

UCF Degree Programs

Electrical Engineering - Power and Renewable Energy Track (B.S.E.E.)

College of Engineering and Computer Science
Department of Electrical and Computer Engineering
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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 CHS 1440 or CHM 2045C.

■ 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 Electrical 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 Electrical 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 Electrical 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 Electrical 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 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 College System or State University System should complete the GEP and the Common Program Prerequisites before transferring.

A: Communication Foundations (9 hrs)

Required ENC 1101 Composition I 3 hrs
 Required ENC 1102 Composition II 3 hrs

Select 1: (3 hrs)

Prefer SPC 1603C Fundamentals of Technical Presentations or 3 hrs
 Suggested SPC 1608 Fundamentals of Oral Communication 3 hrs

B: Cultural & Historical Foundations (9 hrs)
 Select two courses from Historical Foundations 6 hrs
 Select one class from Cultural Foundations 3 hrs

C: Mathematical Foundations (7 hrs)

Required MAC 2311C Calculus with Analytic Geometry I 4 hrs
 Required STA 3032 Probability and Statistics for Engineers 3 hrs

D: Social Foundations (6 hrs)

Select 1: (3 hrs)

Prefer ECO 2013 Principles of Macroeconomics or 3 hrs
 Prefer ECO 2023 Principles of Microeconomics 3 hrs
 Select one class from Social Foundations 3 hrs

E: Science Foundations (7 hrs)

Required PHY 2048C General Physics Using Calculus I 4 hrs
 Select one course 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 EE major courses, a 2.0 (C or better) in each course is required.

MAC 2311C Calculus with Analytic Geometry I GEP
 MAC 2312 Calculus with Analytic Geometry II 4 hrs
 MAC 2313 Calculus with Analytic Geometry III 4 hrs
 PHY 2048C General Physics Using Calculus I GEP
 PHY 2049C General Physics Using Calculus II 4 hrs
 MAP 2302 Ordinary Differential Equations I 3 hrs

Select 1: (4 hrs)

¹CHS 1440 Principles of Chemistry or 4 hrs
 CHM 2045C Chemistry Fundamentals I 4 hrs

¹ Preferred

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 courses required for the major, technical elective courses, and with the senior design courses. Independent study courses generally do not satisfy major requirements.

EGS 1006C Introduction to the Engineering Profession 1 hr
 EGN 1007C Engineering Concepts and Methods 1 hr

4. Core Requirements: Advanced Level (48 hrs)

Courses Required for the Engineering Core (3 hrs)

STA 3032 Probability and Statistics for Engineers GEP
 PHY 3101 General Physics Using Calculus III 3 hrs

Courses Required for the Major (45 hrs)

EEL 3926L Junior Design 1 hr
¹EGN 3211 Engineering Analysis and Computation 3 hrs
¹EEL 3004C Electrical Networks 3 hrs
¹EEL 3123C Networks and Systems 3 hrs
 EEE 3307C Electronics I 4 hrs
¹EEE 3342C Digital Systems 3 hrs
¹EEL 3801C Computer Organization 4 hrs
 EEL 3657 Linear Control Systems 3 hrs
 EEL 4216 Fundamentals of Electric Power Systems 3 hrs
 EEL 4742C Embedded Systems 3 hrs

Junior Level Electives (6 hrs)

EEL 3470 Electromagnetic Fields or 3 hrs
 EEL 3552C Signal Analysis and Analog Communication or 4 hrs
 EEE 3350 Semiconductor Devices I or 3 hrs
 EEL 3290 Global Energy Issues 3 hrs

Senior Level Electives (9 hrs)

EEL 4205 Electric Machinery or 3 hrs
 EEL 4612C Introduction to Modern and Robust Control or 4 hrs
 EEL 4750 Digital Signal Processing Fundamentals or 3 hrs
 EEL 4XXX Introduction to Smart Grids or 3 hrs

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EEL 5173	Linear Systems Theory or	3 hrs
EEL 5185	System Identification or	3 hrs
EEL 5268	Communications and Networking for Smart Grid or	3 hrs
EEL 5291	Distributed Control and Optimization for Smart Grid or	3 hrs
EEL 5XXX	Advanced Power Systems Analysis or	3 hrs
EEL 5245C	Power Electronics	3 hrs

¹ A "C" (2.0) or better is required in this course.

5. Restricted Electives

■ Technical electives are available in the BSEE program to address specific student interests in a variety of technical areas. Students should consult their academic advisor for the identification of courses that are approved technical electives and the terms when specific courses of this type are to be offered.

Technical Electives 15 hrs

■ Technical elective courses are to be selected by the student from department approved courses.

6. Capstone Requirements (6 hrs)

EEL 4914	Senior Design I	3 hrs
EEL 4915L	Senior Design II	3 hrs

7. Foreign Language Requirements

Admissions

■ 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

8. Electives

■ None

9. Additional Requirements

■ Electrical engineering students must earn at least 32 hours in residence at UCF.

■ 24 of the 32 Residency hours must be at the 3000-5000 level courses taken from the ECE Department at UCF and applicable to the degree program.

10. Required Minors

■ None

11. Departmental Exit Requirements

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

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

- Computer Engineering
- Computer Science
- Mathematics - Engineering/Physics Track
- Physics

Certificates

■ None

Related Minors

- Engineering Leadership
- Intelligent Robotic Systems (IRS) - Interdisciplinary
- Mathematics
- Physics

Advising Notes

■ Each engineering student should meet with their academic advisor in the department of their major regularly.

■ Each student should seek academic advisement before registering for classes each semester to minimize excess hours and to ensure that satisfactory academic progress is being maintained.

■ The Electrical Engineering program 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.

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 freshmen only. The credits for these two courses (one hour each) may, with prior approval of the department academic advisor, be moved to the Restricted Elective area.

Acceptable Substitutes for Transfer Courses

■ None

Plan of Study

Freshman Year - Fall 15 hrs

EGS 1006C	Introduction to the Engineering Profession	1 hr
MAC 2311	Calculus with Analytic Geometry I	4 hrs
GEP- Historical Foundation		3 hrs

Select 1: 3 hrs

¹ SPC 1603C	Fundamentals of Technical Presentations	3 hrs
	or	
SPC 1608	Fundamentals of Oral Communication	3 hrs

Select 1: 4 hrs

CHS 1440	Principles of Chemistry or	4 hrs
CHM 2045C	Chemistry Fundamentals I	4 hrs

¹ Preferred

Freshman Year - Spring 15 hrs

EGN 1007C	Engineering Concepts and Methods	1 hr
MAC 2312	Calculus with Analytic Geometry II	4 hrs
PHY 2048C	General Physics Using Calculus I	4 hrs
ENC 1101	Composition I	3 hrs

Select 1: 3 hrs

ECO 2013	Principles of Macroeconomics or	3 hrs
ECO 2023	Principles of Microeconomics	3 hrs

Sophomore Year - Fall 14 hrs

ENC 1102	Composition II	3 hrs
PHY 2049C	General Physics Using Calculus II	4 hrs
MAC 2313	Calculus with Analytic Geometry III	4 hrs
EGN 3211	Engineering Analysis and Computation	3 hrs

Sophomore Year - Spring 15 hrs

PHY 3101	General Physics Using Calculus III	3 hrs
EEL 3004C	Electrical Networks	3 hrs
MAP 2302	Ordinary Differential Equations I	3 hrs
EEE 3342C	Digital Systems	3 hrs
GEP- Cultural Foundation		3 hrs

Sophomore Year - Summer 9 hrs

EEL 3123C	Networks and Systems	3 hrs
STA 3032	Probability and Statistics for Engineers	3 hrs
GEP- Social Foundation		3 hrs

Junior Year - Fall 16 hrs

EEL 3801C	Computer Organization	4 hrs
GEP- Science Foundation		3 hrs
EEL 3657	Linear Control Systems	3 hrs
Junior Level Elective		3 hrs
Junior Level Elective		3 hrs

Junior Year - Spring 17 hrs

EEE 3307C	Electronics I	4 hrs
EEL 4216	Fundamentals of Electric Power Systems	3 hrs
EEL 4742C	Embedded Systems	3 hrs
Senior Level Elective		3 hrs
Senior Level Elective		3 hrs
EEL 3926L	Junior Design	1 hr

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Senior Year - Fall	15 hrs
EEL 4914 Senior Design I	3 hrs
Senior Level Elective	3 hrs
Technical Elective	3 hrs
Technical Elective	3 hrs
GEP- Historical Foundation	3 hrs

Senior Year - Spring	12 hrs
EEL 4915L Senior Design II	3 hrs
Technical Elective	3 hrs
Technical Elective	3 hrs
Technical Elective	3 hrs

Program Academic Learning Compacts

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