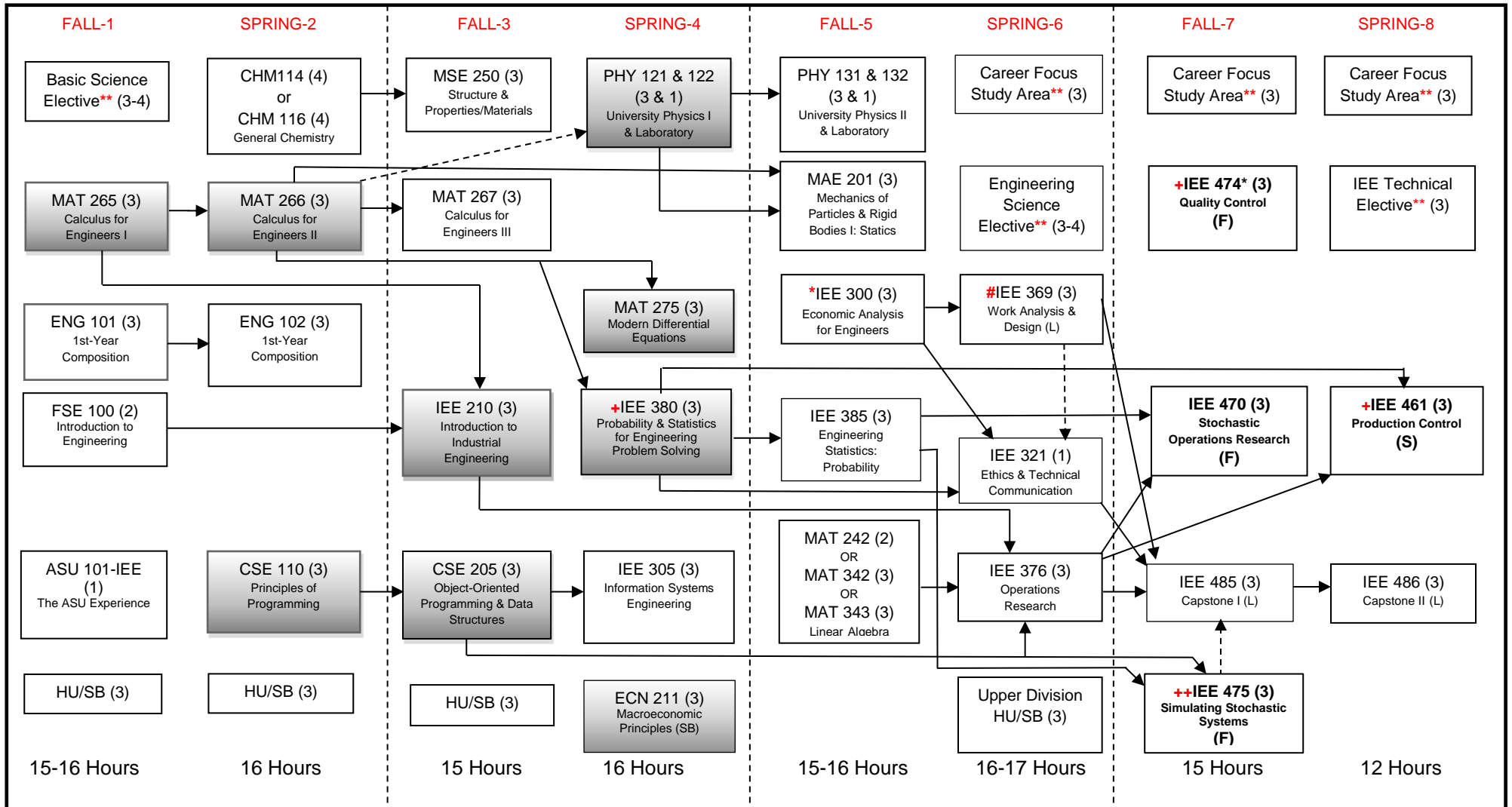


Industrial Engineering, BSE

Bachelor of Science in Engineering, 2019-2020 Catalog Year

ESIEEBSE



Notes: Shaded classes designates critical requirements. Minimum 'C' grade required in all IEE-prefix courses.

"**Bolded**" courses are offered in specified terms only.

+IEE380 is a prerequisite to certain upper division IEE courses and Career Focus Study Areas (depending on the focus). Check prerequisites carefully.

++IEE 385 is the prerequisite to IEE 475

*MAT 265 is a prerequisite to IEE 300.

(**) See Advisor or CIDSE Website for TE, Career Focus, Basic Science Elective and Engineering Science Elective course options.

(<http://cidse.engineering.asu.edu/forstudent/undergraduate/majors/industrial-engineering-bse/>)

Cultural
 Global
 Historical

Pre-requisite \longrightarrow

Pre- or Co- requisite \dashrightarrow

Term 1

Basic Science Elective: Choose one of the following - BIO 181, BIO 182, BIO 201, BIO 202, BME 111, CHM113 (MUST TAKE CHM116 – NOT CHM114), GLG 101, GLG 102, GLG 110.

MAT 265: Calculus for Engineers I - Limits and continuity, differential calculus of functions of one variable, introduction to integration. Not open to students with credit in MAT 270.

ENG 101: First-Year Composition

FSE 100: Introduction to Engineering - Introduces the engineering design process; working in engineering teams; the profession of engineering; engineering models, written and oral technical communication skills.

ASU 101-IEE: The ASU Experience

HU/SB: Humanities, Fine Arts & Design or Social & Behavioral Sciences

Term 2

CHM 114: General Chemistry for Engineers or CHM 116: General Chemistry II (pre-req is CHM 113). MUST TAKE CHM116 if CHM 113 is taken for Basic Science Elective.

MAT 266: Calculus for Engineers II - Methods of integration, applications of calculus, elements of analytic geometry, improper integrals, Taylor series.

ENG 102: First-Year Composition

CSE 110: Principles of Programming - Concepts of problem solving using Java, algorithm design, structured programming, fundamental algorithms and techniques, and computer systems concepts. Social and ethical responsibility.

HU/SB: Humanities, Fine Arts & Design or Social & Behavioral Sciences

Term 3

MSE 250: Structure and Properties-Materials - Basic concepts of material structure and its relation to properties. Application to engineering problems.

MAT 267: Calculus for Engineers III - Vector-valued functions of several variables, partial derivatives, and multiple integration.

IEE 210: Introduction to Industrial Engineering - History of IE: IE career paths; ethical, social, and contemporary issues; introduces IE techniques, methods, and their application; case studies.

CSE 205: Object-Oriented Programming & Data Structures - Problem solving by programming with an object-oriented programming language. Introduces data structures. Overview of computer science topics.

HU/SB: Humanities, Fine Arts & Design or Social & Behavioral Sciences

Term 4

PHY 121/122: University Physics I: Mechanics and laboratory - Kinematics; Newton's laws; work, energy, momentum, conservation laws; dynamics of particles, solids, and fluids. Both PHY 121 and PHY 122 must be taken to secure SQ General Studies credit.

MAT 275: Modern Differential Equations - Introduces differential equations, theoretical and practical solution techniques. Applications. Problem solving using MATLAB.

IEE 380: Probability and Statistics for Engineering Problem Solving - Applications-oriented course with computer-based experience using statistical software for formulating and solving engineering problems.

IEE 305: Information Systems Engineering - Overview of computer and information systems applications. Topics include client/server; distributed computing; networks; process modeling; e-commerce; enterprise applications; Internet.

ECN 211: Macroeconomic Principles - Basic macroeconomic analysis. Economic institutions and factors determining income levels, price levels, and employment levels.

Term 5

PHY 131/132: University Physics II: Electricity and Magnetism and laboratory -

Electric charge and current, electric and magnetic fields in vacuum and in materials, and induction. AC circuits, displacement current, and electromagnetic waves. Both PHY 131 and PHY 132 must be taken to secure SQ General Studies credit.

MAE 201: Mechanics of Particles and Rigid Bodies I: Statics - Force vectors and force system resultants, equilibrium of particles and rigid bodies, friction, centroid and moments of inertia of an area. Required for aerospace engineering and mechanical engineering.

IEE 300: Economic Analysis for Engineers - Economic evaluation of alternatives for engineering decisions, emphasizing the time value of money.

IEE 385: Engineering Statistics: Probability - Conditional probability, common probability models, Goodness-of-fit tests and reliability models.

MAT 242: Elementary Linear Algebra - Introduces matrices, systems of linear equations, determinants, vector spaces, linear transformations, and eigenvalues. Emphasizes development of computational skills.

Term 6

Upper Division Career Focus Area Elective: (contact CIDSE Advising for options)
Engineering Science Elective (see Major Map for course options)

IEE 369: Work Analysis and Design (L) - Planning, analysis, and design of methods of accomplishing work. Emphasizes human factors, work planning, methods analysis and design, and work measurement. Applications in diverse fields.

IEE 321: Ethics and Technical Communication - Methods and tools for preparing students for work in industry including ethics, technical writing and communications; understanding how learned undergraduate skills are used in the workplace and in engineering problem solving.

IEE 376: Operations Research Deterministic Techniques/Applications - Industrial systems applications with deterministic operations research techniques. Resource allocation, product mix, production, transportation, task assignment, networks.

Upper Division HU/SB: Upper division Humanities or Social and Behavioral Science

Term 7

Upper Division Career Focus Area Elective: (contact CIDSE Advising for options)

IEE 474: Quality Control - Basic statistical process control techniques, capability analysis, design of experiments, and acceptance sampling plans.

IEE 470: Stochastic Operations Research - Modeling and analysis with emphasis on stochastic operations research. Models for stochastic processes, including Markov chains, queuing and decision analysis.

IEE 485: Systems Design Capstone I - Senior capstone project provides students with the skills required to effectively complete a capstone project in design and development.

IEE 475: Simulating Stochastic Systems - Analyzes stochastic systems using basic queuing networks and discrete event simulation. Basic network modeling, shared resources, routing, assembly logic.

Term 8

Upper Division Career Focus Area Elective: (contact CIDSE Advising for options)

Upper Division IEE Technical Elective: (contact CIDSE Advising for options)

IEE 461: Production Control - Techniques for the planning, control, and evaluation of production systems. Forecasting, inventory control, scheduling, enterprise requirements planning, supply chain design, and coordination.

IEE 486: Systems Design Capstone II - Project in design and development. Individual or team capstone project in creative design and synthesis.