Bachelors of Science-Aerospace Engineering

Program Description

The aerospace engineering curriculum provides students with an education in technological areas critical to the design and development of aerospace vehicles and systems. The aeronautics concentration, under the B.S.E. in aerospace engineering, emphasizes aeronautical engineering. Topics in required courses cover aerodynamics, aerospace materials, aircraft structures, propulsion, flight mechanics, and stability and control. Required astronautics topics include orbital mechanics, attitude control and rocket propulsion.

Career Opportunities

Majority of students entering the field of aerospace engineering desire to work on the design and analysis of aerospace vehicles. Most graduates are employed in the aerospace industry or in government positions related to aerospace. Specific careers in aerospace engineering include vehicle design and performance, vehicle and component analysis using computer-aided tools, wind-tunnel and flight testing, space mission design and analysis, propulsion engineering, aeronautical and space systems integration, material and structural design and configuration development.

The objectives of the aerospace engineering program are for graduates to be employed in aerospace engineering or a related field or accepted to graduate school and:

1. Graduates will have the technical skills for career success, including the ability to think in a critical and evaluative manner and to consider a broad perspective in order to solve technical and non-technical problems.
2. Graduates will have the professional skills for career success, including an awareness of ethical responsibility, the ability to communicate well and to work successfully within diverse groups

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Mechanical and Aerospace Engineering Program | ECG 202
macme@asu.edu 4809652335
**Prerequisite Courses**

**MATH SEQUENCE:**
- MAT 082 (3) Basic Mathematics
- MAT 092/091 (3)/(4) Introductory
- MAT 121 (3) Intermediate Algebra
- MAT 151 (4) College Algebra
- MAT 182 (3) Trigonometry
- MAT 187 (5) Pre-Calculus

**PHYSICS SEQUENCE:**
- PHY 111/111 LL and PHY 112/112LL or one year High School Physics
- PHY 111/111 LL and PHY 112/112LL or one year High School Physics

**ENGINEERING CORE:**
- ECE 103 AB (2) Intro to Engineering: Problem Solving and Design
- ECE 102 AA (2) Engineering Analysis Tools and Techniques
- ECE 216 (2) Computer Aided Engineering
- ECE 202 (5) Circuit Devices I
- ECE 214 (3) Engineering Mechanics Which is equivalent to: ECE 211 (statics) + ECE 212 (Dynamics)

**ENGLISH SEQUENCE:**
- ENG 061 Basic Writing Skills
- ENG 071 Fundamentals of Writing
- ENG 101 (3) First year composition I
- ENG 102 (3) First year composition II

**CHEMISTRY SEQUENCE:**
- CHM 130/130 LL or one year High School Chemistry
- CHM 151/1 LL (4) General Chemistry I
- CHM 152/1 LL (4) General Chemistry II

**Required Courses**

**1st Semester**
- MAT 220/221 (4/5) Calculus I
- PHY 121/121 LL (4/5) University Physics I: Mechanics (Lect/Lab)
- ECE 102 AA (2) Engineering Analysis Tools and Techniques
- CHM 151/1 LL (4) General Chemistry I

**2nd Semester**
- MAT 230/231 (4/5) Calculus II
- PHY 131/131 LL (4) University Physics II: Electricity & Magnetism (Lect/Lab)
- ECE 102 AA (2) Engineering Analysis Tools and Techniques
- CHM 152/1 LL (4) General Chemistry II

**1st Semester**
- MAT 240/241 (4/5) Calculus III
- PHY 131/131 LL (4) University Physics II: Electricity & Magnetism (Lect/Lab)
- ECE 214 (3) Engineering Mechanics Which is equivalent to: ECE 211 (statics) + ECE 212 (Dynamics)
- CHM 152/1 LL (4) General Chemistry II

**2nd Semester**
- MAT 276 (3) Modern Differential Equations
- MAT 225 (3) Elementary Linear Algebra
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*MAT 187 is a refresher course for those students who have taken college algebra and trigonometry.*
Chandler/Gilbert Community College applicable courses. 
All courses must be completed with a “C” or better.

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<tr>
<th>Course Subject and Title</th>
<th>ASU hrs</th>
<th>Applicable MCCCD course prefix &amp; number(s)</th>
<th>MCCCD hrs</th>
<th>Notes</th>
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<tr>
<td><strong>TERM ONE: 0-15 CREDIT HOURS</strong></td>
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| ASU 101-FSE: The ASU Experience | 1 | (content included in Intro to Engineering) | - | • ASU 101-FSE should be completed first semester. 
*CHM 113 is a prerequisite and does not apply toward degree credit. 
**If ENG 105 a 3 hr applicable elective must also be taken prior to graduation. See Advisor. |
| MAE 100: Intro to Mechanical and Aerospace Engineering | 2 | ECE102AA & ECE 103AB | 4 | |
| CHM 114: General Chemistry for Engineers (SQ) OR CHM 116: General Chemistry II* (SQ) | 4 | CHM 151 & CHM 151LL and CHM 152 & CHM 152LL | 8 | |
| MAT 265: Calculus for Engineers I | 3 | MAT 220 or MAT 221 | 5 or 4 | |
| Humanities Elective | 3 | (see approved HU and awareness courses) | 3 | |
| ENG 101 First-Year Composition OR ENG 105: Advanced First-Year Composition** OR ENG 107: English for Foreign Students | 3 | ENG 101 or ENG 107 | 3 | |

**TEAM TWO: 16-30 CREDIT HOURS**

| Social & Behavioral Science (SB) AND Cultural Diversity in the US (C) or Global Awareness (G) | 3 | SB Elective | 3 | |
| ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition** OR ENG 108: English for Foreign Students | 3 | ENG 102 or ENG 108 | 3 | |
| MAT 266: Calculus for Engineers II | 3 | MAT 230 or MAT 231 | 5 or 4 | |
| PHY 121/122: University Physics I/ Laboratory I (SQ) | 3/1 | PHY 115 or PHY 121 | 5 or 4 | |

**TERM THREE: 31-45 CREDIT HOURS**

| MAE 212: Engineering Mechanics | 3 | ECE 214 | 4 | • Complete 12 critical courses by end of term 3, 
• Complete First-Year Composition requirement: ENG 101 & 102 or ENG 107 & 108 or ENG 105 |
| MAT 267: Calculus for Engineers III | 3 | MAT 240 or MAT 241 | 5 or 4 | |
| MAT 275: Modern Differential Equations (MA) | 3 | MAT 276 OR MAT 277 | 4 or 3 | |
| PHY 131/132: University Physics II: Electricity and Magnetism/ Laboratory II (SQ) | 3/1 | PHY 116 or PHY 131 | 5 or 4 | |
| MAE 214 Computer Aided Engineering | 1 | ECE 216 Solidworks | 3 | |

**TERM FOUR: 46-60 CREDIT HOURS**

| MAE 213: Solid Mechanics | 3 | ECE 215 | 3 | |
| MAE 240 Thermofluids | 4 | | | |
| MSE 250 Structures and Properties of Materials | 3 | | | |
| EEE202 Circuits I | 4 | EEE 202 | 5 | |
| MAT243 | 2 | MAT 225 | 3 | |

**Additional applicable MCCCD topics beyond Term Four**

| Humanities, Fine Arts & Design (HU) AND Cultural Diversity in the US (C) or Global Awareness (G) | 3 | (see approved HU and awareness courses) | 3 | |
| Social & Behavioral Science (SB) AND Cultural Diversity in the US (C) or Global Awareness (G) | 3 | SB Elective | 3 | |

| 63 | Total ASU Credits |

Note that if all topics listed above are completed at MCCCD prior to transfer to ASU, a minimum of 56 hours that are applicable to the BSE degree must be taken at ASU.

**General University Requirements: Legend**

- General Studies Core Requirements:
  - Literacy and Critical Inquiry (L)
  - Mathematical Studies (MA)
  - Computer/Statistics/Quantitative applications (CS)
  - Humanities, Fine Arts, and Design (HU)
  - Social and Behavioral Sciences (SB)
  - Natural Science-Quantitative (SQ)
  - Natural Science-General (SG)
- General Studies Awareness Requirements
  - Cultural Diversity in the US (C)
  - Global Awareness (G)
  - Historical Awareness (H)
- First-Year Composition