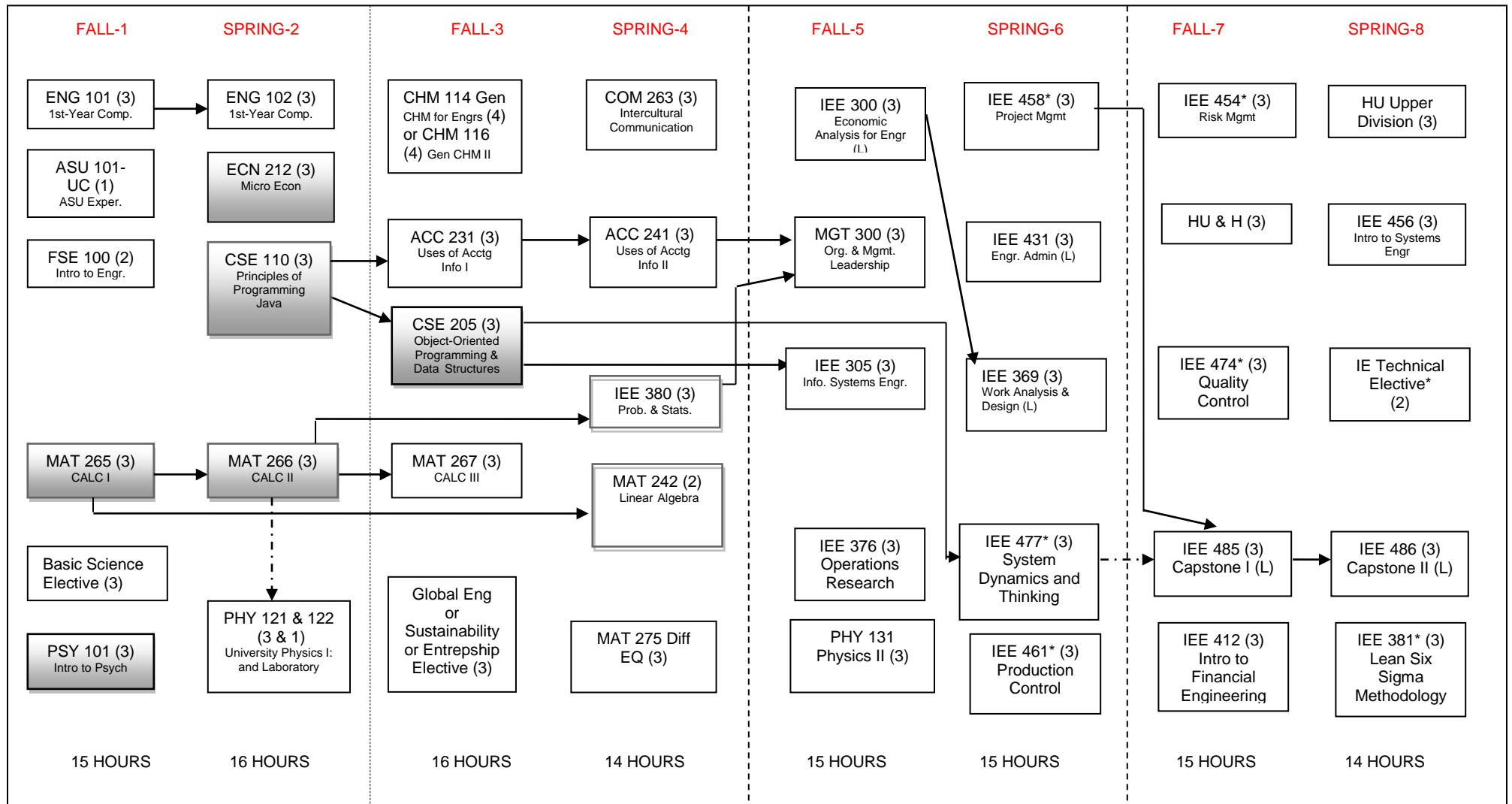


ONLINE Engineering Management, BSE

Bachelor of Science in Engineering, 2016-2017 Catalog Year

ESEMG BSE



*Contact CIDSE Advising Center or visit CIDSE Website (<http://engineering.asu.edu/cidse>) for approved IEE Technical Electives.

Shaded courses designate critical requirements.

*IEE380 is the prerequisite to many IEE upper division courses

Prerequisite → Pre or Co-requisite

Color Coding Key: **Completed Requirements** **Enrolled** **Need to Retake**



Term 1

ENG 101: First-Year Composition

ASU 101-CSE: 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.

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.

Basic Science Elective: GLG 101

PSY 101: Introduction to Psychology-Major areas of theory and research in psychology. Requires participation in department-sponsored research or an educationally equivalent alternative activity.

Term 2

ENG 102: First-Year Composition

ECN 112: Microeconomics Principles-Basic microeconomic analysis. Theory of exchange and production, including the theory of the firm.

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.

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.

Term 3

CHM 114: General Chemistry for Engineers - Chemical principles with emphasis toward engineering. Students without high school chemistry or chemical engineering majors must enroll in the CHM 113, 116 sequence instead of CHM 114.

OR CHM 116: General Chemistry II(pre-req is CHM 113)- Continuation of CHM 113. Equilibrium theory, thermodynamics, kinetics, electrochemistry, nuclear chemistry, descriptive chemistry.

ACC 231: Uses of Accounting I-Introduces the uses of accounting information focusing on the evolution of the business cycle and how accounting information is used for internal and external purposes.

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.

Global Eng or Sustainability or Entrepreneurship Elective: choose one of the following- SOS 110, SOS 111, or SES 106

Term 4

COM 263: Elements of Intercultural Communication-Basic concepts, principles, and skills for improving communication among persons from different minority, racial, ethnic, and cultural backgrounds.

ACC 241: Uses of Accounting II-Introduces the uses of accounting information focusing on the evolution of the business cycle and how accounting information is used for internal and external purposes.

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

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

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

Term 5

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

MGT 300: Organization and Management Leadership-Analyzes strategic, behavioral, and human resource management perspectives, including principles of strategic management and leadership of human resources.

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.

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

PHY 131 University Physics II: Electricity and Magnetism- Electric charge and current, electric and magnetic fields in vacuum and in materials, and induction. AC circuits, displacement current, and electromagnetic waves.

Term 6

IEE 458: Project Management-Life-cycle processes for selecting and managing large-scale projects to ensure successful completion. Topics include project phases, defining milestones, work breakdown structure, group decision making and teamwork, organizational structure, human resource management, technological and economic feasibility, configuration management, budget control, and resource allocation and scheduling. Use of modern tools for planning and controlling project performance.

IEE 431: Engineering Administration-Introduces quantitative and qualitative approaches to management functions, engineering administration, organizational analysis, decision making, and communication.

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 477: System Dynamics and Thinking- Methods for the modeling and analysis of system dynamics; metrics to measure business performance; continuous simulation tools for evaluation of system performance over time.

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.

Term 7

IEE 454: Risk Management- Methods and tools for identifying, assessing, mitigating and controlling risk in business and engineering design activities. Decision tools include cost-benefit analysis, decision trees, value of information, Bayesian statistical decision making, fault trees, and failure modes and effects analysis (FMEA).

HU & H: Humanities and Historical awareness area

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

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

IEE 412: Intro to Financial Engineering - Intensive exploration course of three phases: (1) a preparation phase for the terminology and financial lingo to be used throughout the semester, (2) introduction of more advanced financial topics such as portfolio formation, assessment and traditional portfolio theory, (3) several financial engineering topics such as the application of stochastic models to stock and derivatives pricing and financial risk management.

Term 8

Upper Division HU: Humanities

IEE 456: Introduction to Systems Engineering-Foundation course addressing the concepts needed for successful system planning, design and build process. Topics include successfully bringing large-scale systems to completion on schedule and on budget, modeling and cost estimating techniques, risk and variability.

IE Technical Elective

IEE 486: Systems Design Capstone II (L) – Individual or team capstone project in creative design and synthesis.

IEE 381: Lean Six Sigma Methodology - Define, measure, analyze, improve and control (DMAIC) steps of six sigma methodology for business and quality improvement. Reviews the necessary statistical tools and illustrates their integration into the problem-solving process. Overview of lean principles and design for six sigma. Unique features of applying six sigma and DMAIC in transactional and service organizations.