

# UCF Degree Programs

## Computer Engineering - Digital Circuits Track

(B.S.Cp.E.)

**College of Engineering and Computer Science**  
**Department of Electrical and Computer Engineering**  
**Harris Corp. Engineering Center, Room: 346**  
<http://www.eecs.ucf.edu>

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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 Computer 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 Computer 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 Computer 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 Computer 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 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

#### 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

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 CpE major courses, a 2.0 (C or better) in each course is required.

■ See "Common Prerequisites" in the Transfer and Transitions Services section for more information.

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)

<sup>1</sup> CHS 1440	Principles of Chemistry or	4 hrs
CHM 2045C	Chemistry Fundamentals I	4 hrs

<sup>1</sup> Preferred

### 3. Core Requirements: Basic Level (2 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 courses required for the major in section 4 below, 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.

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

### 4. Core Requirements: Advanced Level (48 hrs)

#### Engineering Core

STA 3032	Probability and Statistics for Engineers	GEP
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#### Courses Required for the Major

EGN 3211	Engineering Analysis and Computation	3 hrs
COT 3100C	Introduction to Discrete Structures	3 hrs
COP 3502C	Computer Science I	3 hrs
COP 3503C	Computer Science II	3 hrs
COP 3330	Object Oriented Programming	3 hrs
EEL 3926L	Junior Design	1 hr
EEL 3004C	Electrical Networks	3 hrs
EEL 3123C	Networks and Systems	3 hrs
EEE 3307C	Electronics I	4 hrs
EEE 3342C	Digital Systems	3 hrs
EEL 3801C	Computer Organization	4 hrs
EEL 4742C	Embedded Systems	3 hrs
EEL 4768	Computer Architecture	3 hrs
EEL 4781	Computer Communication Networks	3 hrs

#### Select 2: (6 hrs)

EEE 4346C	Hardware Security and Trusted Circuit Design or	3 hrs
EEE 4314	Device Electronics for Integrated Circuits or	3 hrs
EEL 4783	Hardware Description Languages in Digital Systems Design or	3 hrs
EEL 5704	Computer Aided Logical Design or	3 hrs

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EEE 5353	Semiconductor Device Modeling and Simulation or	3 hrs
EEE 5356C	Fabrication of Solid-State Devices or	4 hrs
EEE 5378	CMOS Analog and Digital Circuit Design or	3 hrs
EEE 5390C	Full-Custom VLSI Design	3 hrs

### 5. Restricted Electives

■ Technical electives are available in the BSCpE program to address specific student interests in a variety of technical areas such as Software Engineering. Students should consult with 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

■ Computer 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 Science  
 ■ Electrical Engineering  
 ■ Information Technology  
 ■ Mathematics - Engineering/Physics Track  
 ■ Physics

#### Certificates

■ None

#### Related Minors

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

### Advising Notes

■ Each engineering student should meet regularly with an academic advisor in the major department.  
 ■ The Computer 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.  
 ■ 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.

### 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

■ 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 15 hrs

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

#### Select 1: 3 hrs

<sup>1</sup> 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

<sup>1</sup> Preferred

#### Freshman Year - Spring 15 hrs

EGN 1007C	Engineering Concepts and Methods	1 hr
ENC 1101	Composition I	3 hrs
MAC 2312	Calculus with Analytic Geometry II	4 hrs
PHY 2048C	General Physics Using Calculus I	4 hrs
COT 3100C	Introduction to Discrete Structures	3 hrs

#### Sophomore Year - Fall 14 hrs

PHY 2049C	General Physics Using Calculus II	4 hrs
EGN 3211	Engineering Analysis and Computation	3 hrs
MAC 2313	Calculus with Analytic Geometry III	4 hrs
GEP- Historical Foundation		3 hrs

#### Sophomore Year - Spring 15 hrs

EEL 3004C	Electrical Networks	3 hrs
EEE 3342C	Digital Systems	3 hrs
MAP 2302	Ordinary Differential Equations I	3 hrs
ENC 1102	Composition II	3 hrs
GEP Science Foundation		3 hrs

#### Sophomore Year - Summer 10 hrs

EEL 3123C	Networks and Systems	3 hrs
EEL 3801C	Computer Organization	4 hrs
GEP- Cultural Foundation		3 hrs

#### Junior Year - Fall 16 hrs

COP 3330	Object Oriented Programming	3 hrs
COP 3502C	Computer Science I	3 hrs
STA 3032	Probability and Statistics for Engineers	3 hrs
EEE 3307C	Electronics I	4 hrs
GEP- Social Foundation		3 hrs

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<b>Junior Year - Spring</b>	<b>16 hrs</b>
COP 3503C Computer Science II	3 hrs
EEL 4742C Embedded Systems	3 hrs
EEL 4768 Computer Architecture	3 hrs
EEL 3926L Junior Design	1 hr
Senior Elective	3 hrs

<b>Select 1:</b>	<b>3 hrs</b>
ECO 2013 Principles of Macroeconomics or	3 hrs
ECO 2023 Principles of Microeconomics	3 hrs

<b>Senior Year - Fall</b>	<b>15 hrs</b>
EEL 4914 Senior Design I	3 hrs
Senior Elective	3 hrs
Technical Elective	3 hrs
Technical Elective	3 hrs
Technical Elective	3 hrs

<b>Senior Year - Spring</b>	<b>12 hrs</b>
EEL 4915L Senior Design II	3 hrs
EEL 4781 Computer Communication Networks	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.oegas.ucf.edu/alc/academic\\_learning\\_compacts.htm](http://www.oegas.ucf.edu/alc/academic_learning_compacts.htm)