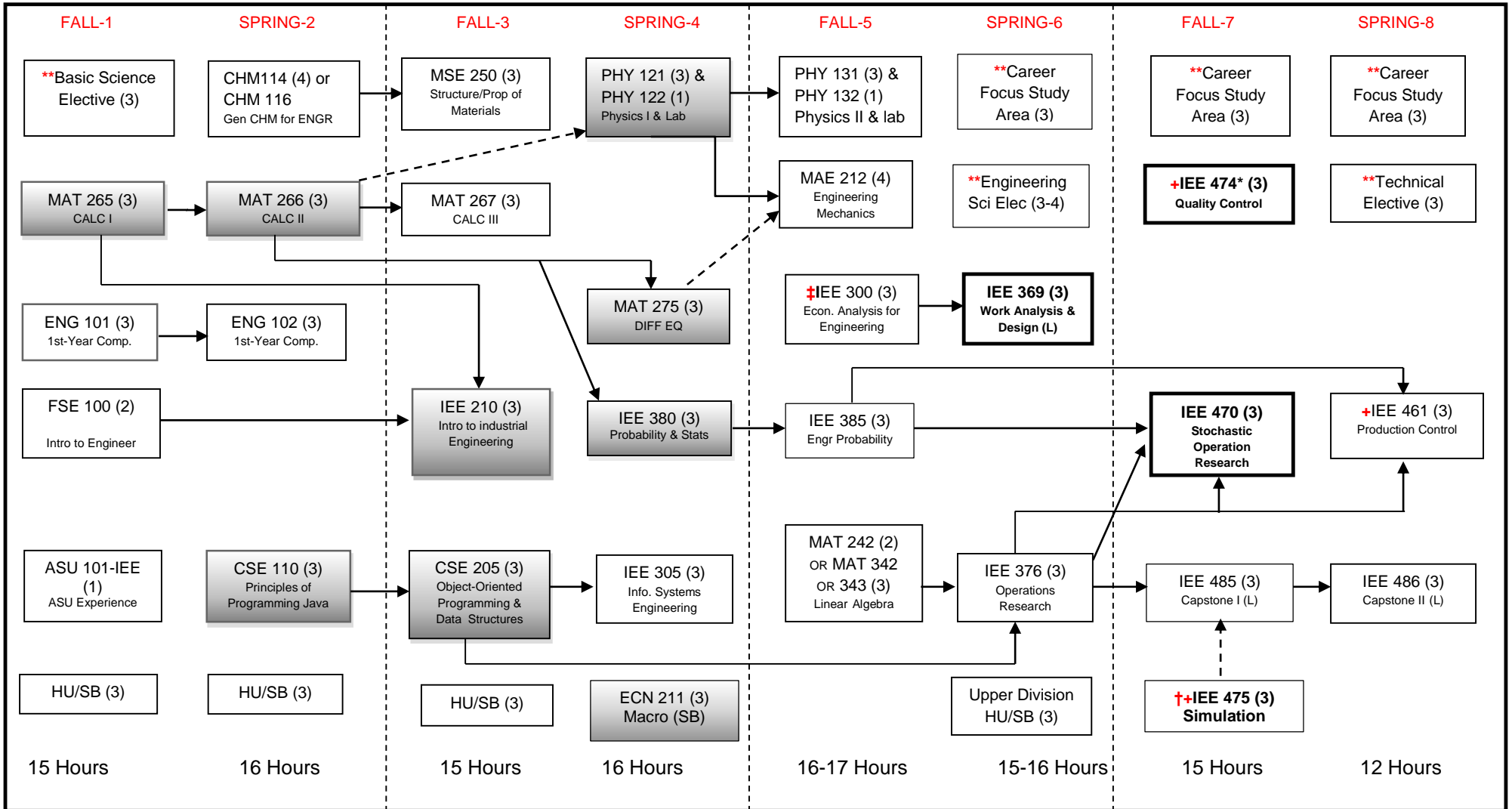


Industrial Engineering, BSE

Bachelor of Science in Engineering, 2016-2017 Catalog Year

ESIEEBSE



Notes: **See Advisor or CIDSE Website for TE, Career Focus, Basic Science or Engineering Sci Elective course options

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

+IEE380 is a prerequisite to specified upper division IEE courses and Career Focus areas (depending on the focus). Be sure to check prerequisites carefully.

†MAT 265 and FSE 100 are additional prerequisites for IEE 300

†CSE 205 is a prerequisite for IEE 475

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

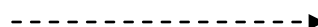
Bolded courses are offered in specific terms only.

Cultural
 Global
 Historical

Pre-requisite



Pre- or co-requisite



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 Chem for Engineers or CHM 116: General Chem II(pre-req is CHM 113). MUST TAKE CHM116 if CHM113 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 with Java -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 of 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, 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 Engr-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 212: Engineering Mechanics- Force systems, resultants, moments and equilibrium. Kinematics and kinetics of particles, systems of particles and rigid bodies. Energy and momentum principles.
IEE 300: Economic Analysis for Engineers-Economic evaluation of alternatives for engineering decisions, emphasizing the time value of money.
IEE 385: Engr 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 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: 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 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 485: Systems Design Capstone II – Project in design and development. Individual or team capstone project in creative design and synthesis.