Industrial Engineering Undergraduate Program Guide

2018-2019 Catalog Year

Guide Purpose

This document has been prepared to assist undergraduate students in understanding the BSIE program offered by the Industrial, Manufacturing, and Systems Engineering (IMSE) department at the University of Texas at Arlington (UTA).[1]

The Undergraduate Catalog is the official source of university information. Each student should become familiar with it, and consult it for answers to questions regarding policies, regulations, and course descriptions. The Undergraduate Catalog can be found at http://www.uta.edu/catalog . It is also important that all students watch for memos and notices posted on the IMSE bulletin boards and websites that pertain to undergraduate students. These notices are of a real-time nature, dealing with required student actions or important opportunities.

Program Overview

The IMSE department is one of five Engineering departments at UTA. Our undergraduate IE program is nationally accredited. It prepares students for work in the modern workplace and also for entry into graduate degree programs nationwide in Industrial Engineering and associated specialized fields, such as Logistics, Operations Research, Enterprise Engineering, and Engineering Management. Our undergraduate class sizes guarantee the positive benefits of close student-faculty interaction that is often lacking in very large departments. We encourage face-to-face meetings between students, faculty and staff. You can learn more about the IMSE faculty by visiting the IMSE webpage at http://www.uta.edu/ie .

We are located on the 3rd and 4th floors of Woolf Hall just west of the Students Activities building, south west of the junction of Cooper and Border Streets. The 3rd floor houses the IMSE Academic Advising Center. The 4th floor houses all our class rooms, laboratories and most faculty offices. A map of the UTA campus showing our location is shown below in Figure 1.

[1] *This guide is not an official publication and the contents hereof are not official policy of UTA or of The University of Texas System. In all matters, the Rules and Regulations of the Regents of The University of Texas System, The Handbook of Operating Procedures of The University of Texas at Arlington, and the Undergraduate Catalog of The University of Texas at Arlington shall supersede this guide.*

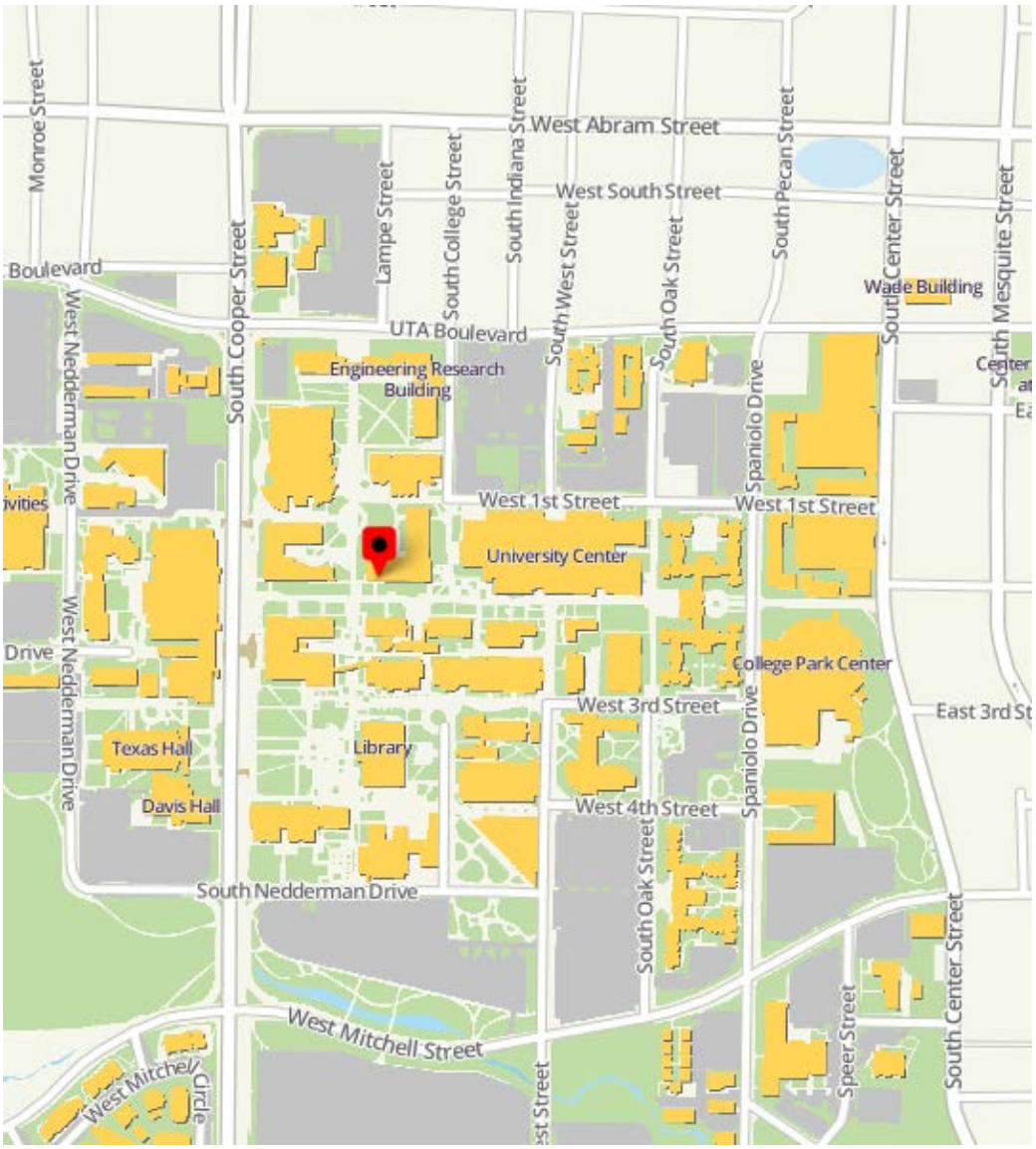

Figure 1: Location of Woolf Hall

Educational Objectives

Industrial engineers analyze, design, and transform complex systems of people, processes, and technology to accomplish organizational goals. To this end, the program educational objectives of the Industrial Engineering program are what we expect our students to attain within three to five years of graduation.

The graduates of the UTA industrial engineering program:

1. To create value for stakeholders through the identification, development, and implementation of new or optimized processes, products, or integrated systems.

2. To successfully communicate and document process descriptions, methodologies, data, analyses, results, and proposals to stakeholders.
3. To achieve goals through effective team interactions, followership, and leadership.
4. To maintain basic knowledge and skills and to evolve capabilities through professional development and advanced education.
5. To maintain connection with the University and the professional community.

The following student outcomes prepare graduates to attain the program educational objectives:

- an ability to apply knowledge of mathematics, science, and engineering
- an ability to design and conduct experiments, as well as to analyze and interpret data
- an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- an ability to function on multi-disciplinary teams
- an ability to identify, formulate, and solve engineering problems
- an understanding of professional and ethical responsibility
- an ability to communicate effectively
- the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- a recognition of the need for, and an ability to engage in, life-long learning
- a knowledge of contemporary issues
- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Students will be prepared for engineering practice through a curriculum culminating in a major design experience based on the knowledge and skills in earlier course work and incorporating appropriate engineering standards and multiple realistic constraints. The curriculum will prepare graduates to design, develop, implement, and improve integrated systems that include people, materials, information, equipment and energy. The curriculum includes in-depth instruction to accomplish the integration of systems using appropriate analytical, computational, and experimental practices.

ABET Accreditation

Accreditation is an assurance that the professionals that serve us have a solid educational foundation and are capable of leading the way in innovation, emerging technologies, and in anticipating the welfare and safety needs of the public. The program in Industrial Engineering has been accredited since 1967 by the Engineering Accreditation Commission (EAC) of ABET, http://www.abet.org. ABET accreditation is voluntary, and to date, approximately 3,600 programs at over 700 colleges and universities in 29 countries have received ABET accreditation. Over 85,000 students graduate from ABET-accredited programs each year, and millions of graduates have received degrees from ABET-accredited programs since 1932.

Academic Integrity

The College of Engineering takes academic honesty and ethical behavior very seriously. Engineers are entrusted with the safety, health, and well-being of the public. Students found guilty of academic dishonesty will be punished to the full extent permitted by the rules and regulations of UT Arlington. In particular, any student found guilty of a second offense by the Office of Student Judicial Affairs will be subject to dismissal from the College of Engineering.

Academic Advising

A new student with fewer than 30 hours of transferrable credit, including any student entering directly from high school, is advised in the University Advising Center of University College. The student's program/plan will be listed as IE__UCOL during this time. After one or more semesters and sufficient progress in the degree program, this student is released by the University Advising Center to be advised in the IE department and the student's program/plan will be changed to IE__IEINT. This program/plan designation indicates that the student is in the IE pre-professional program.

The advising process is designed to assist students as they make important decisions related to their academic progress at UTA and career goals in general.

Specifically, the purpose of advising is:

- To empower students to clarify and achieve their educational goals by providing timely and accurate information about degree requirements, as well as College and University policies and procedures.
- To provide every student with the opportunity to develop a relationship with a knowledgeable advisor in order to obtain sound academic advising with a degree of continuity.
- To provide students with information about additional services, programs, and support systems available within the College and University as appropriate.

Ultimately, the student is responsible for seeking academic advice, making decisions regarding goals, meeting degree requirements, and enrolling in appropriate courses. The academic advisor is available to provide assistance in these decisions. Each student is responsible for understanding and complying with University and College practices and procedures.

During each long semester, the Industrial, Manufacturing, & Systems Engineering Department conducts pre-enrollment advising weeks. All students must receive this pre-enrollment advising prior to registering for classes.

Grade Forgiveness

Grade Forgiveness is available to incoming freshman and transfer students whose initial enrollment at UT Arlington was Fall 2013 or thereafter. For students who entered UT Arlington before the Fall 2013 and who have not utilized the Grade Replacement policy, the Grade Exclusion policy remains in effect.

Upon receiving a grade of D or F in a 1000 or 2000 course at UT Arlington, students subject to the Grade Forgiveness policy may elect to have the grade forgiven. Students subject to this policy must contact their academic advisor, who files the Grade Forgiveness petition on their behalf. All Grade Forgiveness

requests submitted during the term must be submitted by the last day to drop a course to be processed that term. Students have to be enrolled on Census Date for their Grade Forgiveness petition in that term to be processed during that term. See the academic calendar for Census Date and Last Drop Date information. A student is limited to a total of two Grade Forgiveness approvals. For more information on grade forgiveness see the Undergraduate Catalog.

Admission to the IE Department

For admission to the industrial engineering program, all students must meet the requirements for admission to the College of Engineering. A grade point average of 2.25 in science, mathematics, and engineering courses is required for transfer into the department from any other program at UTA.

Degree Requirements

The degree requirements listed in this guide are for the current catalog year. Current degree requirements may be different from other catalog years. Students are locked into the degree requirements of the catalog year in which they first started at UTA, no matter the degree program in which the student started. It is possible for a student to change their degree program to the current catalog year by talking to their advisor. Degree programs for years prior to the current catalog can be found here: http://www.uta.edu/engineering/current-students/degree-plans.php

Consistent with the educational objectives, each candidate for a Bachelor of Science degree in Industrial Engineering must successfully complete the undergraduate program as prescribed by the IMSE faculty. The program is divided into three components: a 21 semester hour general education component, a 53 semester hour pre-professional component, and a 54 semester hour professional component. Course descriptions for the industrial engineering courses can be found online here: http://catalog.uta.edu/coursedescriptions/ie/

Students who do not have two years of the same high school foreign language will be required to take two semesters of the same modern and classical languages courses in addition to the previously listed requirements.

Semester 1

- ENGR 1250 – Problem Solving in Engineering
- ENGR 1101 – Entrance to Engineering for Transfer Students *or* UNIV 1131 – Student Success
- IE 1205 – Introduction to Industrial Engineering
- ENGL 1301 – Rhetoric and Composition I
- MATH 1426 – Calculus I
- CHEM 1465 – Chemistry for Engineers (CHEM 1441 and CHEM 1442 may be substituted for CHEM 1465 listed in semester 1 and the Science Elective listed in the semester 2.)

Total credits: 16 credit hours

Semester 2

- IE 2305 – Computer Applications in Industrial Engineering
- MAE 1351 – Engineering Graphics
- MATH 2425 – Calculus II
- Science Elective (Four credit hour class from the College of Science which includes a lab and is approved by the undergraduate advisor. CHEM 1441 and CHEM 1442 may be substituted for CHEM 1465 listed in semester 1 and the Science Elective listed in the semester 2.)
- PHYS 1443 – General Technical Physics I

Total credits: 18 credit hours

Semester 3

- IE 2308 – Engineering Economics
- HIST 1311 – History of the United States to 1865
- MATH 2326 – Calculus III
- PHYS 1444 – General Technical Physics II
- COMS 2302 – Professional and Technical Communication for Science and Engineering

Total credits: 16 credit hours

Semester 4

- IE 3301 – Engineering Probability
- IE 3315 – Operations Research I
- HIST 1312 – History of the United States, 1865 to present
- MATH 3319 – Differential Equations & Linear Algebra
- POLS 2312 – State and Local Government

Total credits: 15 credit hours

Semester 5

- IE 3314 – Engineering Research Methods
- IE 3343 – Metrics and Measurements
- IE 4303 – Production and Inventory Control
- IE 4315 – Operations Research II
- Language, Philosophy and Culture Elective

Total credits: 15 credit hours

Semester 6

- IE 4302 – Engineering Administration and Organization
- IE 4322 – Enterprise Simulation
- IE 4340 – Engineering Project Management
- IE 4344 – Human Factors Engineering
- POLS 2311 – Government of the United States
- Technical Elective (Three credit hour, 3000-level or above, technical class pre-approved by undergraduate advisor.)

Total credits: 18 credit hours

Semester 7

- IE 4308 – Quality Systems
- IE 4325 – Operations and Robotics I
- IE 4339 – Product Development, Producibility, and Entrepreneurship
- IE 4343 – Facilities Planning and Design
- Technical Elective (Three credit hour, 3000-level or above, technical class pre-approved by undergraduate advisor.)

Total credits: 15 credit hours

Semester 8

- IE 4318 – Enterprise Design
- IE 4345 – Applied Knowledge Engineering and Data Analytic Applications
- IE 4350 – Industrial Engineering Capstone Design
- Creative Arts Elective
- Technical Elective (Three credit hour, 3000-level or above, technical class pre-approved by undergraduate advisor.)

Total credits: 15 credit hours

Total credits for the BSIE: 128 credit hours

General Core Classes

General core classes may be taken at any during the program. General core elective classes must come from the list approved by the university found here:
http://catalog.uta.edu/degreerequirements/generalcorerequirements/

- COMS 2302 – Professional and Technical Communication for Science and Engineering
- HIST 1311 – History of the United States to 1865
- HIS 1312 – History of the United States, 1865 to present
- POLS 2311 – Government of the United States
- POLS 2312 – State and Local Government
- Language, Philosophy, and Culture Elective
- Creative Arts Elective

Total general core credits: 21 credit hours

IE Required Pre-Professional Program Classes

All pre-professional classes must be completed with a grade of C or better before a student is admitted to the professional program and allowed to take professional classes. There can be a one semester overlap between pre-professional and professional classes. Total pre-professional credit hours is 53 credit hours.

- ENGL 1301 – Rhetoric and Composition I
- MATH 1426 – Calculus I
- MATH 2425 – Calculus II
- MATH 2326 – Calculus II
- MATH 3319 – Differential Equations & Linear Algebra
- CHEM 1465 – Chemistry for Engineers
- Science Elective
- PHYS 1443 – General Technical Physics I
- PHYS 1444 – General Technical Physics II
- ENGR 1300 – Engineering Problem Solving
- MAE 1351 – Engineering Graphics
- IE 1205 – Introduction to Industrial Engineering
- IE 2305 – Computer Applications in Industrial Engineering
- IE 2308 – Engineering Economics
- IE 3301 – Engineering Probability
- IE 3315 – Operations Research I

IE Required Professional Program Classes

Professional classes cannot be taken until a student has completed all pre-professional classes with a C or better. There can be a one semester overlap between pre-professional and professional classes. Most professional program classes are only offered once per year. It's important for students to plan ahead to avoid delays in graduation. Total pre-professional credit hour is 54 credit hours.

- IE 3314 – Engineering Research Methods
- IE 3343 – Metrics and Measurements
- IE 4302 – Engineering Administration and Organization
- IE 4303 – Production and Inventory Control
- IE 4308 – Quality Systems
- IE 4315 – Operations Research II
- IE 4318 – Enterprise Design
- IE 4322 – Enterprise Simulation
- IE 4325 – Automation and Robotics I
- IE 4339 - Product Development, Producibility, and Entrepreneurship
- IE 4340 – Engineering Project Management
- IE 4343 – Facilities Planning and Design
- IE 4344 – Human Factors Engineering

- IE 4345 - Applied Knowledge Engineering and Data Analytic Applications
- IE 4350 – Industrial Engineering Capstone Design
- Technical Electives – 9 Hours

Technical Elective Sequences

The following are suggested course sequences for use in satisfying IE technical electives. These course sequences were designed to enhance the BSIE degree requirements. Students should consider their interests and career goals in choosing technical electives.

These course sequences are suggestions only. Students who want to use a course as a technical elective which is not contained in one of these sequences must get approval from the IE Undergraduate Advisor prior to taking it.

Automation and Unmanned Vehicle Systems

Will result in UVS Certificate

IE 4378 – Introduction to Unmanned Vehicle Systems

Introduction to UVS (Unmanned Vehicle Systems) such as UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground System) and UMS (Unmanned Maritime System), their history, missions, capabilities, types, configurations, subsystems, and the disciplines needed for UVS development and operation. UVS missions could include student competitions sponsored by various technical organizations. This course is team-taught by engineering faculty. Prerequisite: Admission to a professional engineering or science program.

IE 4379 – Unmanned Vehicle Systems Development

Introduction to the technologies needed to create an UVS (Unmanned Vehicle System). Integration of these technologies (embodied as a set of sensors, actuators, computing and mobility platform sub-systems) into a functioning UVS through team work. UVS could be designed to compete in a student competition sponsored by various technical organizations or to support a specific mission or function defined by the instructors. This course is team-taught by engineering faculty. Prerequisite: B or better in IE 4378 and admission to the UVS certificate program.

IE 4351 – Fundamentals of Systems Engineering

The course provides an overview of concepts, principles, and processes related to Systems Engineering. Topics include systems theory and systems thinking, fundamental technical and management processes, life cycle models, sustainability, resilience and other knowledge useful to engineer complex systems throughout the life cycle from concept through disposal. Prerequisite: Accepted into an engineering professional program at UTA.

Human Factors

IE 4310 – Industrial and Product Safety

Scientific, managerial, and legal aspects of safety hazard control and elimination in the industrial workplace. Methods for enhancing product safety. Prerequisite: accepted in an UTA engineering professional program.

PSYC 3302 - Business Psychology

A survey of the fields of industrial and organizational psychology, focusing on the application of psychological theory to understanding and solving problems in the workplace. Topics include recruitment, employee selection and training, the effects of attitudes, motivation, group dynamics and leadership, job satisfaction, productivity and morale.

PSYC 3322 – Brain and Behavior

An introduction to the anatomical structures and physiological processes that determine behavior. Topics include the acquisition and processing of sensory information, the neural control of movement, and the biological bases of complex behaviors (such as learning, memory, sex, language, and addiction), as well as the basic functioning of the nervous system. Offered as BIOL 3322 and PSYC 3322. Credit will be granted only once. BIOL 3322 prerequisite: BIOL 1441, BIOL 1442. PSYC 3322 prerequisite: BIOL 1441 or PSYC 1315.

General IE

IE 4304 – Enterprise Systems

An extension of Production and Inventory Control (IE 4303), this course covers enterprise resource planning systems (ERP) in manufacturing, E-Commerce and supply chain environments. ERP software and case studies are reviewed. Prerequisite: IE 4303.

IE 4310 – Industrial and Product Safety

Scientific, managerial, and legal aspects of safety hazard control and elimination in the industrial workplace. Methods for enhancing product safety. Prerequisite: accepted in an UTA engineering professional program.

IE 4351 – Fundamentals of Systems Engineering

The course provides an overview of concepts, principles, and processes related to Systems Engineering. Topics include systems theory and systems thinking, fundamental technical and management processes, life cycle models, sustainability, resilience and other knowledge useful to engineer complex systems throughout the life cycle from concept through disposal. Prerequisite: Accepted into an engineering professional program at UTA.

Information Systems

Consider INSY minor

INSY 3304 – Database Management Systems

Comprehensive coverage of database technology and applications. Data models, query processing (SQL), relational database design, and implementation. Topics covered are hierarchical, network, relational, and object-oriented models, data dictionaries, distributed databases, evaluation and selection of database management systems (DBMS), and data administration. Formerly INSY 4302; credit will be granted only once. Prerequisite: INSY 3300.

INSY 3305 – IS Analysis and Design

This is a survey of the concepts and methods of information systems analysis and design, system development life cycle (SDLC) and methodologies associated with the SDLC. Course covers feasibility analysis, requirements definition, systems design, data design, coding design, programming, and implementation. Prerequisite: INSY 3304 and INSY 4305. INSY 4305 may be taken concurrently.

INSY 3330 – Intro to E-Commerce

Examines current and projected developments in electronic commerce. Topics include the information technologies upon which electronic commerce is based, such as the telecommunications infrastructure; new perspectives on space, time and money in business; electronic consumers and advertising; the effect of e-commerce on logistics and supply chain management; electronic financial markets and digital payment mechanisms; marketing through digital storefronts and virtual corporations; new frontiers of business such as electronic auctions and business to business e-commerce; the relationship between e-commerce and successful business strategy; and finally, public policy. Formerly BUSA 3330; credit will be granted only once. Prerequisite: INSY 2303.

Sustainability Engineering

Consider Sustainable Engineering Minor

ENGR 4395. SUSTAINABLE ENGINEERING DESIGN PROJECT. 3 Hours.

This course provides an open-ended design experience. Planning, analysis of alternatives, and design of selected projects that cross various engineering disciplines, and include multiple realistic constraints. Students will use life cycle assessment to quantify environmental and economic impacts of various design alternatives. They will also identify trade-offs among social, economic, and environmental drivers. A team approach is emphasized. Prerequisites: ENGR 2300, IE 3315, ECON 2305 or IE 2308, societal context elective.

IE 4351 – Fundamentals of Systems Engineering

The course provides an overview of concepts, principles, and processes related to Systems Engineering. Topics include systems theory and systems thinking, fundamental technical and management processes, life cycle models, sustainability, resilience and other knowledge useful to engineer complex systems throughout the life cycle from concept through disposal. Prerequisite: Accepted into an engineering professional program at UTA.

GEOL 4308. ENVIRONMENTAL GEOCHEMISTRY. 3 Hours.

The geochemistry of natural waters with emphasis on processes that control solute concentrations including complexation reactions, oxidation and reduction reactions, biogeochemistry, and chemical weathering reactions. Prerequisites: CHEM 1442 or GEOL 2445.

Entrepreneurship

ENGR 4302 – Engineering Entrepreneurship

Topics include special problems of newly formed firms, planning, start-up business considerations, business strategy, management basics, and business plan design. Students will engage in business and entrepreneurship training or discussion, become aware of basic business operations, and learn about inventions, intellectual property, and the patenting process. Other topics include assessment of possible markets, venture feasibility, teambuilding, and leadership. Opportunities in university environments will be discussed including incubation centers and patent licensing. We address legal issues, SBIR proposal design, SBIR funding from NSF, NIH, and others, the review process, reporting, local high-tech business accelerators, venture plans, and venture capital. Course taught as EE 4302, ENGR 4302 and ENGR 5302; credit will be granted only once. Prerequisite: Student must be in an engineering professional program.

BDEC 3311 - BUSINESS DECISION MAKING - PLANNING, ETHICS, SUSTAINABILITY, & AGILITY

Students are exposed to broad and integrative business knowledge as they learn to lead and manage teams while creating a business plan. The business decisions they make focus on value added offerings and are crafted in a culture of ethical, sustainable, and agile business activity. Ethics are discussed as a critical staple of decision making during times of fundamental and less predictable change. Sustainability is discussed as a touchstone for innovative decision making. Agility is discussed as a decision making trait needed in times of evolving marketplace needs. Written business plans are evaluated by business professionals. Student teams also compete for various awards by presenting their business plans to those business professionals in a business exhibition format called the Sustainable Business Challenge. Prerequisite: Junior standing, 60 completed hours.

MANA 3325 – Entrepreneurship and Venture Management

The fundamentals of identifying the need for and organizing a small business. Role and characteristics of the entrepreneur and problems of venture initiation. New venture creation and its management through the first two/three years of operation. Prerequisite: 60 credit hours.

Mathematical Modeling

Consider Math Minor

MATH 3303 – Mathematical Game Theory

Two-person zero-sum games, solving matrix games by linear programming, two-person non-zero sum games, noncooperative n-person games, Nash equilibrium points and refinements, cooperative n-person games, core, Shapley value, and other concepts of solution. Applications to cost allocation, fair division, and voting power. Prerequisite: C or better in MATH 3330 or MATH 3319, or consent of the instructor.

MATH 3345 – Numerical Analysis and Computer Applications

Numerical solutions of nonlinear equations, numerical integration and differentiation, polynomial interpolation, solutions of linear systems, and an introduction to spline functions. C or better in MATH 2326, and C or better in one of MATH 3330 or MATH 3319.

MATH 4311 - Stochastic Models and Simulation

A study of processes, whose outcomes are governed by chance, through a combination of lectures and computer lab sessions. Experiments include random number generation, coin tossing and other games of chance, random walks, Markov Chains, Poisson processes, birth-death processes, branching processes, and Brownian Motion. A foundation for modeling random phenomena in sciences, engineering and business. Prerequisite: C or better in MATH 2326 and knowledge of basic probability (MATH 3313/STATS 3313 or MATH 3351/BIOL 3351 or equivalent), or consent of instructor.

IE Course Prerequisites

Several of our classes have prerequisites for registration. In order to conduct classes with the greatest benefit for all our students, it is essential for students to have common preparatory activities.

Prerequisite: A course or other requirement **that must be completed and verified** prior to enrollment in a more advanced level course.

To ensure proper placement, prerequisites for all classes will be checked during advising. If a prerequisite course has been taken at an institution other than UTA, the course must be transferred prior to enrolling in the subsequent course.

Many classes are only offered once a year, as shown in the IE Course Frequency Chart. This along with the tight prerequisite structure makes it very important that each student have a graduation plan early and that he/she stick with that plan as much as possible. There is a critical path through the curriculum and if a class is missed in that path it will likely delay graduation. This leads to the suggested course sequence listed in Degree Requirements.

Please use the table below to ensure you meet the prerequisite/co-requisite requirements before scheduling a course. Courses with an asterisk after the number are professional level courses. Students must be in the professional program or in their last semester of the pre-professional program to enroll in these courses.

Course Number	Course Name	Prerequisites	Prerequisite or Concurrent
IE 1205	Introduction to Industrial Engineering		
IE 2305	Computer Applications in Industrial Engineering		IE 1205
IE 2308	Engineering Economics		MATH 1426
IE 3301	Engineering Probability	MATH 2425	
IE 3314*	Engineering Research Methods	IE 3301, IE 2326	
IE 3315	Operations Research I		MATH 2326
IE 3343*	Metrics and Measurements	MATH 2326	IE 2308, IE 3301
IE 4302*	Engineering Administration and Organization		
IE 4303*	Production and Inventory Control	IE 3301, IE 3315	
IE 4308*	Quality Systems		IE 3314
IE 4315*	Operations Research II	IE 3301, IE 3315	MATH 3319
IE 4318*	Enterprise Design		
IE 4322*	Enterprise Simulation	IE 3314, IE 415	
IE 4325*	Automation and Robotics I		IE 4303
IE 4339*	Product Development, Producibility, and Entrepreneurship		
IE 4340*	Engineering Project Management		
IE 4343*	Facilities Planning and Design		IE 4303
IE 4344 *	Human Factors Engineering	IE 2308, IE 3301, IE 3343	
IE 4345*	Applied Knowledge Engineering and Data Analytic Applications		
IE 4350 *	Industrial Engineering Capstone Design		All required IE courses

IE Course Frequency Chart

The table below shows the frequency of IE classes. Summer semesters are not shown as they vary greatly. Summer schedules will need to be checked year by year. This chart is based on historical data and future planning. Course offerings are subject to change by the IMSE Department.

Course	Fall Semester	Spring Semester
1205	✓	✓
2305	✓	✓
2308	✓	✓
3301	✓	✓
3314	✓	
3315	✓	✓
3343	✓	
4302		✓
4303	✓	
4308	✓	
4315	✓	
4318		✓
4322		✓
4325	✓	
4339	✓	
4343	✓	
4340	✓	✓
4344		✓
4345		✓
4350	✓	✓

Advancement to the Professional Program

Requirements for advancement into the Professional Program in Industrial Engineering are in accordance with those in the College of Engineering with the added stipulations that:

- No professional Industrial Engineering course may be taken unless the student is admitted into the professional program or obtains the consent of the Undergraduate Advisor. Professional curses may be taken to fill out a schedule in the semester that the last pre-professional course is taken.
- Each student must complete all pre-professional courses with a minimum grade of C in each course and a minimum GPA of 2.25 in each of three categories: (1) overall, (2) required math, science, and engineering courses, and (3) required IE courses.

Once a student meets all requirements to enter the professional program their program/plan will be changed from IE__IEINT to IE__IE to indicate they have been admitted to the professional program.

Internships and Co-Ops

IE students are strongly encouraged to gain relevant, career-related work experience before graduation. There are many opportunities in the DFW area and students at UTA should take advantage of the fantastic location of UTA for internship and co-op opportunities. These paid experiences can aid in molding future career goals and paths.

An internship is work experience for a company that the students undertakes while also taking classes on campus at UTA. Internships are more common than co-op positions for UTA students. Getting multiple internships while in school allows a student to try out different types of positions and companies to see the type of work that interests the student the most. It is also a great way to get foot in the door to increase the chances of receiving a permanent position offer after graduation.

A co-op typically involves taking a fall or spring semester off from course work in order to work full time at a company. Although this may delay a student's graduation date, graduates find the work experience to be well worth the extra time. Participants of the co-op program find that working for a longer period of time, at the same company, allows them to delve deeper into their assigned projects and many times, see them to completion and directly witness the impact the project has on the company.

The College of Engineering at UTA has a Co-op/Intern Office responsible for administering the undergraduate engineering co-op and internship program. It is located in the Engineering Student Services Center, 242 Nedderman Hall. Staff is available to answer general questions about specific co-op/intern listings, procedures for registering for the co-op course, etc. A counselor is available for students seeking assistance with general career planning, résumé writing, interviewing techniques and job search strategies. Students should think about preparing for internships and co-ops in their sophomore year. The Co-op/Intern Office can aid students in that preparation.

Student Organizations

Institute of Industrial & Systems Engineering (IISE)

Systems world view. Productivity. Efficiency. These are words that describe the distinctive attributes of industrial engineering, and IISE is the world's largest professional society dedicated solely to the support of the industrial and systems engineering profession and individuals involved with improving quality and productivity. Founded in 1948, IISE is an international, nonprofit association that provides leadership for the application, education, training, research, and development of industrial and systems engineering. ISEs figure out a better way to do things and work in a wide array of professional areas, including management, manufacturing, logistics, health systems, retail, service and ergonomics. They influence policy and implementation issues regarding topics such as sustainability, innovation and Six Sigma. And like the profession, ISEs are rooted in the sciences of engineering, the analysis of systems, and the management of people.

Student Chapter Website: https://mavorgs.collegiatelink.net/organization/iie

Faculty Contact: Dr. Jamie Rogers

Alpha Pi Mu (APM)

Industrial Engineering Honor Society

Faculty Contact: Dr. Brian Huff

APICS

Our purpose is to facilitate learning outside the classroom, to provide valuable networking opportunities with industry professionals, and to provide students with resources that will supplement their growth as Operations Management or Supply Chain Management professionals.

Student Chapter Website: https://mavorgs.collegiatelink.net/organization/apics

American Society for Engineering Management (ASEM)

ASEM, the American Society for Engineering Management, is the society that speaks for the profession of engineering management across the world.

Faculty Contact: Dr. Don Liles