Thus, students will not need to wait for an interdisciplinary program to be established; they can create their own.

To answer the demands of industry for employees with both technical competence and the ability to communicate effectively, the program requires communication courses beyond the usual general education requirements for engineering.

**Department Requirements**

Students must complete all critical-tracking courses with minimum grades of C in each course and the critical-tracking GPA must be 2.5 minimum. A minimum grade of C is required in all other courses that are prerequisites to a required course: CDA 3101, COP 3502C, COP 3503C, COP 3530, COP 4600, and COT 3100. In addition, CISE requires all computer science students to maintain a cumulative, upper-division and department grade point average minimum of 2.0.

Students who do not meet these requirements will be placed on academic probation and will be required to prepare a probation contract with a CISE advisor. Students are normally given two terms to remove their deficit points; however, students who do not satisfy the conditions of the first term of probation may be dismissed from the department.

Students may opt to take COP 3504C in lieu of COP 3502C and COP 3503C. If elected, students will need to complete an additional 4 credits to complete the degree program.

**Placement**

Students who have scored at least a 4 or 5 on the AP Computer Science exam are eligible to start the programming fundamentals sequence with COP 3503C. Students will need to see an advisor in the major to adjust their degree audit.

### Required Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC 3246</td>
<td>Professional Communication for Engineers</td>
<td>3</td>
</tr>
<tr>
<td>MAC 2311</td>
<td>Analytic Geometry and Calculus 1</td>
<td>4</td>
</tr>
<tr>
<td>MAC 2312</td>
<td>Analytic Geometry and Calculus 2</td>
<td>4</td>
</tr>
<tr>
<td>MAC 2313</td>
<td>Analytic Geometry and Calculus 3</td>
<td>4</td>
</tr>
<tr>
<td>MAS 3114</td>
<td>Computational Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>PHY 2048</td>
<td>Physics with Calculus 1</td>
<td>4</td>
</tr>
<tr>
<td>&amp; 2048L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHY 2049</td>
<td>Physics with Calculus 2</td>
<td>4</td>
</tr>
<tr>
<td>&amp; 2049L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STA 3032</td>
<td>Engineering Statistics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Writing or public speaking course, as approved by department</td>
<td></td>
</tr>
</tbody>
</table>

### Computing Core

- COP 3502C Programming Fundamentals 1 4
- COP 3503C Programming Fundamentals 2 4
- COP 3530 Data Structures and Algorithm 3
- COT 3100 Applications of Discrete Structures 3

### Major Core

- CDA 3101 Introduction to Computer Organization 3
- CEN 3031 Introduction to Software Engineering 3
- CIS 4301 Information and Database Systems 1 3
- CIS 4914 Senior Project 3
- or EGN 4952 Integrated Product and Process Design 2
- CNT 4007 Computer Network Fundamentals 3
- COP 4020 Programming Language Concepts 3
- COP 4533 Algorithm Abstraction and Design 3
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COP 4600</td>
<td>Operating Systems</td>
<td>3</td>
</tr>
<tr>
<td>EGS 4034 or CGS 3065</td>
<td>Engineering Ethics and Professionalism or Legal and Social Issues in Computing</td>
<td>1</td>
</tr>
<tr>
<td><strong>Major Electives</strong></td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Select from:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIS 4905</td>
<td>Individual Study in CISE</td>
<td></td>
</tr>
<tr>
<td>CIS 4930</td>
<td>Special Topics in CISE</td>
<td></td>
</tr>
<tr>
<td>CIS 4940</td>
<td>Practical Work</td>
<td></td>
</tr>
<tr>
<td>CIS 4949</td>
<td>Co-Op Work in CISE</td>
<td></td>
</tr>
<tr>
<td>EGN 4912</td>
<td>Engineering Directed Independent Research</td>
<td></td>
</tr>
<tr>
<td>EGN 4951</td>
<td>Integrated Product and Process Design 1</td>
<td></td>
</tr>
<tr>
<td>EIN 3354</td>
<td>Engineering Economy</td>
<td></td>
</tr>
<tr>
<td>EEL 3701C</td>
<td>Digital Logic and Computer Systems</td>
<td></td>
</tr>
<tr>
<td>EEL 4744C</td>
<td>Microprocessor Applications</td>
<td></td>
</tr>
<tr>
<td>Any 4000-level or higher CISE course, beyond the Core Requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Interdisciplinary Electives</strong></td>
<td>14</td>
<td></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

---

1 Students should check prerequisites when planning their major electives. Students should discuss electives with an advisor in the department. Individual study, co-op, internship, research, and special topics credits must be approved by an advisor in the department.

Technical Electives may also be:

- Any 4000-level or higher ECE or PHY course not taken to fulfill some other requirement, excluding EEL 4384 and most CGS courses.
- MAP 2302 or any 4000-level math or statistics course with the prefix STA, MAA, MAD, MAP, MAS, or MHF not fulfilling another requirement.
- Up to two 3000-level CAP courses.
- EGN 4038, EGN 4641, EGN 4643, EGS 4038, EGS 4641, or EGS 4643.

**Interdisciplinary Electives | Select one option**

**Option A**
14 credits applicable toward formal minor and not counting for other requirements; completion of minor not required if it exceeds 14 credits. If completed minor contributes less than 14 credits, remaining credits can be fulfilled with additional 3000-level coursework in the area of the minor, 3000-level CISE courses, or 3000-level Engineering courses.

**Option B**
14 credits in a concentration area outside of CISE at 3000-level or higher (advisor approval required).

**Option C**
14 credits arranged with a department of interest which does not offer a formal minor.

**Critical Tracking**

Critical Tracking records each student's progress in courses that are required for progress toward each major. Please note the critical-tracking requirements below on a per-semester basis.

Equivalent critical-tracking courses as determined by the State of Florida Common Course Prerequisites (http://www.flvc.org/cpp/displayRecord.jsp?cip=140901&track=01) may be used for transfer students.

---

**Semester 1**
- Complete 1 of 6 critical-tracking courses with a minimum grade of C within two attempts: MAC 2311, MAC 2312, MAC 2313, COP 3502C, PHY 2048, PHY 2049
- 2.5 GPA required for all critical-tracking courses
- 2.0 UF GPA required

**Semester 2**
- Complete 1 additional critical-tracking course with a minimum grade of C within two attempts
- 2.5 GPA required for all critical-tracking courses
- 2.0 UF GPA required

**Semester 3**
- Complete 2 additional critical-tracking courses with minimum grades of C within two attempts
- 2.5 GPA required for all critical-tracking courses
- 2.0 UF GPA required

**Semester 4**
- Complete 1 additional critical-tracking course with minimum grades of C within two attempts
- 2.5 GPA required for all critical-tracking courses
- 2.0 UF GPA required

**Semester 5**
- Complete all 6 critical-tracking courses with minimum grades of C in each course within two attempts
- 2.5 GPA required for all critical-tracking courses
- 2.0 UF GPA required

**Semester 6**
- Complete COP 3503C and COT 3100
- 2.0 departmental GPA required
- 2.0 UF GPA required

**Semester 7**
- Complete COP 3530
- 2.0 departmental GPA required
- 2.0 UF GPA required

**Semester 8**
- Complete COP 4600 and COP 4020
- 2.0 departmental GPA required
- 2.0 UF GPA required

**Model Semester Plan**

Students are expected to complete the general education international (GE-N) and diversity (GE-D) requirements. This is often done concurrently with another general education requirement (typically, GE-C, H or S).

To remain on track, students must complete the appropriate critical-tracking courses, which appear in bold. These courses must be completed by the terms as listed above in the Critical Tracking criteria.
This semester plan represents an example progression through the major. Actual courses and course order may be different depending on the student’s academic record and scheduling availability of courses. Prerequisites still apply.

### Course Title

#### Semester One
- **Course:** Quest 1 (Gen Ed Humanities)  
  **Title:** Programming Fundamentals 1 (Critical Tracking)  
  **Credits:** 3
- **Course:** COP 3502C  
  **Title:** Engineering Design & Society (Gen Ed Physical Sciences)  
  **Credits:** 2
- **Course:** MAC 2311  
  **Title:** Analytic Geometry and Calculus 1 (Critical Tracking; State Core Gen Ed Mathematics)  
  **Credits:** 4

#### Semester Two
- **Course:** COP 3503C  
  **Title:** Programming Fundamentals 2  
  **Credits:** 3
- **Course:** COT 3100  
  **Title:** Applications of Discrete Structures  
  **Credits:** 3
- **Course:** MAC 2312  
  **Title:** Analytic Geometry and Calculus 2 (Critical Tracking; Gen Ed Mathematics)  
  **Credits:** 4
- **Course:** PHY 2048 & 2048L  
  **Title:** Physics with Calculus 1 and Laboratory for Physics with Calculus 1 (Critical Tracking; State Core Gen Ed Physical Sciences)  
  **Credits:** 4

#### Summer After Semester Two
- **Course:** ENC 1101 or ENC 1102  
  **Title:** Expository and Argumentative Writing (State Core GE Composition; Writing Requirement: 6,000 words) or Argument and Persuasion  
  **Credits:** 3

#### Semester Three
- **Course:** CDA 3101  
  **Title:** Introduction to Computer Organization  
  **Credits:** 3
- **Course:** COP 3530  
  **Title:** Data Structures and Algorithm  
  **Credits:** 3
- **Course:** MAC 2313  
  **Title:** Analytic Geometry and Calculus 3 (Critical Tracking; Gen Ed Mathematics)  
  **Credits:** 4
- **Course:** PHY 2049 & 2049L  
  **Title:** Physics with Calculus 2 and Laboratory for Physics with Calculus 2 (Critical Tracking; Gen Ed Physical Sciences)  
  **Credits:** 4

#### Semester Four
- **Course:** CEN 3031  
  **Title:** Introduction to Software Engineering  
  **Credits:** 3
- **Course:** CIS 4301  
  **Title:** Information and Database Systems 1  
  **Credits:** 3
- **Course:** ENC 3246  
  **Title:** Professional Communication for Engineers (Gen Ed Composition; Writing Requirement: 6,000 words)  
  **Credits:** 3
- **Course:** MAS 3114 or MAS 4105  
  **Title:** Computational Linear Algebra or Linear Algebra 1  
  **Credits:** 3
- **Course:** STA 3032  
  **Title:** Engineering Statistics  
  **Credits:** 3

#### Semester Five
- **Course:** Qyest 2 (Gen Ed Social and Behavioral Sciences OR Gen Ed Biological or Physical Sciences OR Gen Ed Humanities)  
  **Credits:** 3
- **Course:** COP 4600  
  **Title:** Operating Systems  
  **Credits:** 3
- **Course:** STA 3032  
  **Title:** Engineering Statistics  
  **Credits:** 3

### Technical elective

#### Semester Six
- **Course:** COP 4020  
  **Title:** Programming Language Concepts  
  **Credits:** 3
- **Course:** COP 4XXX  
  **Title:** Algorithm Abstraction and Design  
  **Credits:** 3
- **Course:** Interdisciplinary electives  
  **Credits:** 6
- **Course:** Technical elective  
  **Credits:** 3

#### Summer After Semester Six
- **Course:** Internship / Co-op (if desired)  
  **Credits:** 0

#### Semester Seven
- **Course:** CNT 4007  
  **Title:** Computer Network Fundamentals  
  **Credits:** 3
- **Course:** EGS 4034  
  **Title:** Engineering Ethics and Professionalism or Legal and Social Issues in Computing  
  **Credits:** 1-3
- **Course:** Technical electives  
  **Credits:** 6
- **Course:** Interdisciplinary elective  
  **Credits:** 3

#### Semester Eight
- **Course:** CIS 4913C or CIS 4914 (4EG)  
  **Title:** Integrated Product and Process Design 2 or Senior Project  
  **Credits:** 3
- **Course:** CNT 4007  
  **Title:** Computer Network Fundamentals  
  **Credits:** 3
- **Course:** CNT 4007  
  **Title:** Computer Network Fundamentals  
  **Credits:** 3
- **Course:** Interdisciplinary electives  
  **Credits:** 5

### Total Credits

- **Credits:** 120

### Academic Learning Compact

The Herbert Wertheim College of Engineering’s computer science program combines a strong engineering technical basis with a flexible interdisciplinary component and strong communication skills. This program emphasizes the technical aspects of computer science and is less flexible than the computer science program in the College of Liberal Arts and Sciences.

### Before Graduating Students Must

- Pass assessment according to department rubric of student performance on a major design experience.
- Pass assessment in one or more core courses of individual assignments targeted to each SLO.
- Complete requirements for the baccalaureate degree, as determined by faculty.

### Students in the Major Will Learn to Student Learning Outcomes (SLOs)

#### Content

1. Apply knowledge of mathematics and science to computer science problems.
2. Design and conduct computer-science experiments, analyzing and interpreting the data.

#### Critical Thinking

3. Design a computer science system, component or process to meet desired needs within realistic economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability constraints.
Communication
4. Communicate technical data and design information effectively in writing and in speech to other computer scientists and engineers.

Curriculum Map
*I = Introduced; R = Reinforced; A = Assessed*

<table>
<thead>
<tr>
<th>Courses</th>
<th>SLO 1</th>
<th>SLO 2</th>
<th>SLO 3</th>
<th>SLO 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDA 3101</td>
<td>I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEN 3031</td>
<td></td>
<td></td>
<td>I, A</td>
<td></td>
</tr>
<tr>
<td>CIS 4914</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>COP 4600</td>
<td>I, A</td>
<td></td>
<td>I, A</td>
<td></td>
</tr>
</tbody>
</table>

Assessment Types
- Assignments
- Exams
- Reports
- Exit survey