Engineering Management, BSE
Bachelor of Science in Engineering, 2016-2017 Catalog Year
ESEMGBSE

Please connect with your CIDSE Advisor with questions about critical requirements, math and science electives, and industry focus area options.

FALL-1
- ENG 101 (3) 1st-Year Comp.
- ASU 101- IEE (1) ASU Exper.
- FSE 100 (2) Intro to Engr.
- ENG 102 (3) 1st-Year Comp.
- ECN 212 (3) Micro Econ
- CSE 110 (3) Principles of Programming Java
- MAT 265 (3) CALC I
- Basic Science Elective (3)
- PHY 121 & 122 (3 & 1) University Physics I and Laboratory
- PSY 101 (3) Intro to Psych
- 15 HOURS

SPRING-2
- CHM 114 Gen CHM for Engrs (4) or CHM 116 (4) Gen CHM II
- ACC 231 (3) Uses of Acctg Info I
- ACC 241 (3) Uses of Acctg Info II
- CSE 205 (3) Object-Oriented Programming & Data Structures
- MAT 266 (3) CALC II
- Global Eng or Sustainability or Entrepship Elective (3)
- Math or Science Elective** (3)
- 16 HOURS

FALL-3
- COM 263 (3) Intercultural Communication
- MGT 300 (3) Org. & Mgmt. Leadership
- IEE 380* (3) Prob. & Stats.
- MAT 267 (3) CALC III
- Elementary Linear Algebra
- Math or Science Elective** (3)
- 16 HOURS

SPRING-4
- IEE 431 (3) Engr. Admin (L)
- IEE 458* (3) Project Mgmt
- IEE 381* (3) Lean Six Sigma Methodology
- IEE 369 (3) Work Analysis & Design (L)
- IEE 454* (3) Risk Mgmt
- HU Upper Division (3)
- 14 HOURS

FALL-5
- IEE 477* (3) System Dynamics & Thinking
- IEE 369 (3) Work Analysis & Design (L)
- IEE 485 (3) Capstone I (L)
- Industry Focus Area Elective** (3)
- Industry Focus Area Elective** (3)
- 15 HOURS

SPRING-6
- IEE 456 (3) Intro to Systems Engr
- HU & H (3)
- Industry Focus Area Elective** (3)
- IE Technical Elective (2-3)
- Industry Focus Area Elective** (3)
- 14-15 HOURS

FALL-7
- IEE 431 (3) Engr. Admin (L)
- IEE 458* (3) Project Mgmt
- IEE 454* (3) Risk Mgmt
- HU Upper Division (3)
- Industry Focus Area Elective** (3)
- Industry Focus Area Elective** (3)
- 15 HOURS

SPRING-8
- IEE 477* (3) System Dynamics & Thinking
- IEE 369 (3) Work Analysis & Design (L)
- IEE 485 (3) Capstone I (L)
- Industry Focus Area Elective** (3)
- Industry Focus Area Elective** (3)
- Industry Focus Area Elective** (3)
- 14-15 HOURS

Notes:
** Contact your CIDSE Advisor or visit the CIDSE Website (http://cidse.engineering.asu.edu/degerequirementsbseem/) for list of Industry Focus Areas, Math/Science and Basic Science Electives.
Shaded courses designate critical requirements.
*IEE380 is the prerequisite to many IEE upper division courses
Bolded courses are offered specific terms only

Prerequisite Pre or Co-requisite

Cultural
Global
Historical
Term 1
ENG 101: First-Year Composition
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.
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: choose one of the following-BIO 181, BIO 182, BME 111, GLG 101, GLG 102, GLG 110, CHM113 (MUST TAKE CHM116 IF CHM 113 IS TAKEN FOR BASIC SCIENCE ELECTIVE).
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 212: Microeconomics Principles-Basic microeconomic analysis. Theory of exchange and production, including the theory of the firm.
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 Chem for Engineers or CHM 116: General Chem II (pre-req is CHM 113). Students who take CHM113 for Basic Science Elective must take CHM116.
ACC 231: Uses of Acctg 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- ALA 102, CEE 181, FSE 301, FSE 394, PUP 190, SOS 100, SOS 110, or SOS 111

Term 4
COM 263: Elements of Intercultural Comm-Basic concepts, principles, and skills for improving communication among persons from different minority, racial, ethnic, and cultural backgrounds.
ACC 241: Uses of Acctg 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.
Math or Science Elective: (depends on Industry Focus Area)

Term 5
IEE 431: Engineering Administration-Introduces quantitative and qualitative approaches to management functions, engineering administration, organizational analysis, decision making, and communication.
MGT 300: Org and Mgt Leadership-Analyzes strategic, behavioral, and human resource management perspectives, including principles of strategic management and leadership of human resources.
IEE 300: Economic Analysis for Engineers-Economic evaluation of alternatives for engineering decisions, emphasizing the time value of money.
Math or Science Elective: (depends on Industry Focus Area)
Industry Focus Area Elective (see the Major Map for options or meet with CIDSE Advising)

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 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.
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.
Industry Focus Area Elective (depends on Industry Focus Area)

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 course
Industry Focus Area Elective (depends on Industry Focus Area)
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.
Upper Division Industry Focus Area Elective (depends on Industry Focus Area)

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.
IEE 3XX or 4XX: Upper Division IEE Technical Elective (depends on Industry Focus Area)
IEE 486: Systems Design Capstone II – Project in design and development. Individual or team capstone project in creative design and synthesis.
Upper Division Industry Focus Area Elective (depends on Industry Focus Area)