Industrial Engineering, BSE
Bachelor of Science in Engineering, 2013-2014 Catalog Year

Contact CIDSE Advising with questions about critical requirements, elective courses, and Technical Elective and Career Focus Study Area course options.

*Designates critical requirements for IE admits in the 2013-2014 academic year. Minimum 'C' grade required in all IEE-prefix courses.

Pre-requisite
Pre- or co- requisite
Term 1
ENG 101: First-Year Composition
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.
ASU 101-IEE: The ASU Experience
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.

Basic Science Elective: choose one of the following:BIO 181, BIO 182, BME 111, GLG 101, GLG 102, or GLG 110
HU/ SB: Humanities, Fine Arts & Design or Social & Behavioral Sciences

Term 2
ENG 102: First-Year Composition
MAT 266: Calculus for Engineers II-Methods of integration, applications of calculus, elements of analytic geometry, improper integrals, Taylor series.
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.
HU/ SB: Humanities, Fine Arts & Design or Social & Behavioral Sciences

Term 3
ECN 211: Macroeconomic Principles- Basic macroeconomic analysis. Economic institutions and factors determining income levels, price levels, and employment levels.
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.
MAT 267: Calculus for Engineers III-Vector-valued functions of several variables, partial derivatives, multiple integration.
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.

Term 4
CHM 114: General Chem for Engineers or CHM 116: General Chem II(pre-req is CHM 113)
IEE 300: Economic Analysis for Engineers- Economic evaluation of alternatives for engineering decisions, emphasizing the time value of money.
MAT 275: Modern Differential Equations-Introduces differential equations, theoretical and practical solution techniques. Applications: Problem solving using MATLAB.

Term 5
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.

Engineering Science Elective: (depends on Focus area)
HU/ SB: Humanities, Fine Arts & Design or Social & Behavioral Sciences

Term 6
IEE 385: Engr Stats - Probability- Conditional probability, common probability models, Goodness-of-fit tests and reliability models.
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.
Upper Division Career Focus Area Elective (depends on Focus area)
Upper Division HU/ SB: Humanities or Social and Behavioral Science

Term 7
IEE 475: Simulating Stochastic Systems-Analyzes stochastic systems using basic queuing networks and discrete event simulation. Basic network modeling, shared resources, routing, assembly logic.
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 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 474: Quality Control- Basic statistical process control techniques, quality analysis, design of experiments, and acceptance sampling plans.
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.

Term 8
IEE 490: Project in Design and Development(L)-Individual or team capstone project in creative design and synthesis.
Upper Division IEE Technical Elective (depends on Focus area)
Upper Division Career Focus Area Elective (depends on Focus area)
Upper Division Career Focus Area Elective (depends on Focus area)