

# UCF Degree Programs

## AEROSPACE ENGINEERING (B.S.A.E.)

College of Engineering and Computer Science  
Mechanical, Materials & Aerospace Engineering  
Department

ENGR 307, 407-823-2416; Fax 407-823-0208

<http://www.mmae.ucf.edu>

Associate Chair: Dr. Kuo-Chi Lin, E-mail: klin@mail.ucf.edu;

Undergraduate Advisor: Waheeda Illasarie;

E-mail: willasar@mail.ucf.edu

**Admission Requirements:** none  
**1. UCF General Education Program for Engineering Students** (36+2 hrs)

The UCF General Education Program (GEP) is described in the section, **General Education Program**, found 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 State University/Community College Systems should complete the GEP and the Common Program Prerequisites before transferring.

- |   |       |
|---|-------|
| A. Communication Foundations  | 9 hrs |
| 1. ENC 1101 & ENC 1102  |       |
| 2. Prefer SPC 1016  |       |
| B. Cultural and Historical Foundations  | 9 hrs |
| 1. Select two courses from Historical Foundations   |       |
| 2. ARH 2050, ARH 2051, MUL 2010, THE 2000, FIL 1000, REL 2300, PHI 2010, LIT 2110, <i>or</i> LIT 2120 |       |
| C. Mathematical Foundations   | 7 hrs |
| 1. Select MAC 2311 (PR: MAC 1114 and MAC 1140)  |       |
| 2. Select STA 3032 (PR: MAC 2312)   |       |
| D. Social Foundations   | 6 hrs |
| 1. Take Prefer ECO 2013 <i>or</i> ECO 2023.   |       |
| 2. Take ANT 2000, PSY 2012, <i>or</i> SYG 2000.   |       |
| E. Science Foundations  | 7 hrs |
| 1. Take Select PHY 2048/48L (PR: MAC 2311).   |       |
| 2. ANT 2511, BSC 1005, BSC 1050, GLY 1030, GEO 1200, <i>or</i> MCB 1310                               |       |

### 2. Common Program Prerequisites (CPP's) (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. marked with an asterisk (\*).** Note: MAC 2311 and PHY 2048/48L also satisfy UCF GEP sub-requirements as do ENC 1101, ENC 1102, the Humanities courses, and the Social Science courses.

CHS 1440*	Fundamentals of Chemistry for Eng (CHM 2045C/45L will substitute)	4 hrs
MAC 2311*	Calculus with Analytic Geometry I	GEP
MAC 2312*	Calculus with Analytic Geometry II	4 hrs
MAC 2313*	Calculus with Analytic Geometry III	4 hrs
MAP 2302*	Differential Equations	3 hrs
PHY 2048/48L*	Physics for Engineers & Scientists I	GEP
PHY 2049/49L	Physics for Engineers & Scientists II	4 hrs
ENC 1101	Composition I	GEP
ENC 1102	Composition II	GEP
	Humanities Courses	GEP
	Social Science Courses	GEP
	Humanities <i>or</i> Social Sciences	GEP

See "Common Prerequisites" in the Transfer and Transitions Services section (pg. 46) for more information.

### 3. Courses Required for the Major (55 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 technical elective courses listed in 4. below and with the senior design courses listed in 5. below. Independent study courses generally do **not** satisfy major requirements.

ENGR 1006C	Intro to the Engineering Profession	1 hr
ENGR 1007C	Engineering Concepts & Methods	1 hr
ENGR 3310	Engineering Analysis - Statics	3 hrs
ENGR 3321	Engineering Analysis - Dynamics	3 hrs
ENGR 3343	Thermodynamics	3 hrs
EMA 3706	Structure & Properties of Aerospace Materials	3 hrs
ENGR 3373	Principles of Electrical Engrng	3 hrs
STA 3032	Probability & Statistics for Engineers	GEP
EAS 3010	Fundamentals of Aerospace Flight	3 hrs
EAS 3101	Fundamentals of Aerodynamics	3 hrs

EAS 3800C	Aerospace Engineering Measurements	3 hrs
EAS 3810C	Design of Aerospace Experiments	2 hrs
EAS 4105	Flight Mechanics	3 hrs
EAS 4134	High-Speed Aerodynamics	3 hrs
EAS 4200	Flight Structures	3 hrs
EAS 3530	Space Systems Concepts	3 hrs
<i>or</i> EAS 4400	Spacecraft Attitude Dynamics	
<i>or</i> EAS 4505	Orbital Mechanics	
EAS 4300	Aerothermodynamics-Propulsion Sys	3 hrs
EML 3034	Modeling Methods in MMAE	3 hrs
EML 4312C	Feedback Control	3 hrs
EGM 3601	Solid Mechanics	3 hrs
EAS 4210	Space Structural Design	3 hrs

### 4. Approved Technical Electives (10 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.

### 5. Departmental Graduation 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.

- EAS 4700C Aerospace Design I 3 hrs
- or* EGN 4412C Interdisciplinary Design I
- EAS 4710C Aerospace Design II 3 hrs
- or* EGN 4413C Interdisciplinary Design II

CECS encourages all engineering students to take the Fundamentals Exam during their Senior year.

### 6. Foreign Language Requirements (0-8 hrs)

**Admission:** Two years of one foreign language in high school, or one year of one foreign language in college (or equivalent proficiency exam) prior to graduation.

**Graduation:** none

### 7. University Minimum Graduation Requirements

- A 2.0 UCF GPA.
- 60 semester hours earned after any CLEP award.
- 48 semester hours of upper division credit completed.
- 30 of the last 36 hours of course work must be completed in residency at UCF.
- 25% 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, the CLAST, and nine semester hours of Summer credit (if applicable).

**Total Semester Hours Required:** 128 hrs

**Related Programs:** Mechanical Engineering.

**Related Minors:** Intelligent Robotic Systems, Engineering Leadership.

### Transfer Notes:

- Courses taken from Community Colleges do not substitute for Upper Division Courses unless part of an articulated pre-engineering degree program.
- Courses transferred must be formally evaluated for equivalency credit. The student must provide all supporting information with his/her petition for this evaluation.
- EGN 1006C and EGN 1007C are required courses for incoming freshman students only. The two credit hours for these courses may be substituted by an approved Aerospace Engineering technical elective for transfer students. However, students may take EGN 1007C in the Spring semester if they do not have knowledge of Mathcad or Matlab.

### Program Academic Learning Compacts

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

### Tentative Course Schedule for Entering Freshmen

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.

**Aerospace Engineering - 128 semester hours required**

**FIRST YEAR**

<b>Fall</b>	<b>12 hrs<sup>1</sup></b>	<b>Spring</b>	<b>15 hrs<sup>1</sup></b>
*ENC 1101 English Comp I	3	EGN 1007C: Eng Conc/Meth	1
*CHS 1440 Chem for Eng	4	*ENC 1102 English Comp II	3
or CHM 2045C w/lab		*MAC 2312 Calculus II	4
*MAC 2311 Calculus I	4	*PHY 2048 Phys Eng/Sci I w/lab	4
EGN 1006C Intro to Eng Prof	1	*SPC 1016 Tech Presentations	3
<b>Summer</b>	<b>10 hrs<sup>1, 3</sup></b>		
*MAC 2313 Calculus III	4		
EMA 3706 Struct & Prop of	3		
Aerospace Mat'l			
*Social Foundations	3		

**SECOND YEAR**

<b>Fall</b>	<b>13 hrs<sup>1</sup></b>	<b>Spring</b>	<b>12 hrs</b>
*Historical Foundations	3	EGN 3373 Prin Elec Eng	3
*MAP 2302 Diff Equations	3	EGN 3321 Engr Anal-Dynmcs	3
*PHY 2049 Phys Eng II w/lab	4	EGN 3343 Thermodynamics	3
EGN 3310 Engr Anal - Statics	3	EGM 3601 Solid Mechanics	3
<b>Summer</b>	<b>9 hrs<sup>1, 3</sup></b>		
*ECO 2013 or 2023 Macro or Micro	3		
*Historical Foundations	3		
STA 3032 Prob & Stats/Engrs			

**THIRD YEAR**

<b>Fall</b>	<b>15 hrs</b>	<b>Spring</b>	<b>15 hrs</b>
EML 3034 Model Meth's MMAE	3	EAS 3101 Fund of Aerodyn	3
EAS 3010 Fund of Aerospace Flight	3	EAS 3810C Dsgn Aerosp Expr	2
EAS 3800C Aerosp Eng Msr	3	EAS 4210 Space Structural Dyn	3
Science Foundation	3	EAS 4505 Orbital Mechncs	3
EAS 4200 Flight Structures	3	or EAS 3530 Space Sys Concepts	
		or EAS 4400 Spacecraft Attitude Dyn	
		Approved technical elective	4

**FOURTH YEAR**

<b>Fall</b>	<b>12 hrs<sup>1, 2</sup></b>	<b>Spring</b>	<b>15 hrs</b>
EML 4312C Feedback Control	3	EAS 4300 Aerotherm Prop Sys	3
EAS 4105 Flight Mechanics	3	EAS 4710C Aerosp Design II	3
EAS 4134 High-Spd Aerodyn	3	or EGN 4413C Interdiscipl Design II	
EAS 4700C Aerosp Design I	3	Cultural Foundations	3
or EGN 4412C Interdiscipl Design I		Approved technical elective	3
		Approved technical elective	3

**Notes:**

1. Courses marked with an asterisk (\*) are also available from most Community Colleges and are often part of their Pre-Engineering AA programs. Most of these courses are part of the UCF General Education Program; see the section on the GEP elsewhere in this catalog for further information.
2. Students should view the MMAE website (<http://www.mmae.ucf.edu>) or consult with the MMAE Department in ENGR 307 for a list of approved technical electives and for the terms when specific courses of this type are to be offered. Students should check with MMAE Associate Chairman each semester to ensure they are making satisfactory progress toward their degree.
3. The State University System requires most students to complete a minimum of nine semester hours during summer terms prior to graduation. See the section on Summer Attendance Requirement elsewhere in this catalog.
4. Aerospace engineering students must earn at least 32 hours in residence at UCF.

**Important Notice:**

- Certain courses required for this major serve as key prerequisites or are offered in specific terms. Any deviation from the four-year plan should be discussed with an academic advisor. Failure to take courses as listed may result in a delay in the date of your graduation.
- If you are not ready to begin the calculus sequence upon entry to the Aerospace Engineering curriculum, it is imperative that you meet with your advisor to plan a personalized program of study. Mathematics and physics are cornerstones of a quality engineering program and it is important for your academic career that you proceed accordingly.

**Accelerated BS/MS Degree Program**

The Mechanical, Materials, and Aerospace Engineering Department offers the Accelerated BS/MS program to students of high academic standing. This program allows up to twelve hours to be shared between the BS and MS degrees. See your department or the Accelerated program section in the back of this catalog for more information.