instructor.

PTEC 3304 Drilling Technology (2)

An introduction to the drilling process, including drilling rigs, bits, drilling mud, air and gas drilling, casing and tubing, cementing and well control. Prerequisites: Math 1324 or equivalent or consent of instructor.

PTEC 4301 Petroleum Production Technology (2)

An introduction to the production of petroleum, including completion, artificial lift, workovers and stimulation. Prerequisites: PTEC 3304 or equivalent, or consent of instructor.

PTEC 4302 Pipeline Technology (2)

An introduction to pipeline technology, corrosion, and hydraulics. Prerequisites: PTEC 3301 or consent of instructor.

PTEC 4304 Wireline, Mud Logging, and Core Analysis (3)

An introduction to open and cased hole well logging, mud logging and coring. Prerequisites: PTEC 3301 or consent of instructor.

DEGREE PLAN: BS IN INDUSTRIAL TECHNOLOGY

Freshman Year					
Fall		Hours	Spring		Hours
ENGL	1301	3	ENGL	1302	3
MATH	1324	3	MATH	1325	3
COMM	1315	3	HIST	1302	3
HIST	1301	3	COSC	1335	3
ARTS	1301	3	CHEM	1311, 1111	4
Total Hours		15			16

Sophomore Year					
Fall		Hours	Spring		Hours
ENGL	2328	3	ITEC	2302	3
ACCT	2301	3	PLSC	2305	3
ECON	2301	3	ITEC	2200	2
ITEC	2301	3	MNGT	2301	3
PHYS	1301, 1101	4	PLSC	2306	3
Total Hours		16			14

Junior Year					
Fall		Hours	Spring		Hours
ITEC	3305	3	ITEC	3380	3
ITEC	2337	3	Major Elective		3
ITEC	3303	3	Major Elective		3
Major Elective		3	Major Elective		3
Major Elective		3	Major Elective		3
Total Hours		15			15

Senior Year					
Fall		Hours	Spring		Hours
ITEC	4380	3	ITEC	4392	3
Major Elective		3	Major Elective		3
Major Elective		3	Major Elective		3
Major Elective		3	Free Elective		3
Free Elective		3	Free Elective		2
Total Hours		15			14