

Industrial Technology



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Dr. Desai is the founding faculty member of the Engineering and Technology Programs in the College of Business and Engineering. Dr. Desai received his doctorate degree in Industrial Technology from the University of Northern Iowa. He has a wide range of teaching experience at community colleges and universities accredited by the Association of Technology, Management, and Applied Engineering (ATMAE). He has several years of industry experience in the areas of maintenance and management. His research interests are in the areas of administration, innovation, and applied technology. He has several journal articles published in national and international journals.

Administered by the Department of Engineering and Technology in the College of Business and Engineering, 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. Graduates of the program will be equipped 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 **120**.

General Education Core Courses	42 credits
Communication: ENGL 1301, ENGL 1302	6 SCH
Mathematics: MATH 1324	3 SCH
Life and Physical Sciences:	8 SCH
GEOL 1301, GEOL 1101, GEOL 1302, GEOL 1102 or equivalent	
Language, Philosophy & Culture	3 SCH
<i>Notes: eligible courses are COMM 1301, ENGL 2322, ENGL 2323, ENGL 2327, ENGL 2328, UNIV 1301, and UNIV 1302.</i>	
Creative Arts	3 SCH
<i>Notes: eligible courses are ARTS 1301, DRAM 1310, MUSI 1306,</i>	

and MUSI 2310.

American History: HIST 1301, HIST 1302 6 SCH

Government/Political Science 6 SCH

Notes: eligible courses are PLSC 2305, PLSC 2306, and UNIV 2301.

Social and Behavioral Sciences: either PSYC 1301 or SOCI 1301 3 SCH

Component Area Option 4 SCH

COMM 1315

1 credit hour from either COMM 1115 or a third approved science lab

Computer Use:

Industrial Technology Majors obtain skills in using computers in problem solving in COSC 1335, a required lower division course. ENGR 1204 will develop skills in computer aided design.

Industrial Technology Lower Division Required Courses 20 credits

MATH 1325 – Applications of Continuous Mathematics

ENGR 1204 – Engineering Graphics

COSC 1335 - Computers and Problem Solving

ACCT 2301 - Principles of Financial Accounting

ECON 2301 – Principles of Macroeconomics

ECON 2302 – Principles of Microeconomics

MNGT 2342 – Principles of Statistics

Industrial Technology Major Upper Division Required Courses 18 credits

ITEC 3305 – Safety, Health, and the Environment

ITEC 3307 – Project Management

ITEC 3380 - Managing Technology

ITEC 4380 - Total Quality Management

MNGT 3310 - Management Concepts and Organization

MNGT 3312 - Human Resource Management

Industrial Technology Major Elective Courses 27 credits

Choose 9 courses from the following areas:

Industrial Technology

ITEC 3310 - Manufacturing Technology

ITEC 3340 - Facilities Design

ITEC 3350 - Supply Chain Management

ITEC 3390 – Technology and Society

ITEC 4302 – Innovation

ITEC 4303 - Environmental Technology

ITEC 4310 – Energy Technology

ITEC 4340 – Construction Technology

Petroleum Technology

PTEC 3301 - Petroleum Fundamentals

PTEC 3302 - Petroleum Fluids and Natural Gas Technology

PTEC 3304 - Drilling Technology
 PTEC 3305 – Enhanced Oil Recovery
 PETC 3306 – Well Stimulation
 PTEC 4301 - Petroleum Production Technology
 PTEC 4302 - Pipeline Technology
 PTEC 4304 - Wireline, Mud Logging and Core Analysis
 PTEC 4305 – Petroleum Reservoirs

Free Electives (can use the elective courses above) 10 credits

Capstone Industrial Technology 3 credits

ITEC 4392 – Internship

TOTAL CREDITS 120 credits

Course Listing

ITEC 3305 – Safety, Health, and the Environment (3-0)

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 3307 – Project Management (3)

Meet project constraints of money, time, and resources along with problems that can and do occur without undue risk or stress. Crosslisted with MNGT 3340.

ITEC 3310 – Manufacturing Technology (3)

Survey of manufacturing processes for metals and polymers. Casting, deformation, sheet metal, machining, and polymer processing.

ITEC 3340 Facilities Design (3)

Study of techniques and procedures for developing efficient facilities layout.

ITEC 3350 Supply Chain Management (3)

Satisfy customer needs by reducing time required to design, process, and deliver products. Use appropriate transportation, warehousing, and logistics to lower costs. COSC 1335 or equivalent or consent of instructor.

ITEC 3380 – Managing Technology (3-0)

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

ITEC 3390 – Technology and Society (3-0)

The impact of technology on individuals and society through critical analysis of selected modern topics using the methods of science and technology. Prerequisite: COSC 1335 or equivalent, or consent of the instructor.

ITEC 4302—Innovation (3)

This course is aimed at preparing students for careers in industry. A team of students will identify and develop solutions to practical problems or market needs. Students will develop creative problem solving abilities and other skills necessary for invention, innovation, and entrepreneurship. Prerequisite: senior standing and COSC 1335 or equivalent, or consent of instructor.

ITEC 4303 Environmental Technology (3)

Study of the interaction between humans and the environment and major environmental issues that confront our society.

ITEC 4310—Energy Technology (3)

Energy sources and how the sources produce usable power. Future trends in the area of energy technology.

ITEC 4340 Construction Technology (3)

Provide a basic understanding of the construction industry, construction materials, tools, and equipment.

ITEC 4380—Total Quality Management (3-0)

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 150 hours for 3 credit hours. For Industrial Technology majors only. Prerequisites: Senior standing or permission of instructor.

PTEC 3301—Petroleum Fundamentals (3-0)

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

PTEC 3302—Petroleum Fluids and Natural Gas Technology (2-2)

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 (3-0)

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 3305 – Enhanced Oil Recovery (3-0)

New principles of recovery of oil and gas fields including: water flooding, polymer, surfactants, miscible recovery processes, inert gas injection, emulsions, steam, in situ and wet combustion techniques, PTEC 3302 or equivalent or consent of instructor.

PTEC 3306 – Well Stimulation (3-0)

Theory and application of hydraulic fracturing, acidizing, acid fracturing and other stimulation processes, PTEC 3304 or equivalent or consent of instructor.

PTEC 4301 – Petroleum Production Technology (3-0)

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 (3-0)

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

PTEC 4304 – Wireline, Mud Logging, and Core Analysis (2-2)

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

PTEC 4305 – Petroleum Reservoirs (3-0)

An introduction to petroleum reservoirs and the basics of reservoir engineering. Prerequisite: PTEC 3301 or consent of instructor. Corequisite MATH 1325 or 2413.

DEGREE PLAN: BS IN INDUSTRIAL TECHNOLOGY

Suggested Courses by Semester: BSIT

Freshman Year

Fall		Hours	Spring		Hours
ENGL	1301	3	ENGL	1302	3
MATH	1324	3	MATH	1325	3
COMM	1301, 1315	4	HIST	1302	3
HIST	1301	3	COSC	1335	3
ART	1301	3	GEOL	1301, 1101	4
Total Hours		16			16

Sophomore Year

Fall		Hours	Spring		Hours
PLSC	2305	3	ECON	2302	3
ACCT	2301	3	PLSC	2306	3
ECON	2301	3	COMM	1315	3
ENGR	1204	2	MNGT	2342	3
GEOL	1302, 1102	4	PSYC/SOCI	1301	3
Total Hours		15			15

Junior Year

Fall		Hours	Spring		Hours
ITEC	3305	3	ITEC	4380	3
ITEC	3307	3	Major Elective		3
ITEC	3380	3	Major Elective		3
MNGT	3310	3	Major Elective		3
MNGT	3312	3	Major Elective		3
Total Hours		15			15

Senior Year

Fall		Hours	Spring		Hours
Major Elective		3	ITEC	4392	3
Major Elective		3	Free Elective		1
Major Elective		3	Free Elective		3
Major Elective		3	Free Elective		3
Major Elective		3	Free Elective		3
Total Hours		15			13

Requirements for the BAAS Industrial Technology Option

The total credits required for a BAAS degree is **120**. The purpose of the Bachelor of Applied Arts and Science (B.A.A.S.) program is to offer career advancement opportunities to students who have previously earned the Associate of Applied Science (A.A.S.) degree. The BAAS degree will enhance students' technical education and will prepare them with leadership skills relevant in their respective working environments. Read the U.T. Permian Basin catalog and be familiar with the University's requirements for the B.A.A.S. degree in the College of Arts and Sciences Section. It is the student's responsibility to read the catalog and be familiar with and fulfill all the requirements for the degree.

Specific Requirements for the BAAS Industrial Technology Option

General Education

42 Credits

General Education Requirements are 42 semester credit hours as outlined in the general education section of the catalog. Fifteen semester credit hours from the General Education Requirements category taken as part of the A.A.S. degree can also be applied to satisfy the University's General Education Requirement section of the B.A.A.S degree.

Computer Use

3 credits

All majors must demonstrate a basic use of computing through completion of COSC 1335, or through examination, or through a similar computer science course that requires the actual use of computers. COSC 1335 may be used to meet both this requirement and the general education requirements.

BAAS Core Courses

18 Credits

(MNGT 3310, MNGT 3311, MNGT 3312, MNGT 3330, MNGT 3370, MNGT 33xx/43xx)

Applied Arts and Science Requirements

51 Credits

Technical Field of A.A.S. Degree

30 SCH

Industrial Technology Upper Level Courses

21 SCH

The B.A.A.S will only be available to students transferring to the University with an A.A.S. degree or its equivalent. A block of 30 semester credit hours (SCH) from the technical field of the A.A.S. degree will be applied to the B.A.A.S. degree. Students must complete at least 27 SCH in upper level courses related to their AAS specialty chosen from the following courses. This includes two free upper division electives.

Industrial Technology Major Courses

ITEC 3305	Safety, Health, and the Environment	3
ITEC 3307	Project Management	3
ITEC 3310	Manufacturing Technology	3
ITEC 3340	Facilities Design	3
ITEC 3350	Supply Chain Management	3
ITEC 3380	Managing Technology	3
ITEC 3390	Technology and Society	3
ITEC 4302	Innovation	3
ITEC 4303	Environmental Technology	3
ITEC 4310	Energy Technology	3
ITEC 4340	Construction Technology	3

ITEC 4380	Total Quality Management	3
PTEC 3301	Petroleum Fundamentals	3
PTEC 3302	Petroleum Fluids and Natural Gas Technology	3
PTEC 3304	Drilling Technology	3
PTEC 3305	Enhanced Oil Recovery	3
PTEC 3306	Well Stimulation	3
PTEC 4301	Petroleum Production Technology	3
PTEC 4302	Pipeline Technology	3
PTEC 4304	Wireline, Mud, and Core Analysis	3
PTEC 4305	Petroleum Reservoirs	3
Upper Division Elective		3
Upper Division Elective		3

Other Required Upper Level Courses

6 Credits

In addition, all B.A.A.S. students must complete BAAS 4393 (Senior Project) and all B.A.A.S. Industrial Technology option students will be required to have a supervised internship (ITEC 4392).