The Computer Science program focuses on the design, development, and application of software systems and on the theory of computation. Additional course work in algorithms, discrete structures, object oriented design, data structures, operating systems, digital logic design, computer architecture, and a wide range of advanced electives extend and supplement the core.

### Mission Statement

In keeping with the mission of the College of Engineering, the Department of Computer Science and Engineering strives for excellence in teaching, research, and public service. Specifically, the Department aspires to:

1. Lead the advancement of computer science, computer engineering, and information technology through internationally recognized research and graduate education, as well as technology transfer to regional industries.
2. Prepare students for full and ethical participation in a diverse society and encourage lifelong learning.
3. Educate students in the best practices of the field as well as integrate the latest research into the curriculum.
4. Foster the development of problem solving and communication skills as an integral component of the profession.
5. Provide quality learning experiences through small classes, active learning styles of teaching, and opportunities for meaningful interactions between students and faculty.

### Objectives

The Department of Computer Science and Engineering has established the following program educational objectives for the computer science graduates of the Department.

1. Our computer science graduates will apply their knowledge and skills to succeed in their career and/or obtain an advanced degree.
2. Our graduates will function ethically and responsibly, and will remain informed and involved as full participants in our profession and our society.
3. Our graduates will successfully function in multi-disciplinary teams.
4. Our graduates will apply basic principles and practices of computing grounded in mathematics and science to successfully complete software related projects to meet customer business objectives and/or productively engage in research.

### Entrance and Continuation Requirements for the Computer Science Program

College of Engineering students who have fully met the admission requirements for the major, and are in good academic standing, may declare a major in Computer Science. Prior to being admitted to a department, a student may be permitted to take no more than two departmental courses.

#### Minimum Admission Requirements for the Computer Science Program

1. Completion of:
   - English Composition I (ENC 1101) and English Composition II (ENC 1102)
   - Calculus I (MAC 2311 or MAC 2281) and Calculus II (MAC 2312 or MAC 2282)
   - Calculus-based Physics I with Lab (PHY 2048 and PHY 2048L)
   - Calculus-based Physics II with Lab (PHY 2049 and PHY 2049L)

   All students must complete the equivalent of USF Composition I & II, Engineering Calculus I & II and Calculus-based General Physics I & II (with labs) with minimum grades of C in each course (grades of C- are insufficient). The minimum overall average GPA in these six courses required for admission to the Department is between 3.0 and 3.5 for any given year. The minimum acceptable average GPA will be posted on the Department's website one year prior to the Fall Semester that the revised GPA is applicable. The computed GPA is based on the best attempts in these courses.

2. Completion of COP 2510 with a minimum grade of B (grade of B- is insufficient) or another introductory programming course covering a modern programming language, with an emphasis on programming concepts and design methodology with a minimum grade of B (grade of B- is insufficient).

3. A minimum overall GPA of 2.0
4. A minimum USF GPA of 2.0

### Minimum Continuation Requirements for the Computer Science Program

Students meeting the above requirements may be admitted to either the Computer Science or Computer Engineering degree tracks; however, continuation in the program will be allowed only for students who complete CDA 3103 and COP 3514 with minimum grades of B, based on best attempts in each course (grades of B- are insufficient). These requirements must be met with a maximum of two attempts allowed for each course.

#### GPA and Grade Requirements

Unless otherwise stated, the minimum acceptable grade in all BSCS required math, science, and engineering courses is a C or higher (C- is insufficient). The minimum acceptable grade in specialization courses is a C-, except as stated in the program admission and continuation requirements. Students must have and maintain a minimum 2.0 Math and Science GPA, 2.0 Engineering GPA, 2.0 Specialization GPA, 2.0 USF GPA, and 2.0 Overall GPA.
Departmental Policies
In addition to the College’s graduation requirements, the Department has the following policies:
1. Mandatory academic advising and/or mentoring of students.
2. Exit interview and/or survey as a graduation requirement.

STATE MANDATED COMMON COURSE PREREQUISITES
If a student wishes to transfer without an A.A. degree and has fewer than 60 semester hours of acceptable credit, the student must meet the university’s entering freshman requirements including ACT or SAT test scores, GPA, and course requirements.

Students should complete the following prerequisite courses listed below at the lower level prior to entering the University. If these courses are not taken at a Florida College System institution, they must be completed before the degree is granted. Unless stated otherwise, a grade of C is the minimum acceptable grade (C- is insufficient).

Students qualify for direct entry to the Department if they have completed the following courses at a Florida College System institution or University in the Florida State University System (SUS) and meet all other admissions requirements of the University and College.

Some courses required for the major may also meet General Education Requirements thereby transferring maximum hours to the university.

- COP XXXX Introductory Programming in C, C++, Java, or equivalent language
- MAC X311 Calculus I or MAC X281
- MAC X312 Calculus II or MAC X282
- PHY X048/X048L General Physics I with Lab or PHY X048C
- PHY X049/X049L General Physics II with Lab or PHY X049C
- XXX XXXX Six credit hours of science courses for science majors

REQUIREMENTS FOR THE MAJOR IN COMPUTER SCIENCE
TOTAL MAJOR HOURS: 96

Major requirements for the B.S.C.S. Degree:

<table>
<thead>
<tr>
<th>Major Core (68-72 hours)</th>
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<tbody>
<tr>
<td>Math and Science (20 credit hours)</td>
</tr>
<tr>
<td>- MAC 2281 Engineering Calculus I or MAC 2311 Calculus I</td>
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<tr>
<td>- MAC 2282 Engineering Calculus II or MAC 2312 Calculus II</td>
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<tr>
<td>- MAC 2283 Engineering Calculus III or MAC 2313 Calculus III</td>
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<tr>
<td>- PHY 2048 General Physics I</td>
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<td>- PHY 2048L General Physics I Laboratory</td>
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<tr>
<td>- PHY 2049 General Physics II</td>
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<tr>
<td>- PHY 2049L General Physics II Laboratory</td>
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<tr>
<td>Basic Engineering (6 credit hours)</td>
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<tr>
<td>- EGN 3000 Foundations of Engineering</td>
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<tr>
<td>- EGN 3000L Foundations of Engineering Lab</td>
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<tr>
<td>- EGN 4450 Introduction to Linear Systems</td>
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<td>- EGN 3443 Probability and Statistics for Engineers</td>
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<tr>
<td>Specialization (37-4 credit hours)</td>
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<tr>
<td>- COP 2510 Programming Concepts</td>
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<td>- COP 3514 Program Design</td>
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<tr>
<td>- COP 3331 Object-Oriented Software Design</td>
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<tr>
<td>- COP 4530 Data Structures</td>
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<tr>
<td>- COP 4600 Operating Systems</td>
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<tr>
<td>- CDA 3103 Computer Organization</td>
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<td>- CDA 3201 Computer Logic and Design</td>
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<tr>
<td>- CDA 3201L Computer Logic Design Lab</td>
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<tr>
<td>- CDA 4205 Computer Architecture</td>
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<td>- CEN 4020 Software Engineering</td>
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<td>- COT 3100 Introduction to Discrete Structures</td>
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<tr>
<td>- COT 4400 Analysis of Algorithms</td>
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<td>- CIS 4250 Ethical Issues and Professional Conduct (CPST)</td>
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<tr>
<td>Composition and Technical Writing (9 credit hours)</td>
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<tr>
<td>- ENC 1101 Composition I</td>
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</table>
• ENC 1102 Composition II
• ENC 3246 Communication for Engineers (WRIN)

Major Electives (247 hours)
• 15 hours of Department Upper-Level Electives (CSE Elective)
  o CAP 4034 Computer Animation Fundamentals
  o CAP 4063 Web Application Design
  o CAP 4401 Image Processing Fundamentals
  o CAP 4410 Computer Vision
  o CAP 4800 Systems Simulation
  o CAP 5400 Digital Image Processing
  o CAP 5625 Introduction to Artificial Intelligence
  o CDA 4203 Computer System Design
  o CDA 4203L Computer System Design Lab
  o CDA 4213 CMOS-VLSI Design
  o CDA 4213L CMPS-VLSI Design Lab
  o CDA 4253 Field Programmable Gate Array System Design and Analysis
  o CDA 4621 Control of Mobile Robots
  o CEN 4020 Software Engineering
  o CEN 4072 Software Testing
  o CEN 4721 User Interface Design
  o CIS 4364 Cryptology and Information Security
  o CIS 4910 Computer Science Project
  o CIS 4915 Supervised Research in Computer Science
  o CIS 4930 Special Topics in Computer Science I
  o CNT 4004 Computer Networks I
  o CNT 4504 Computer Networks II
  o COP 3257 JAVA for Experienced Programmers
  o COP 4020 Programming Languages
  o COP 4365 Software System Development
  o COP 4620 Compilers
  o COP 4656 Software Development for Mobile Devices
  o COP 4710 Database Design
  o COT 4115 Advanced Discrete Structures and Cryptology
  o COT 4210 Automata Theory and Formal Languages
  o COT 4521 Computational Geometry
• 6 hours of Department Upper-Level Electives (CSE Software Elective)
  o CAP 4034 Computer Animation Fundamentals
  o CAP 4063 Web Application Design
  o CAP 4401 Image Processing Fundamentals
  o CAP 4410 Computer Vision
  o CAP 4800 Systems Simulation
  o CAP 5400 Digital Image Processing
  o CAP 5625 Introduction to Artificial Intelligence
  o CIS 4364 Cryptology and Information Security
  o CNT 4004 Computer Networks I
  o CNT 4504 Computer Networks II
  o COP 3257 JAVA for Experienced Programmers
  o COP 4020 Programming Languages
  o COP 4365 Software System Development
  o COP 4620 Compilers
  o COP 4656 Software Development for Mobile Devices
  o COP 4710 Database Design
• 3 hours of Department Upper-Level Electives (CSE Theory Elective)
  o 4000-level COP course
  o CIS 4930 Special Topics in Computer Science I
• 3 hours of Upper-Level Humanities, Social Sciences, or Fine Arts Elective
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4. A minimum USF GPA of 2.0

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Departmental Policies
In addition to the College’s graduation requirements, the Department has the following policies:
1. Mandatory academic advising and/or mentoring of students.
2. Exit interview and/or survey as a graduation requirement.

GPA Requirements
Students must have and maintain a minimum 2.0 Math and Science GPA, 2.0 Engineering GPA, 2.0 Specialization GPA, 2.0 USF GPA, and 2.0 Overall GPA.

Course Grade Requirement
Continuation in the major requires successful completion of CDA 3103 and COP 3514 with minimum grades of B, based on best attempts in each course. Grades of B- are insufficient. These requirements must be met with a maximum of two attempts allowed for each course.

Grading Requirement
Unless otherwise stated, the minimum acceptable grade in all BSCS required math, science, and engineering courses is a C or higher (C- is insufficient). The minimum acceptable grade in specialization courses is a C-, except as stated in the program admission and continuation requirements.

Residency Requirement
Transfer students must complete a minimum number of approved specialization courses in the major at USF. The minimum number of USF specialization credit hours required is established by the respective academic department. In no case will this be less than 18 hours. Basic engineering courses are not considered specialization courses. The University residency requirement must also be met.
A dual degree student must meet the requirements of each major and have a minimum of 18 approved specialization hours taken in the degree granting department beyond those specialization hours required for the first degree.

Gordon Rule Requirement
Gordon Rule (6A) is fully met through the mathematics courses above, ENC 1101, ENC 1102, ENC 3246 and CIS 4250 or by completing an A.A. degree at a Florida College System institution.
Foundations of Knowledge and Learning (FKL) Requirement

The math courses required for this major fully meet the math requirements of the Foundations of Knowledge and Learning core curriculum.

Students in the College of Engineering may substitute a second "Physical Science" course for the required "Life Science" course.

Foundations of Knowledge and Learning (FKL) Exit Requirement

- ENC 3246 Communication for Engineers (WRIN)
- CIS 4250 Ethical Issues and Professional Conduct (CPST)

Research Opportunities

The Research Experiences for Undergraduate Students program in the USF College of Engineering offers undergraduate students an opportunity to directly participate in state-of-the-art research. Professors and graduate students serve as research partners and mentors as undergraduate research assistants participate in the scientific process and gain relevant experience.

Internship Opportunities

The College of Engineering and USF’s Career Services Cooperative Education (Co-Op) program provides services for students interested in experiential educational experiences. A wide variety of industries and government agencies offer internships and cooperative education employment opportunities for engineering students. Participants gain valuable expertise in practical applications and other aspects of operations and development in a professional engineering environment. Students normally apply for participation in this program during their first year in the College of Engineering and pursue actual internships during their sophomore, junior, and senior years.

Accreditation Information

The Bachelor of Science degree program in Computer Science is accredited by the Computing Accreditation Commission of ABET, http://www.abet.org.

Advising Information

Undergraduate Advising: http://www.cse.usf.edu/undergraduate/people_to_contact/.