

UCF Degree Programs

MECHANICAL ENGINEERING (B.S.M.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>

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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 within the Florida State University/ Community College Systems should complete the GEP and the Common Program Prerequisites *before* transferring.

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|---|-------|
| 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) | |
| 2. Select STA 3032 (PR: MAC 2312) | |
| D. Social Foundations | 6 hrs |
| 1. Prefer ECO 2013 <i>or</i> ECO 2023. | |
| 2. ANT 2000, PSY 2012, <i>or</i> SYG 2000. | |
| E. Science Foundations | 7 hrs |
| 1. Select PHY 2048/48L (PR: MAC 2311) | |
| 2. ANT 2511, BSC 1005, BSC 1050, GLY 1030, <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 (65 hrs)

The College of Engineering and Computer Science requires all engineering students to achieve a minimum 2.25 GPA in completing these courses, together with the senior design courses listed in 4. below.

EGN 1006C	Intro to the Engineering Profession	1 hr
EGN 1007C	Engineering Concepts & Methods	1 hr
EGN 3310	Engineering Analysis - Statics	3 hrs
EGN 3321	Engineering Analysis - Dynamics	3 hrs
EGN 3343	Thermodynamics	3 hrs
EGN 3365	Structure & Properties of Materials	3 hrs
EGN 3373	Principles of Electrical Engnrng	3 hrs
STA 3032	Probability & Statistics for Engineers	GEP
EML 3034	Modeling Methods in MMAE	3 hrs
EML 3303C	Mechanical Engng Measurements	3 hrs
EML 4312C	Feedback Control	3 hrs

EML 3500	Machine Design & Analysis	3 hrs
EGM 3601	Solid Mechanics	3 hrs
EML 3701	Fluid Mechanics I	3 hrs
EML 4142	Heat Transfer	3 hrs
EML 4220	Vibration Analysis	3 hrs
EML 4535C	Introduction to CAD/CAM	3 hrs

Select one of the following three options for your senior year to complete your BSME. (21 hrs)

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|-------------------------------------|--|--------|
| a. Energy Systems Option | | |
| EML 3101 | Thermodynamics of Mechanical Sys | 3 hrs |
| EML 4304C | Thermo-fluids Measurements | 2 hrs |
| EML 4703 | Fluid Mechanics II | 3 hrs |
| EML 4145 | Topics in Heat Transfer | 1 hr |
| | Approved Electives | 12 hrs |
| b. Mechanical Systems Option | | |
| EML 4304C | Thermo-fluids Measurements | 2 hrs |
| EML 3262 | Kinematics of Mechanisms | 3 hrs |
| EGM 3601L | Solid Mechanics Lab | 1 hr |
| | Approved Electives | 15 hrs |
| c. Materials Option | | |
| EMA 3012C | Experimental Techniques in Mechanics & Materials | 3 hrs |
| EMA 4102 | Thermodynamics and Kinetics of Materials | 3 hrs |
| EMA 3124 | Design and Selection of Materials | 3 hrs |
| EMA 4223 | Fundamentals of Mech. Behavior of Materials | 3 hrs |
| | Approved Electives | 9 hrs |

4. 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.

EML 4501C	Engineering Design I	3 hrs
<i>or</i> EGN 4412C	Interdisciplinary Design I	
EML 4502C	Engineering Design II	3 hrs
<i>or</i> EGN 4413C	Interdisciplinary Design II	

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

5. 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**

6. Approved Restricted and Technical Electives

Technical electives are available in the BSME program to address specific student interests in a variety of technical areas. Restricted electives are intended to ensure that all students have a significant design experience in both mechanical and thermofluids systems. Students should consult with their Department for a list of the approved restricted and technical electives and the terms when specific courses of this type are to be offered.

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: Aerospace Engineering.

Related Minors: Space Studies, 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 freshmen only, The two credit hours for these courses may be

substituted by an approved Mechanical 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.oegas.ucf.edu/aic/academic_learning_compacts.htm

Equipment Fee

- Full-time Student\$72 per term
- Part-time Student\$36 per term

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 Department to develop and maintain an appropriate plan of study.

Mechanical Engineering - 128 semester hours required

FIRST YEAR

Fall	15 hrs¹	Spring	15 hrs¹
EGN 1006C Intro to Eng Prof	1	EGN 1007C Eng Conc & Meth	1
*ENC 1101 English Comp I	3	*ENC 1102 English Comp II	3
*CHS 1440 Chm Eng	4	*MAC 2312 Calc II	4
or CHM 2045C w/lab		*SPC 1016 Oral Comm for Eng	3
*MAC 2311 Calc I	4	*PHY 2048 Phys Eng I w/lab	4
*ECO 2013 or 2023 Macro or Micro	3		
Summer	10 hrs^{1, 3, 4}		
*MAC 2313 Calc III	4		
*Social Foundations	3		
*Historical Foundations	3		

SECOND YEAR

Fall	13 hrs¹	Spring	15 hrs
STA 3032 Prob & Stats/Engrs	3	EGN 3321 Engr Anal-Dynamics	3
*MAP 2302 Diff Equations	3	EGN 3365 Strctr & Prop Matls	3
EGN 3310 Engr Anal-Statics	3	EGN 3343 Thermodynamics	3
*PHY 2049 Phys Eng II w/lab	4	EGM 3601 Solid Mechanics	3
		EGN 3373 Prin of Elec Engr	3

THIRD YEAR

Fall	15 hrs¹	Spring	15 hrs
EML 3500 Machine Design	3	EML 4220 Vibration Analysis	3
EML 3701 Fluid Mechanics I	3	Approved Technical Elective	3
EML 3034 Modeling Methods	3	EML 4142 Heat Transfer	3
EML 3303C Mech Engr Meas	3	EML 4535C CAD/CAM	3
*Science Foundations 2	3	*Historical Foundations	3

FOURTH YEAR

I. ENERGY SYSTEMS OPTION

Fall	15 hrs^{1, 2}	Spring	15 hrs^{1, 2}
EML 3101 Thermo Mech Sys	3	EML 4502C Eng Design II	3
EML 4703 Fluid Mechanics II	3	or EGN 4413C Inter Design II	
EML 4501C Eng Design I	3	EML 4304C Meas Therm Sys	2
or EGN 4412C Inter Design I		Approved Elective	3
EML 4312C Feedback Control	3	Approved Elective	3
Approved Elective	3	*Cultural Foundations	3
		EML 4145 Topics in Heat Transfer	1

II. MECHANICAL SYSTEMS OPTION

Fall	15 hrs^{1, 2}	Spring	15 hrs^{1, 2}
EML 3262 Kinem Mechnsms	3	EML 4502C Eng Design II	3
EML 4501C Eng Design I	3	or EGN 4413C Inter Deisgn II	
or EGN 4412C Inter Design I		Approved Elective	3
EML 4312C Feedback Control	3	EML 4304C Meas Therm Sys	2
Approved Elective	3	Approved Elective	3
Approved Elective	3	*Cultural Foundations	3
		EGM 3601L Solid Mechanics Lab	1

III. MATERIALS OPTION

Fall	15 hrs^{1, 2}	Spring	15 hrs^{1, 2}
EMA 4102 Thermo & Kinetics of Mtrls	3	EML 4502C Eng Design II	3
EML 4501C Eng Design I	3	or EGN 4413C Inter Design II	
or EGN 4412C Inter Design I		EMA 3012C Exp Tech Mech/Mtrl	3
EMA 3124 Design & Select of Mtrls	3	EMA 4223 Fund of Mech Beh Mtrl	3
EML 4312C Feedback Control	3	Approved Elective	3
Approved Elective	3	*Cultural Foundations	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 consult the MMAE website (<http://www.mmae.ucf.edu>) or with the MMAE Associate Chairman 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 the MMAE Associate Chairman each semester to ensure they are making satisfactory progress toward their degree.
3. The State University System requires 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.

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 the courses as listed may result in a delay in the date of your graduation.
- Caution must be taken to ensure that you take courses in a proper sequence regarding prerequisites.
- If you are not ready to begin the Calculus sequence upon entry to the Mechanical 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.