### Aerospace Engineering (B.S.A.E.)

#### College of Engineering and Computer Science

#### Department of Mechanical and Aerospace Engineering, Engineering 1, Room: 381

[http://www.mae.ucf.edu](http://www.mae.ucf.edu)

Email: MAEadvising@ucf.edu

Dr. Hyoung Jin “Joe” Cho, hjcho@ucf.edu, 407-823-8014
Lynn Grabenhorst, Lynn.Grabenhorst@ucf.edu, 407-823-5448
Phone: 407-823-5448

**Admission Requirements**
- Students wanting to declare a major in an engineering discipline must be in good academic standing and must have a “C” (2.0) or better in each of the following courses or their equivalents: MAC 2311C, MAC 2312, PHY 2048C, and CHM 2045C or CHS 1440.
- Students wanting to declare a major in an engineering discipline must complete a change of major in the term of completion of the final pending prerequisite course(s) listed above.

**Degree Requirements**
- Students in the Aerospace Engineering major are expected to make consistent good progress toward their degrees to remain enrolled in, or eligible for, any major in the College of Engineering and Computer Science (CECS) or the College of Optics and Photonics (COP). Therefore, any student majoring in Aerospace Engineering who repeats any UCF course and does not earn a grade of “C” (2.0) or better on the second attempt will be placed on Lack of Progress Probation and remain on Lack of Progress Probation as long as the student is enrolled in a CECS or COP major. If a student on Lack of Progress Probation does not receive a grade of “C” (2.0) or better by the third attempt in the same UCF course, the student will be excluded from all CECS and COP majors. Any student majoring in Aerospace Engineering who has accumulated 7 or more unsuccessful attempts (i.e., grades below “C” (2.0) and withdrawals) over all courses taken at UCF will be placed on Lack of Progress Probation and remain on Lack of Progress Probation as long as the student is enrolled in a CECS or COP major. If a student on Lack of Progress Probation has a tenth unsuccessful attempt over all courses taken at UCF, the student will be excluded from all CECS and COP majors.
- A student who is excluded from CECS and COP majors may seek readmission to a major in CECS or COP after at least one full year has passed since exclusion. Readmission is not automatic and is dependent upon a high probability of success after readmission. Any student who is readmitted to the Aerospace Engineering major will be subject to all probation conditions that applied at the time of exclusion.

#### 1. UCF General Education Program (GEP) (38 hrs)
- The UCF General Education Program (GEP) is described in the General Education Program section, located elsewhere in this catalog. Engineering students should closely study the requirements of the UCF GEP and the allowable substitutions detailed in paragraphs A. through E. below to minimize excess hours. Students transferring to UCF from the Florida College System or State University System should complete the GEP and the Common Program Prerequisites before transferring.

<table>
<thead>
<tr>
<th>A: Communication Foundations (9 hrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required ENC 1101 Composition I</td>
</tr>
<tr>
<td>Required ENC 1102 Composition II</td>
</tr>
</tbody>
</table>

**Select 1:**
- Prefer SPC 1603C Fundamentals of Technical Presentations or Suggested SPC 1608 Fundamentals of Oral Communication

<table>
<thead>
<tr>
<th>B: Cultural &amp; Historical Foundations (9 hrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select two classes from Historical Foundations</td>
</tr>
<tr>
<td>Select one class from Cultural Foundations</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C: Mathematical Foundations (7 hrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required MAC 2311C Calculus with Analytic Geometry I</td>
</tr>
<tr>
<td>Required STA 3032 Probability and Statistics for Engineers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D: Social Foundations (6 hrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select 1:</td>
</tr>
<tr>
<td>Prefer ECO 2023 Principles of Microeconomics</td>
</tr>
<tr>
<td>Prefer ECO 2013 Principles of Macroeconomics</td>
</tr>
<tr>
<td>Select one class from Social Foundations</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E: Science Foundations (7 hrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suggested PHY 2049C General Physics Using Calculus I</td>
</tr>
</tbody>
</table>

**Select one from Science Foundations**
- 3 hrs

#### 2. Common Program Prerequisites (CPP) (19 hrs)
- These courses are specifically required for all engineering students of the Florida State University System. CPP courses are also available at other Florida post-secondary schools and may be transferred directly to UCF programs. To enroll in MMAE major courses, a 2.0 (C or better) in each course is required for those courses in section 2.
- See “Common Prerequisites” in the Transfer and Transitions Services section for more information.

<table>
<thead>
<tr>
<th>A: MAC 2311C Calculus with Analytic Geometry I GEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 MAC 2312 Calculus with Analytic Geometry II</td>
</tr>
<tr>
<td>1 MAC 2313 Calculus with Analytic Geometry III</td>
</tr>
</tbody>
</table>

| B: MAP 2302 Ordinary Differential Equations I | 3 hrs |
|-----------------------------------------------|
| 1 PHY 2048C General Physics Using Calculus I GEP |
| 1 PHY 2049C General Physics Using Calculus II | 4 hrs |

- A “C” (2.0) or better is required in this course.

**Select one of the following sequences of courses:**

- **Preferred course**
  - CHS 1440 Principles of Chemistry | 4 hrs |

- **or- First alternative:** Select all of the following: 6 hrs
  - CHM 2040 Chemistry Fundamentals IA and 3 hrs
  - CHM 2041 Chemistry Fundamentals IB | 3 hrs |

- **or- Second alternative**
  - CHM 2045C Chemistry Fundamentals | 4 hrs |

#### 3. Core Requirements: Basic Level (2 hrs)
- The College of Engineering and Computer Science requires all engineering students to achieve a minimum 2.250 GPA in completing these courses, together with the core requirements listed in section 4, the technical elective courses listed in section 5 below and with the senior design courses listed in section 6 below. Independent study courses generally do not satisfy major requirements.

| A: EGS 1006C Introduction to the Engineering Profession | 1 hr |
|-------------------------------------------------------|
| EGN 1007C Engineering Concepts and Methods | 1 hr |

#### 4. Core Requirements: Advanced Level (51 hrs)

| A: EGN 3310 Engineering Analysis-Statics | 3 hrs |
|----------------------------------------|
| EGN 3343 Thermodynamics | 3 hrs |
| EMA 3706 Structure and Properties of Aerospace Materials | 3 hrs |
| EGN 3373 Principles of Electrical Engineering | 3 hrs |
| STA 3032 Probability and Statistics for Engineers GEP |
| EAS 3101 Fundamentals of Aerodynamics | 3 hrs |
| EAS 3800C Aerosopace Engineering Measurements | 3 hrs |
| EAS 3810C Design of Aerospace Experiments | 3 hrs |
| EAS 4105 Flight Mechanics | 3 hrs |
| EAS 4134 High-Speed Aerodynamics | 3 hrs |
| EAS 4300 Aerothermodynamics of Propulsion Systems | 3 hrs |
| EML 3034C Modeling Methods in Mechanical and Aerospace Engineering | 3 hrs |
| EGM 3601 Solid Mechanics | 3 hrs |
UCF Degree Programs

5. Restricted Electives (12 hrs)
- Technical electives are available in the BSAE program to address specific student interests in a variety of technical areas. Students must consult with their assigned academic advisor for a list of the approved technical electives and the semesters when specific courses of this type are to be offered. http://mmae.ucf.edu/Academics/undergraduate.html

6. Capstone Requirements (6 hrs)
- These courses are a capstone experience to your engineering program and should be completed in your last 2 major semesters of study.
- CECS encourages all engineering students to take the Fundamentals Exam during their senior year.
- EAS 4700C Aerospace Design I 3 hrs
- EAS 4710C Aerospace Design II 3 hrs

7. Foreign Language Requirements
- Admissions
  - Two years of one foreign language in high school, or one year of foreign language in college (or equivalent proficiency exam) prior to graduation.
- Graduation
  - None
- 8. Electives
  - None
- 9. Additional Requirements
  - None
- 10. Required Minors
  - None
- 11. Departmental Exit Requirements
  - 25% of course work must be in residency at UCF.
- 12. University Minimum Exit Requirements
  - A 2.0 UCF GPA
  - 60 semester hours earned after CLEP awarded
  - 48 semester hours of upper division credit completed
  - 30 of the last 39 hours of course work must be completed in residency at UCF.
  - A maximum of 45 hours of extension, correspondence, CLEP, Credit by Exam, and Armed Forces credits permitted.
  - Complete the General Education Program, the Gordon Rule, and nine hours of Summer credit.

Total Semester Hours Required
- 128
- Honors In Major
  - None
- Related Programs
  - Mechanical Engineering
  - Certificates
  - None
- Related Minors
  - Intelligent Robotic Systems (IRS) - Interdisciplinary
  - Engineering Leadership
- Advising Notes
  - Double Degree/Dual Major requirements listed under college section of the catalog.
- Career and Academic Advising
  - The department requires all students in the program to meet with a faculty member for advising on career and academic issues. These courses must be taken in sequence during the 3rd and 4th year.
  - EAS 3933 Aerospace Career and Academic Faculty 0 hrs
  - EAS 4931 Aerospace Career and Academic Faculty 0 hrs
  - Advising I
  - Advising II

Transfer Notes
- Courses transferred must be formally evaluated for equivalency credit. The student must provide all supporting information with his/her petition for this evaluation.
- EGS 1006C and EGN 1007C are required courses for incoming freshman students only. The two credit hours for these courses will be substituted by an approved Aerospace Engineering Elective for transfer students.
- Acceptable Substitutes for Transfer Courses
  - None

Plan of Study (128 hrs)
- The tentative course schedule listed below is a guide for those students who plan on completing their degree in four years. All engineering students should meet with their faculty advisor to develop and maintain an appropriate plan of study.

Freshman Year - Fall 12 hrs
- EGS 1006C Introduction to the Engineering Profession 1 hr
- ENC 1101 Composition I 3 hrs
- MAC 2311C Calculus with Analytic Geometry I 4 hrs

Select 1: 4 hrs
  - 1 CHS 1440 Principles of Chemistry or 4 hrs
  - CHM 2045C Chemistry Fundamentals I or 4 hrs
  - CHM 2040 Chemistry Fundamentals IA or 3 hrs
  - CHM 2041 Chemistry Fundamentals IB 3 hrs
  - 1 Preferred

Freshman Year - Spring 15 hrs
- EGN 1007C Engineering Concepts and Methods 1 hr
- ENC 1102 Composition II 3 hrs
- MAC 2312 Calculus with Analytic Geometry II 4 hrs
- PHY 2048C General Physics Using Calculus I 4 hrs

Select 1: 3 hrs
  - SPC 1603C Fundamentals of Technical Presentations or 3 hrs
  - SPC 1606C Fundamentals of Oral Communication 3 hrs

Freshman Year - Summer 10 hrs
- MAC 2313 Calculus with Analytic Geometry III 4 hrs
- EMA 3706 Structure and Properties of Aerospace Materials 3 hrs
- GEP 3 hrs

Sophomore Year - Fall 13 hrs
- MAP 2302 Ordinary Differential Equations I 3 hrs
- PHY 2049C General Physics Using Calculus II 4 hrs
- EGN 3310 Engineering Analysis-Statics 3 hrs
- STA 3032 Probability and Statistics for Engineers 3 hrs

Sophomore Year - Spring 12 hrs
- EGN 3321 Engineering Analysis-Dynamics 3 hrs
- EGN 3343 Thermodynamics 3 hrs
- EGN 3373 Principles of Electrical Engineering 3 hrs
- EGM 3601 Solid Mechanics 3 hrs

Sophomore Year - Summer 9 hrs
- GEP 3 hrs
- GEP 3 hrs

Select 1: 3 hrs
  - ECO 2013 Principles of Macroeconomics or 3 hrs
  - ECO 2023 Principles of Microeconomics 3 hrs

Junior Year - Fall 15 hrs
- EML 3034C Modeling Methods in Mechanical and Aerospace Engineering 3 hrs
- EAS 3800C Aerospace Engineering Measurements 3 hrs
- EAS 3933 Aerospace Career and Academic Faculty Advising I 0 hrs
- EML 3701 Fluid Mechanics I 3 hrs
- EAS 4200 Analysis & Design of Aerospace Structures 3 hrs

Junior Year - Spring 15 hrs
- EAS 3810C Design of Aerospace Experiments 3 hrs
- EML 4225 Introduction to Vibration and Controls 3 hrs
- EML 4142 Heat Transfer 3 hrs
- GEP 3 hrs
### Senior Year - Fall

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAS 4105</td>
<td>Flight Mechanics</td>
<td>3 hrs</td>
</tr>
<tr>
<td>EAS 4134</td>
<td>High-Speed Aerodynamics</td>
<td>3 hrs</td>
</tr>
<tr>
<td>EAS 4931</td>
<td>Aerospace Career and Academic Faculty Advising II</td>
<td>0 hrs</td>
</tr>
<tr>
<td>EAS 4700C</td>
<td>Aerospace Design I</td>
<td>3 hrs</td>
</tr>
<tr>
<td>Upper Division Elective</td>
<td></td>
<td>3 hrs</td>
</tr>
<tr>
<td>Upper Division Elective</td>
<td></td>
<td>3 hrs</td>
</tr>
</tbody>
</table>

### Senior Year - Spring

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAS 4300</td>
<td>Aerothermodynamics of Propulsion Systems</td>
<td>3 hrs</td>
</tr>
<tr>
<td>EAS 4710C</td>
<td>Aerospace Design II</td>
<td>3 hrs</td>
</tr>
<tr>
<td>Upper Division Elective</td>
<td></td>
<td>3 hrs</td>
</tr>
<tr>
<td>Upper Division Elective</td>
<td></td>
<td>3 hrs</td>
</tr>
</tbody>
</table>

**Program Academic Learning Compacts**

- Program Academic Learning Compacts (student learning outcomes) for undergraduate programs are located at: [http://www.oeas.ucf.edu/alc/academic_learning_compacts.htm](http://www.oeas.ucf.edu/alc/academic_learning_compacts.htm)

**Equipment Fees**

- Part-Time Student: $45 per term
- Full-Time Student: $90 per term