### Industrial Engineering, BSE
Bachelor of Science in Engineering, 2017-2018 Catalog Year
ESIEEBSE

<table>
<thead>
<tr>
<th>FALL-1</th>
<th>SPRING-2</th>
<th>FALL-3</th>
<th>SPRING-4</th>
<th>FALL-5</th>
<th>SPRING-6</th>
<th>FALL-7</th>
<th>SPRING-8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Science Elective (3)</td>
<td>CHM114 (4) or CHM 116 Gen CHM for ENGR</td>
<td>MSE 250 (3) Structure/Prop of Materials</td>
<td>PHY 121 (3) &amp; PHY 122 (1) Physics I &amp; Lab</td>
<td>PHY 131 (3) &amp; PHY 132 (1) Physics II &amp; lab</td>
<td>Career Focus Study Area (3)</td>
<td>Career Focus Study Area (3)</td>
<td>Career Focus Study Area (3)</td>
</tr>
<tr>
<td>MAT 265 (3) CALC I</td>
<td>MAT 266 (3) CALC II</td>
<td>MAT 267 (3) CALC III</td>
<td>MAE 201 (3) Statics</td>
<td>Engineering Sci Elec (3-4)</td>
<td>Engineering Sci Elec (3-4)</td>
<td>+IEE 474* (3) Quality Control</td>
<td>+IEE Elective (3)</td>
</tr>
<tr>
<td>ENG 101 (3) 1st-Year Comp.</td>
<td>ENG 102 (3) 1st-Year Comp.</td>
<td>ENG 101 (3) 1st-Year Comp.</td>
<td>IEE 210 (3) Intro to Industrial Engineering</td>
<td>MAT 275 (3) Diff EQ</td>
<td>IEE 385 (3) Engr Probability</td>
<td>IEE 470 (3) Stochastic Operation Research</td>
<td>+IEE 461 (3) Production Control</td>
</tr>
<tr>
<td>FSE 100 (2) Intro to Engineer</td>
<td>IEE 210 (3) Intro to Industrial Engineering</td>
<td>IEE 380 (3) Probability &amp; Stats</td>
<td>IEE 385 (3) Engr Probability</td>
<td>IEE 321 (1) Ethics and Tech Comm</td>
<td>IEE 470 (3) Stochastic Operation Research</td>
<td>+IEE 461 (3) Production Control</td>
<td></td>
</tr>
<tr>
<td>ASU 101-IEE (1) ASU Experience</td>
<td>CSE 110 (3) Principles of Programming Java</td>
<td>CSE 205 (3) Object-Oriented Programming &amp; Data Structures</td>
<td>IEE 305 (3) Info. Systems Engineering</td>
<td>MAT 242 (2) OR MAT 342 OR 343 (3) Linear Algebra</td>
<td>IEE 376 (3) Operations Research</td>
<td>+IEE 485 (3) Capstone I (L)</td>
<td>IEE 486 (3) Capstone II (L)</td>
</tr>
<tr>
<td>HU/SB (3)</td>
<td>HU/SB (3)</td>
<td>HU/SB (3)</td>
<td>ECN 211 (3) Macro (SB)</td>
<td>Upper Division HU/SB (3)</td>
<td>Upper Division HU/SB (3)</td>
<td>+IEE 475 (3) Simulation</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- Shaded classes designate critical requirements. Minimum 'C' grade required in all IEE-prefix courses.
- **Bolded courses are offered in specific terms only.**
- +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 is a prerequisite for 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/)

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, CHM 113 (MUST TAKE CHM 116 – NOT CHM 114), 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 CHM 116 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**


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

Term 3


**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.


**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 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: Engr Statistics - Probability** - Conditional probability, common probability models, Goodness-of-fit tests and reliability models.


**Term 6

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

**IEE 369: Work Analysis and Design** - 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.


**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.


**Term 8

**Upper Division Career Focus Area 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.