### Term 1 0 - 16 Credit Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Critical course signified by 📚</strong></td>
<td></td>
<td></td>
<td><strong>ASU 101-MEE: The ASU Experience</strong></td>
</tr>
<tr>
<td>MAT 265: Calculus for Engineers I (MA)</td>
<td>3</td>
<td>C</td>
<td><strong>CHM 114: General Chemistry for Engineers (SQ) OR CHM 116: General Chemistry II (SQ)</strong></td>
</tr>
<tr>
<td>ASU 101-MEE: The ASU Experience</td>
<td>1</td>
<td></td>
<td><strong>ENG 101: First-Year Composition or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107:</strong></td>
</tr>
<tr>
<td>CHM 114: General Chemistry for Engineers (SQ) OR CHM 116: General Chemistry II (SQ)</td>
<td>4</td>
<td>C</td>
<td><strong>FSE 100: Introduction to Engineering</strong></td>
</tr>
<tr>
<td>ENG 101: First-Year Composition or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107: First-Year Composition</td>
<td>3</td>
<td>C</td>
<td><strong>Minimum 2.00 GPA ASU Cumulative.</strong></td>
</tr>
</tbody>
</table>

**Term hours subtotal:** 16

### Term 2 16 - 32 Credit Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Critical course signified by 📚</strong></td>
<td></td>
<td></td>
<td><strong>PHY 121: University Physics I: Mechanics (SQ)</strong></td>
</tr>
<tr>
<td>MAT 242: Elementary Linear Algebra</td>
<td>2</td>
<td>C</td>
<td><strong>ENG 101: First-Year Composition or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107:</strong></td>
</tr>
<tr>
<td>MAT 266: Calculus for Engineers II (MA)</td>
<td>3</td>
<td>C</td>
<td><strong>PHY 122: University Physics Laboratory I (SQ)</strong></td>
</tr>
<tr>
<td>PHY 121: University Physics I: Mechanics (SQ)</td>
<td>3</td>
<td>C</td>
<td><strong>MAE 215: Introduction to Programming in MATLAB</strong></td>
</tr>
<tr>
<td>f-semibold: ENG 101 OR ENG 105 OR ENG 107 course(s)</td>
<td></td>
<td></td>
<td><strong>Social-Behavioral Sciences (SB) AND Historical Awareness (H)</strong></td>
</tr>
<tr>
<td>MAE 215: Introduction to Programming in MATLAB</td>
<td>1</td>
<td>C</td>
<td><strong>Complete ENG 101 OR ENG 105 OR ENG 107 course(s).</strong></td>
</tr>
<tr>
<td>f-semibold: Minimum 2.00 GPA ASU Cumulative.</td>
<td></td>
<td></td>
<td><strong>Term hours subtotal:</strong> 16</td>
</tr>
</tbody>
</table>

### Term 3 32 - 46 Credit Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Critical course signified by 📚</strong></td>
<td></td>
<td></td>
<td><strong>MAE 201: Mechanics of Particles and Rigid Bodies I: Statics</strong></td>
</tr>
<tr>
<td>MAE 201: Mechanics of Particles and Rigid Bodies I: Statics</td>
<td>3</td>
<td>C</td>
<td><strong>MAT 267: Calculus for Engineers III (MA)</strong></td>
</tr>
<tr>
<td>MAT 267: Calculus for Engineers III (MA)</td>
<td>3</td>
<td>C</td>
<td><strong>MAT 275: Modern Differential Equations (MA)</strong></td>
</tr>
<tr>
<td>MAT 275: Modern Differential Equations (MA)</td>
<td>3</td>
<td>C</td>
<td><strong>Term hours subtotal:</strong> 16</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Hours</td>
<td>Minimum Grade</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------------------------------------------</td>
<td>-------</td>
<td>---------------</td>
</tr>
<tr>
<td>PHY 131</td>
<td>University Physics II: Electricity and Magnetism (SQ)</td>
<td>3</td>
<td>C</td>
</tr>
<tr>
<td>MAE 214</td>
<td>Computer-Aided Engineering I</td>
<td>1</td>
<td>C</td>
</tr>
<tr>
<td>PHY 132</td>
<td>University Physics Laboratory II (SQ)</td>
<td>1</td>
<td>C</td>
</tr>
<tr>
<td>Complete CHM 114 OR CHM 116 course(s).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete First-Year Composition requirement.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum 2.00 GPA ASU Cumulative.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete Mathematics (MA) requirement.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Term hours subtotal:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Term 4 46 - 62 Credit Hours Critical course signified by ⚫** | Hours | Minimum Grade | Notes                                                                 |
| MAE 202: Mechanics of Particles and Rigid Bodies II: Dynamics  | 3     | C             | • Pursue an undergraduate research experience.  |
| MAE 213: Mechanics of Materials |                                | 3     | C             | • Apply for internships.  |
| MAE 241: Introduction to Thermodynamics |                                | 3     | C             | • Attend career fairs and events.  |
| EEE 202: Circuits I |                                | 4     | C             |                                                                      |
| MAE 384: Advanced Mathematical Methods for Engineers (CS) |                                | 3     | C             |                                                                      |
| **Term hours subtotal:** |                                |       |               | 16                                                                  |

**Term 5 52 - 78 Credit Hours Necessary course signified by ⭐** | Hours | Minimum Grade | Notes                                                                 |
| MEE 322: Structural Mechanics |                                | 3     | C             | • Plan for success using the Junior Guide.  |
| MEE 324: Structural Mechanics Laboratory |                                | 3     | C             | • Network at student organization competitions or professional societies.  |
| CHM 231: Elementary Organic Chemistry (SQ) OR CHM 233: General Organic Chemistry I |                                | 3     | C             |                                                                      |
| MAE 301: Applied Experimental Statistics |                                | 3     | C             |                                                                      |
| MAE 242: Introduction to Fluid Mechanics |                                | 3     | C             |                                                                      |
| MSE 250: Structure and Properties of Materials |                                | 3     | C             |                                                                      |
| **Term hours subtotal:** |                                |       |               | 16                                                                  |

**Term 6 78 - 93 Credit Hours Necessary course signified by ⭐⭐** | Hours | Minimum Grade | Notes                                                                 |
| MAE 318: System Dynamics and Control I |                                | 4     | C             | • Research and prepare for graduate school.  |
| MEE 340: Heat Transfer |                                | 3     | C             | • Apply for an engineering 4+1 program  |
| MAE 400: Engineering Profession (L) |                                | 3     | C             | • Develop a professional profile online.  |
| MEE 323: Computer-Aided Engineering II |                                | 2     | C             |                                                                      |
| MEE 342: Principles of Mechanical Design |                                | 3     | C             |                                                                      |
| Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s). |                                |       |               |                                                                      |
| **Term hours subtotal:** |                                |       |               | 15                                                                  |

**Term 7 93 - 106 Credit Hours Necessary course signified by ⭐⭐⭐** | Hours | Minimum Grade | Notes                                                                 |
| MEE 482: Intermediate Thermodynamics |                                | 3     | C             | • Plan for success using the Senior Guide.  |
| MAE 417: System Dynamics and Control II OR MEE 491: Experimental Mechanical Engineering (L) |                                | 3     | C             | • Apply for full-time positions.  |
| PUP 190: Sustainable Cities ((HU or SB) & G) OR GPH 314: Global Change (HU & G) |                                | 3     | C             | • Complete an in person or virtual practice interview.  |
| Upper Division Energy and Environment Technical Elective |                                | 3     | C             |                                                                      |
| **Term hours subtotal:** |                                |       |               | 13                                                                  |

Minimum
### Upper Division Energy and Environment Technical Electives

- ATE 521: Building Environmental Science
- ATE 556: Architectural Technology V
- ATE 560: Building Energy Analysis
- ATE 582: Environmental Control Systems
- BIO 320: Fundamentals of Ecology
- CEE 361: Introduction to Environmental Engineering
- CEE 440: Hydrology
- CEE 494: Energy Efficient Buildings and Systems
- CEE 494: Sustainable Energy and Material Use
- CEE 494: Sustainable Energy Technologies
- CHE 473: Fuel Cells and Biofuel Cells
- CHE 478: Biomass Energy Conversion Technology
- CHM 302: Environmental Chemistry
- EEE 360: Energy Systems and Power Electronics
- EEE 460: Nuclear Power Engineering
- EEE 463: Electrical Power Plants
- EVE 302: Environmental Engineering Fundamentals: Physical and Chemical Processes
- MAE 494: Energy Efficiency
- MAE 494: Solar Thermal Engineering

### Upper Division Technical Electives

- AEE OR MAE OR MEE Upper Division Elective
- AST 321: Introduction to Planetary and Stellar Astrophysics
- AST 322: Introduction to Galactic and Extragalactic Astrophysics
- ATE 521: Building Environmental Science
- ATE 556: Architectural Technology V
- ATE 560: Building Energy Analysis
- ATE 582: Environmental Control Systems
- BIO 320: Fundamentals of Ecology
- BME 300: Bioengineering Product Design
- BME 316: Biomechanics for Biomedical Engineers
- BME 350: Signals and Systems for Biomedical Engineers
- BME 358: Biomaterials
- BME 358: Signals and Systems for Bioengineers
- BME 494: Bioenergy and Microbial Biotechnology
- BME 494: Neural Bases of Motor Control
- CEE 361: Introduction to Environmental Engineering
- CEE 372: Transportation Engineering
- CEE 400: Earth Systems Engineering and Management (L or H)
- CHE 473: Fuel Cells and Biofuel Cells
- CHE 478: Biomass Energy Conversion Technology
- CHM 302: Environmental Chemistry
- EEE 360: Energy Systems and Power Electronics
- EEE 460: Nuclear Power Engineering
- EEE 463: Electrical Power Plants
- EVE 302: Environmental Engineering Fundamentals: Physical and Chemical Processes
- MAE 494: Energy Efficiency
- MAE 494: Solar Thermal Engineering
- MEE 446: Energy Systems Design II
- MAE 417: System Dynamics and Control II OR MEE 491: Experimental Mechanical Engineering (L)
- SOS 171: The Thread of Energy (SB & G) OR GCU 364: Energy in the Global Arena (SB & G)

### Notes

For additional information about Upper Division Energy and Environment Technical Electives, & Upper Division Technical Electives, please go to: [Upper Division Energy and Environment Technical Electives & Upper Division Technical Electives](#).

**Hide Course List(s)/Track Group(s)**
MEE 434: Internal Combustion Engines
MEE 440: Renewable Energy: Mechanical Systems
MEE 441: Wind Energy
MSE 460: Nanomaterials in Energy Production and Storage
MSE 466: Electrochemical Energy Storage and Conversion
By approval only:
MAE 484: Internship
MAE 492: Honors Directed Study
MAE 493: Honors Thesis (L)
MAE 499: Individualized Instruction
*Students who do not meet the enrollment requirements for these courses may be allowed to enroll with instructor consent. Courses not listed here require a program petition prior to enrollment. Please check with your advisor. A max of 3 credits from MAE 484/499 can be applied toward the TE requirements.

CEE 494: Energy Efficient Buildings and Systems
CEE 494: Sustainable Energy and Material Use
CEE 494: Sustainable Energy Technologies
CHE 468: Polymer Principles and Processing
CHE 473: Fuel Cells and Biofuel Cells
CHE 478: Biomass Energy Conversion Technology
CHE 494: Nanobiotechnology
CHE 494: Quantum Mechanical Simulations of Chemical Process
CHE 494: Six Sigma Methodology/Engineering Experimentation
CHM 302: Environmental Chemistry
CHM 325: Analytical Chemistry
EEE 304: Signals and Systems II
EEE 333: Hardware Design Languages and Programmable Logic
EEE 334: Circuits II
EEE 350: Random Signal Analysis
EEE 360: Energy Systems and Power Electronics
EEE 407: Digital Signal Processing
EEE 434: Quantum Mechanics for Engineers
EEE 460: Nuclear Power Engineering
EEE 463: Electrical Power Plants
EEE 480: Feedback Systems
EEE 481: Computer-Controlled Systems
EEE 498: Foundations Machine Learning: From Theory to Pract
EEE 498: Science and Technology of Solar Cell Fabrication
EGR 317: Humanitarian Engineering Project II
EGR 433: Transforms and Systems Modeling
EGR 455: Robotic Systems I
EGR 456: Robotic Systems II
EGR 494: Engineering in Semiconductors and Microelectronics
MSE 494: Bioinspired Materials and Biomaterials
MSE 494: Failure Analysis of Metallic Materials
MSE 494: Intro to FEA for Matl Design and Characterization
MSE 494: Manufacturing Processes for Structural Materials
PHY 310: Classical Particles, Fields, and Matter I
PHY 361: Introductory Modern Physics
SES 311: Essentials of Astrobiology: Exploration for Life in the Universe
SES 350: Engineering Systems and Experimental Problem Solving
SES 307: SW3-Structural Modeling: Model, Test, Build
SES 407: Space Works II
SES 494: Modeling and Analysis of Space Thermal Systems
By approval only:
MAE 484: Internship
MAE 492: Honors Directed Study
MAE 493: Honors Thesis (L)
MAE 499: Individualized Instruction
*Students who do not meet the enrollment requirements for these courses may be allowed to enroll with instructor consent. Courses not listed here require a program petition prior to enrollment. Please check with your advisor. A max of 3 credits from MAE 484/499 can be applied toward the TE requirements.
First-Year Composition: All students are placed in ENG 101 unless submission of SAT, ACT, Accuplacer, IELTS, or TOEFL score, or college-level transfer credit or test credit equivalent to ASU's first-year composition course(s), determine otherwise. Students on Polytechnic, Downtown Phoenix and West Campuses are encouraged to complete the Directed Self-Placement survey to choose the first-year composition option they believe best suits their needs. Visit: https://cisa.asu.edu/DSP

Mathematics Placement Assessment score determines placement in first mathematics course.

Notes:

- First-Year Composition: All students are placed in ENG 101 unless submission of SAT, ACT, Accuplacer, IELTS, or TOEFL score, or college-level transfer credit or test credit equivalent to ASU's first-year composition course(s), determine otherwise. Students on Polytechnic, Downtown Phoenix and West Campuses are encouraged to complete the Directed Self-Placement survey to choose the first-year composition option they believe best suits their needs. Visit: https://cisa.asu.edu/DSP
- Mathematics Placement Assessment score determines placement in first mathematics course.

**Total Hours:** 120

**Upper Division Hours:** 45 minimum

**Major GPA:** 2.00 minimum

**Cumulative GPA:** 2.00 minimum

**Total hrs at ASU:** 30 minimum

**Hrs Resident Credit for Academic Recognition:** 56 minimum

**Total Community College Hrs:** 64 maximum

**General University Requirements Legend**

General Studies Core Requirements:

- Literacy and Critical Inquiry (L)
- Mathematical Studies (MA)
- Computer/Statistics/Quantitative Applications (CS)
- Humanities, Arts and Design (HU)
- Social-Behavioral Sciences (SB)
- Natural Science - Quantitative (SQ)
- Natural Science - General (SG)

**General Studies Awareness Requirements:**

- Cultural Diversity in the U.S. (C)
- Global Awareness (G)
- Historical Awareness (H)

**First-Year Composition**

General Studies designations listed on the major map are current for the 2022 - 2023 academic year.