

UCF Degree Programs

Computer Science (B.S.)

College of Engineering and Computer Science

Department of Computer Science,

Harris Corp. Engineering Center, Room: 346

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

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Foundation Examination: Prior to taking courses beyond basic core requirements, students must pass a foundation exam (COT 3960) which covers problem solving techniques, algorithms, abstraction, proofs, and programming language skills. Tests will be administered each semester. Refer to the computer science website for more information about the foundation exam.

Admission Requirements

- None

Degree Requirements

- Students are required to consult with a departmental advisor and file a plan of study after passing the foundation exam
- Students must meet a Residency Requirement of at least 24 semester hours of regularly scheduled 3000-5000 level courses taken from the Computer Science Division at UCF
- 18 of the 24 Residency hours must be at the 4000-5000 level
- Students must earn at least a 2.0 in each course 2-5
- Students in the Computer Science 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 Science 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 Science 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 Science major will be subject to all probation conditions that applied at the time of exclusion.

1. UCF General Education Program (GEP) (39 hrs)

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	3 hrs
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B: Cultural & Historical Foundations (9 hrs)

C: Mathematical Foundations (7 hrs)

Required	MAC 2311C	Calculus with Analytic Geometry I	4 hrs
Required	STA 2023	Statistical Methods I	3 hrs

D: Social Foundations (6 hrs)

E: Science Foundations (8 hrs)

Prefer	BSC 2010C	Biology I	4 hrs
Prefer	PHY 2048C	General Physics Using Calculus I	4 hrs

2. Common Program Prerequisites (CPP) (17 hrs)

- A "C" (2.0) or better is required in all courses in this area.

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

COP 3223C	Introduction to Programming with C	3 hrs
MAC 2311C	Calculus with Analytic Geometry I	GEP
MAC 2312	Calculus with Analytic Geometry II	4 hrs
PHY 2048C	General Physics Using Calculus I	GEP
PHY 2049C	General Physics Using Calculus II	4 hrs

Select 2:

- 4 hours for this requirement assumes that BSC 2010C is taken since the hours for this course are also in the GEP.

BSC 2010C	Biology I or	GEP
BSC 2011C	Biology II or	4 hrs
CHM 2045C	Chemistry Fundamentals I or	4 hrs
CHM 2046	Chemistry Fundamentals II or	3 hrs
PHY 3101	General Physics Using Calculus III	3 hrs

3. Core Requirements: Basic Level (30 hrs)

- A "C" (2.0) or better is required in all courses in this area.

STA 2023	Statistical Methods I	GEP
COP 3330	Object Oriented Programming	3 hrs
COP 3502C	Computer Science I	3 hrs
COP 3503C	Computer Science II	3 hrs
CDA 3103C	Computer Logic and Organization	3 hrs
COT 3100C	Introduction to Discrete Structures	3 hrs
CIS 3360	Security in Computing	3 hrs
COP 3402	Systems Software	3 hrs
COT 4210	Discrete Structures II	3 hrs
COP 4331C	Processes for Object-Oriented Software Development	3 hrs
COT 3960	CS Foundation Exam	0 hrs

Select 1: (3 hrs)

ENC 3241	Writing for the Technical Professional or	3 hrs
ENC 3250	Professional Writing	3 hrs

4. Core Requirements: Advanced Level (18 hrs)

- At most 3 hours of independent study or research allowed. No internship or cooperative education credits are allowed.
- It is recommended that students take at least 3 classes from a primary area to gain an in-depth knowledge in that area of Computer Science.
- It is recommended that students take classes from at least 2 different secondary areas to gain a broad knowledge of Computer Science. These courses may also be listed in the student's primary area.
- A "C" (2.0) or better is required in all courses in this area.
- Students must maintain at least a 2.5 GPA in all courses in this section.

Systems Area

COP 4520	Concepts of Parallel and Distributed Processing	3 hrs
COP 4600	Operating Systems	3 hrs
COP 4710	Database Systems	3 hrs
EEL 4768	Computer Architecture	3 hrs
CDA 5106	Advanced Computer Architecture	3 hrs
COP 5611	Operating Systems Design Principles	3 hrs
COP 5711	Parallel and Distributed Database Systems	3 hrs

AI and Machine Learning Area

CAP 4053	AI for Game Programming	3 hrs
CAP 4453	Robot Vision	3 hrs
CAP 4630	Artificial Intelligence	3 hrs
CAP 5415	Computer Vision	3 hrs
CAP 5512	Evolutionary Computation	3 hrs

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CAP 5610	Machine Learning	3 hrs
CAP 5636	Advanced Artificial Intelligence	3 hrs

Graphics, Games, and HCI Area

CAP 4053	AI for Game Programming	3 hrs
CAP 3104	Foundations of HCI	3 hrs
CAP 4720	Computer Graphics	3 hrs
CNT 5008	Computer Communication Networks Architecture	3 hrs
CAP 5725	Computer Graphics I	3 hrs

Algorithms and Complexity Area

COT 4500	Numerical Calculus	3 hrs
CAP 5510	Bioinformatics	3 hrs
CAP 5512	Evolutionary Computation	3 hrs
COP 5021	Program Analysis	3 hrs
COP 5537	Network Optimization	3 hrs
COT 5405	Design and Analysis of Algorithms	3 hrs

Software Engineering Area

CIS 4615	Secure Software Development and Assurance	3 hrs
COP 4020	Programming Languages I	3 hrs
COP 4520	Concepts of Parallel and Distributed Processing	3 hrs
COP 4710	Database Systems	3 hrs
CEN 5016	Software Engineering	3 hrs
COP 5021	Program Analysis	3 hrs
COP 5711	Parallel and Distributed Database Systems	3 hrs

Cybersecurity Area

CIS 3362	Cryptography and Information Security	3 hrs
CIS 4203C	Digital Forensics	3 hrs
CIS 4361	Secure Operating Systems and Administration	3 hrs
CIS 4615	Secure Software Development and Assurance	3 hrs
CIS 4940C	Topics in Cybersecurity	3 hrs
CNT 4403	Network Security and Privacy	3 hrs
EEE 4346C	Hardware Security and Trusted Circuit Design	3 hrs
CAP 4145	Introduction to Malware Analysis	3 hrs

Big Data Area

COP 4520	Concepts of Parallel and Distributed Processing	3 hrs
COP 4710	Database Systems	3 hrs
COT 4500	Numerical Calculus	3 hrs
EEL 4768	Computer Architecture	3 hrs
CDA 5106	Advanced Computer Architecture	3 hrs
CNT 5008	Computer Communication Networks Architecture	3 hrs
CDA 5110	Parallel Architecture and Algorithms	3 hrs
COP 5611	Operating Systems Design Principles	3 hrs
CAP 5610	Machine Learning	3 hrs
COP 5711	Parallel and Distributed Database Systems	3 hrs
CNT 4425C	Cloud Computing Management	3 hrs

Vision and Robotics Area

CAP 4453	Robot Vision	3 hrs
CAP 4720	Computer Graphics	3 hrs
CAP 5415	Computer Vision	3 hrs
CAP 5725	Computer Graphics I	3 hrs
EGN 4060C	Introduction to Robotics	3 hrs
EEL 4660	Robotic Systems	3 hrs
EEL 5820	Image Processing	3 hrs

Computer Networks Area

CNT 4403	Network Security and Privacy	3 hrs
CNT 4704	Analysis of Computer Communication Networks	3 hrs
EEL 4781	Computer Communication Networks Architecture	3 hrs
CNT 5008	Computer Communication Networks Architecture	3 hrs
COP 5537	Network Optimization	3 hrs
CNT 5805	Network Science	3 hrs
EEL 5780	Wireless Networks	3 hrs

5. Restricted Electives

■ A "C" (2.0) or better is required in all courses in this area.

Advanced mathematics or statistics 6 hrs

■ Choose at least two courses from the following list of approved choices to satisfy this requirement:

■ Any 4000-5000 level courses with STA, MAP, MAA, MAD or MAS prefixes, except independent study hours, internship, or cooperative education hours.		
MAC 2313	Calculus with Analytic Geometry III	4 hrs
MAP 2302	Ordinary Differential Equations I	3 hrs
MAS 3105	Matrix and Linear Algebra	4 hrs
MAS 3106	Linear Algebra	4 hrs

6. Capstone Requirements (6 hrs)

■ A "C" (2.0) or better is required in the two courses.		
COP 4934	Senior Design I	3 hrs
COP 4935	Senior Design II	3 hrs

7. Foreign Language Requirements

Admissions

■ Two years high school, or one year college language (or equivalent proficiency exam) prior to graduation.

Graduation

■ None

8. Electives (4 hrs)

■ Select primarily from upper level courses after meeting with a departmental advisor. Courses may be outside the department.

9. Additional Requirements

■ None

10. Required Minors

■ None

11. Departmental Exit Requirements

■ None.

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

■ 120

Honors in Major

■ None

Related Programs

- Computer Engineering
- Information Technology

Certificates

- Cyber Operations

Related Minors

- Intelligent Robotic Systems (IRS) - Interdisciplinary
- Secure Computing and Networks

Advising Notes

■ The Computer Science 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 from private and out-of-state schools must be evaluated for equivalency credit. The student must provide all supporting information.

Acceptable Substitutes for Transfer Courses

■ None

Plan of Study

Freshman Year - Fall 13 hrs

ENC 1101	Composition I	3 hrs
SPC 1603C	Fundamentals of Technical Presentations	3 hrs
COP 3223C	Introduction to Programming with C	3 hrs
MAC 2311C	Calculus with Analytic Geometry I	4 hrs

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Freshman Year - Spring		12 hrs
ENC 1102	Composition II	3 hrs
COT 3100C	Introduction to Discrete Structures	3 hrs
COP 3502C	Computer Science I	3 hrs
CDA 3103C	Computer Logic and Organization	3 hrs
COT 3960	CS Foundation Exam	0 hrs

Freshman Year - Summer		7 hrs
MAC 2312	Calculus with Analytic Geometry II	4 hrs
COP 3330	Object Oriented Programming	3 hrs

Sophomore Year - Fall		13 hrs
COP 3402	Systems Software	3 hrs
COP 3503C	Computer Science II	3 hrs
PHY 2048C	General Physics Using Calculus I	4 hrs
GEP		3 hrs

Sophomore Year - Spring		13 hrs
COP 4331C	Processes for Object-Oriented Software Development	3 hrs
PHY 2049C	General Physics Using Calculus II	4 hrs
CIS 3360	Security in Computing	3 hrs

Select 1:		3 hrs
ENC 3241	Writing for the Technical Professional or Professional Writing	3 hrs
ENC 3250	Professional Writing	3 hrs

Sophomore Year - Summer		6 hrs
STA 2023	Statistical Methods I	3 hrs
GEP		3 hrs

Junior Year - Fall		13 hrs
COT 4210	Discrete Structures II	3 hrs
BSC 2010C	Biology I	4 hrs
GEP		3 hrs
Area Course		3 hrs

Junior Year - Spring		13 hrs
CHM 2045C	Chemistry Fundamentals I	4 hrs
Math/Stat Restricted Elective		3 hrs
Area Course		3 hrs
Area Course		3 hrs

Junior Year - Summer		3 hrs
Area Course		3 hrs

Senior Year - Fall		13 hrs
Area Course		3 hrs
GEP		3 hrs
Free Elective		4 hrs
COP 4934	Senior Design I	3 hrs

Senior Year - Spring		12 hrs
Area Course		3 hrs
GEP		3 hrs
Math/Stat Restricted Elective		3 hrs
COP 4935	Senior Design II	3 hrs

Program Academic Learning Compacts

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

Equipment Fees

- Part-Time Student: \$28 per term
- Full-Time Student: \$57 per term