Computer Science

The B.S. in Computer Science (CS) degree program emphasizes analytical thinking and problem solving involving scientific applications. The degree includes the theoretical foundations of computer science in the study of algorithms, data structures, computer architecture, programming languages, and net-centric computing. Concentration areas include intelligent systems, software engineering, and cybersecurity.

Program Requirements
In addition to the university’s general requirements, students seeking the B.S. in Computer Science must meet the requirements listed below.

A minimum grade of “C-” is required for all major and major-related courses with a cumulative major GPA of 2.5 or higher. Students should consult with their academic advisor for courses which may satisfy both the General Studies requirements and common prerequisites.

Graduates of the Computer Science degree program will be known for their accomplishments in the early stages on their careers and they should:

• Develop computerized solutions to important problems either individually or through interdisciplinary teams within a global and societal context.
• Professionally and ethically engage in technical or business activity through computer science ability, communication skills and knowledge.
• Engage in continuing professional growth through post-graduate education, continuing education, or professional activity.
• Contribute to the economic development of the Northwest Florida region and the state of Florida.

Computer Science

General Education
In addition to the General Education requirements listed on this page, students must satisfy all additional University requirements, including the Gordon Rule, multicultural, and foreign language requirements. With appropriate planning and coordination with an academic advisor, students may satisfy some of the general University requirements through the General Education curriculum. For a complete listing of general degree requirements, refer to the "University Requirements" section of this catalog.

General Education Curriculum:

Communication
ENC 1101 English Composition I 3
ENC 1102 English Composition II 3

Mathematics
Choose one course from Group A and one Additional course from either Group A or Group B

Group A
MAC 1105 College Algebra
MAC 1105C College Algebra with Lab
MAC 2311 Analytic Geometry and Calculus I

Group B
MAC 1114 Trigonometry
MAC 1140 Precalculus Algebra
MAC 1147 Precalculus with Trigonometry
MAC 2233 Calculus with Business Applications
MAC 2312 Analytic Geometry and Calculus II

Social Sciences
Choose one course from Group A and one additional course from either Group A or Group B

Group A
AMH 2020 United States since 1877
ANT 2000 Introduction to Anthropology
ECO 2013 Principles of Economics Macro
POS 2041 American Politics
PSY 2012 General Psychology
SYG 2000 Introduction to Sociology

Group B
AMH 2010 United States to 1877
ANT 2400 Current Cultural Issues
ANT 2100 Introduction to Archaeology
CCJ 2002 Survey of Crime and Justice
CPO 2002 Comparative Politics
DEP 2004 Human Development Across the Lifespan
EUH 1000 Western Perspectives I
EUH 1001 Western Perspectives II
FIN 2104 Personal Financial Planning
GEO 1000 Nations and Regions of the World
GEB 1011 Introduction to Business
IDH 1041 Honors Core 2
INR 2002 International Politics
MMC 2000 Principles of Mass Communication
PLA 2013 Survey of American Law
SOW 2192 Understanding Relationships in the 21st Century
SPM 2010 Sport in Global Society
SYG 2010 Current Social Problems

Humanities
Choose one course from Group A and one additional course from either Group A or Group B

Group A
ART 1000 Art Appreciation
LIT 2000 Introduction to Literature
MUL 2010 Music Appreciation
PHI 2010 Introduction to Philosophy
THE 2000 Theatre Appreciation

Group B
AML 2010 American Literature I
AML 2020 American Literature II
**Natural Sciences**

Choose one course from Group A and one additional course from either Group A or Group B

**Group A**

- AST 1002 Descriptive Astronomy
- BSC 1005 General Biology for Non-Majors
- BSC 1085 Anatomy and Physiology I
- BSC 2010 Biology I
- CHM 1020 Concepts in Chemistry
- CHM 2045 General Chemistry I
- ESC 2000 Introduction to Earth Science
- EVR 2001 Introduction to Environmental Science
- PHY 2048 Calculus-Based Physics I
- PHY 2048C University Physics I - Studio
- PHY 2053 Algebra-Based Physics I

**Group B**

- ANT 2511 Biological Anthropology
- BOT 2010 General Botany
- BSC 1050 Fundamentals of Ecology
- BSC 1086 Anatomy and Physiology II
- BSC 2011 Biology II
- BSC 2311 Introduction to Oceanography and Marine Biology
- CHM 1032 Fundamentals of General Chemistry
- CHM 2046 General Chemistry II
- CIS 2530 Introduction to Cybersecurity
- GEO 1200 Physical Geography
- GLY 2010 Physical Geology
- MCB 1000 Fundamentals of Microbiology
- PHC 2082 Informatics and Your Health
- PHY 2049 Calculus-Based Physics II
- PHY 2054 Algebra-Based Physics II

* May be taken with or without lab.
** Algebra-Based Physics is usually recommended for non-science majors, while Calculus-Based Physics is recommended for science majors
*** Although students receive 5 semester hours credit for PHY 2048C, an additional 3 semester science course will be needed to meet General Education requirements.

**Multicultural Requirement**

**Multicultural Courses**

An important component of a liberal education is the study of cultures other than one's own. As such, multiculturalism encompasses the appreciation of the values, expressions, and modes of organization of diverse cultural communities. To further such study, the University of West Florida requires all students pursuing a bachelor's degree to complete at least one course that explores one or more of the dimensions of another culture (language, religion, socio-economic structures, etc.). Students are exempt from this requirement if they have completed an A.A. degree, the general education program at a Florida public institution, or a baccalaureate degree.

The requirement is satisfied by the successful completion of a multicultural course designated on the following list. Several of the selections are General Education courses, and students may enroll in these to meet both the General Education and the multicultural requirements.

**Passed by UWF Faculty Senate on 11/08/2002**

This list is continually updated and students are encouraged to check with their advisors for alternative options.

- AML 2010 American Literature I
- AML 2020 American Literature II
- AML 3604 African American Literature
- AML 3624 Black Women Writers
- AML 4015 Topics in Nineteenth-Century American Literature
- ANT 2000 Introduction to Anthropology
- ANT 2301 Human Sexuality and Culture
- ANT 3212 Peoples and Cultures of the World
- ANT 3312 North American Indians
- ANT 3363 Japanese Culture
Civic Literacy Requirement

1. Baccalaureate degree-seeking students initially entering a state university fall semester 2018 and thereafter must demonstrate competency in civic literacy through one of the following options prior to graduation:
   a. Successfully passing either POSX041 American Government or AMHX020 Introductory Survey Since 1877. Each of the courses must include the following competencies:
      i. Understanding of the basic principles and practices of American democracy and how they are applied in our republican form of government;
      ii. An understanding of the United States Constitution and its application;
      iii. Knowledge of the founding documents and how they have shaped the nature and functions of our institutions of self-government; and
      iv. An understanding of landmark Supreme Court cases, landmark legislation and landmark executive actions and their impact on law and society.

2. Achieving the standard score on one of the following assessments:

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Standard Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civic Literacy Exam</td>
<td>50</td>
</tr>
<tr>
<td>Advanced Placement Government</td>
<td>3</td>
</tr>
<tr>
<td>States History</td>
<td>4</td>
</tr>
<tr>
<td>CLEP American Government</td>
<td>50</td>
</tr>
</tbody>
</table>

*BOG 8.006

Common Prerequisites

State mandated common prerequisites must be completed prior to graduation, but are not required for admission to the program. See the Common Prerequisite Manual for course substitutions from Florida colleges and universities.
### Computer Science

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COP XXXX</td>
<td>Introductory programming in C, C++, Java, or equivalent language †</td>
<td>3</td>
</tr>
<tr>
<td>MAC 2311</td>
<td>Analytic Geometry and Calculus I **</td>
<td>4</td>
</tr>
<tr>
<td>MAC 2312</td>
<td>Analytic Geometry and Calculus II ††</td>
<td>4</td>
</tr>
<tr>
<td>PHY 2048+L</td>
<td>Calculus-Based Physics I (+Lab) ††</td>
<td>4</td>
</tr>
<tr>
<td>PHY 2049+L</td>
<td>Calculus-Based Physics II (+Lab)</td>
<td>4</td>
</tr>
</tbody>
</table>

**Two science courses for science majors, please choose from the list below**

- ANT 2511 Biological Anthropology
- AST 1002 Descriptive Astronomy
- BOT 2010 General Botany
- BSC 1050 Fundamentals of Ecology
- BSC 1085 Anatomy and Physiology I
- BSC 1086 Anatomy and Physiology II
- BSC 2010 Biology I
- BSC 2011 Biology II
- BSC 2311 Introduction to Oceanography and Marine Biology
- CHM 1032 Fundamentals of General Chemistry
- CHM 2045 General Chemistry I
- CHM 2046 General Chemistry II
- ESC 2000 Introduction to Earth Science
- EVR 2001 Introduction to Environmental Science
- GEO 1200 Physical Geography
- GLY 2010 Physical Geology
- MCB 1000 Fundamentals of Microbiology

**Total Hours:** 25

† Indicates common prerequisites which can be used to satisfy General Education requirements.

** A minimum grade of C is required for MAC2311, MAC2312 and PHY2048/L.

† A minimum grade of C- is required for COP XXXX

### Lower Division Electives

Students must complete sufficient 1000/2000 level electives to satisfy at least 57 sh in the lower division. Current UWF students may use elective courses at any level (1000-4000) to meet this elective requirement.

**Total Hours:** 0-12

### Major

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDA 3101</td>
<td>Introduction to Computer Organization *</td>
<td>3</td>
</tr>
<tr>
<td>COT 3100</td>
<td>Discrete Structures *</td>
<td>3</td>
</tr>
<tr>
<td>CEN 3031</td>
<td>Software Engineering I *</td>
<td>3</td>
</tr>
<tr>
<td>CIS 4592</td>
<td>Capstone Project *</td>
<td>3</td>
</tr>
<tr>
<td>COP 4710</td>
<td>Database Systems *</td>
<td>3</td>
</tr>
<tr>
<td>COP 3014</td>
<td>Algorithm and Program Design *</td>
<td>3</td>
</tr>
<tr>
<td>COP 3530</td>
<td>Data Structures and Algorithms I *</td>
<td>3</td>
</tr>
<tr>
<td>COP 4534</td>
<td>Data Structures and Algorithms II *</td>
<td>3</td>
</tr>
<tr>
<td>COP 3022</td>
<td>Intermediate Computer Programming *</td>
<td>3</td>
</tr>
<tr>
<td>COP 4027</td>
<td>Advanced Computer Programming *</td>
<td>3</td>
</tr>
<tr>
<td>COP 4020</td>
<td>Programming Languages *</td>
<td>3</td>
</tr>
<tr>
<td>COP 4634</td>
<td>Systems &amp; Networks I *</td>
<td>3</td>
</tr>
<tr>
<td>COP 4635</td>
<td>Systems &amp; Networks II *</td>
<td>3</td>
</tr>
</tbody>
</table>

Choose one group of courses from the following groupings

#### Intelligent Systems:

- CAP 4601 Introduction to Artificial Intelligence *
- CAP 4786 Introduction to Big Data Analytics *

#### Software Engineering:

- CEN 3032 Software Engineering II *
- CEN 4053 Software Engineering Management *

#### Cybersecurity:

- CEN 4078 Secure Software Development *
- CNT 4403 Computer and Network Security *

### Total Hours

54

* Courses included in the major GPA

### Major-Related

Choose one course from the following course list:

- MAS 3105 Linear Algebra
- MHF 3202 Set Theory and Mathematical Logic
- STA 4321 Introduction to Mathematical Statistics I

**Total Hours:** 6

* Two courses must be selected from Computer Science approved upper-level electives. Students should consult with the CS academic advisor, or their assigned CS faculty advisor, for selecting the upper-level Computer Science electives.

### Computer Science Minor

The Computer Science Minor provides students with knowledge of basic software aspects of computer systems. Fundamentals of programming experience utilizing procedural and object-oriented paradigms prepare students in this minor for software development on a variety of computing platforms. Computer Science, CIS, Software Engineering, Cybersecurity, and Software Design & Development majors may not earn this minor.

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<td>Data Structures and Algorithms I</td>
<td>3</td>
</tr>
</tbody>
</table>

Choose one of the following:

- COP 4634 Systems & Networks I
- COP 4331 Object Oriented Programming
- COP 4534 Data Structures and Algorithms II
- COT 4420 Theory of Computation
- EEL 3701 Digital Logic and Computer Systems

**Total Hours:** 15