

COMPUTER SCIENCE

Degrees: Bachelor of Science
 Specializations: Computer Science, Computer Information Systems, Software Engineering
 Minors: Computer Science, Computer Information Systems, Game Development, Information Technology, Internet Technologies
 Certificate: Database Systems, Information Technology, Web Development Technologies
 Department: Computer Science
 Building 79, Room 102
 (850) 474-2542
<http://www.cs.uwf.edu/computerscience@uwf.edu>
 College: Arts and Sciences
 Semester Hours Required for Degree: 120

Faculty: L.W. ter Haar (Chairperson), S. Bagui, J.C. Bezdek, J.W. Bolyard, J.W. Coffey, D. Edwards, E. El-Sheikh, J.M. Huband, J.F. Kolen, G. LaForte, J.D. Lewis, B. Owsnicki-Klewe, A. Pinto, L. Prayaga, E.G. Rodgers, S. Simmons, L. White, N.W. Wilde

The Computer Science program is composed of three specializations: Computer Science, Computer Information Systems, and Software Engineering.

The Computer Science (CS) specialization 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.

The Computer Information Systems (CIS) specialization integrates the foundation of information systems principles with concepts in modern programming languages, database systems, software engineering principles, and net-centric applications. The focus of this track is on problem solving in applications development.

The Software Engineering (SE) specialization incorporates theoretical foundations of computer science with the study of principles and practices regarding the development of high-quality software systems that meet client needs. This track places emphasis on the development of complex, large-scale software systems, software process, and project management.

Contact the department for information concerning the certificates.

PROGRAM REQUIREMENTS

In addition to general University requirements, students seeking the B.S. in Computer Science must meet the requirements listed below.

A minimum grade of "C-" is required for all courses in the major 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.

Two Computer Science concentrations are required. Each concentration requires two courses, 3 hours each, in a specialization area. Students should consult with the CS academic advisor for the courses that satisfy the concentration areas.

COMPUTER SCIENCE SPECIALIZATION

General Studies (36 sh)

For additional information see the General Studies section of this *Catalog*.

The following courses are recommended to complete general studies requirements:

PHI 2603 as Humanities/Contemporary Values
 MAC 2311 & MAC 2312 as Mathematics
 PHY 2048/2048L & PHY 2049/2049L as Natural Science
 ECO 2013 as Social Science: Socio-political

Common Prerequisites (25 sh)

State mandated common prerequisites must be completed prior to graduation, but are not required for admission to the program. Courses in brackets indicate substitutes from Florida public community/junior colleges and universities.

COP	XXXX	Introductory programming in Ada, C, C++, Pascal, or equivalent language	3
+MAC	2311	Analytic Geometry & Calculus I.....	4
		[MAC X311]	
+MAC	2312	Analytic Geometry & Calculus II.....	4
		[MAC X312]	
+PHY	2048/L	University Physics I/Lab	4
		[PHY X048/X048L]	
+PHY	2049/L	University Physics II/Lab	4
		[PHY X049/X049L or X049C]	
		Two science courses for science majors.....	6
		+ Indicates common prerequisites which can be used to satisfy General Studies requirements.	

Lower Division Electives (0-12 sh)

Sufficient 1000/2000 level electives to complete at least 60 semester hours in the lower division. Current UWF students may use elective courses at any level (1000-4999) to meet this elective requirement. If not taken as a general studies course, CGS2060: Excursions in Computing is recommended as a lower-division elective.

Major (54 sh)

CDA	3101/L	Computer Organization	4
CEN	4XX0/L	Networks and Systems I	4
CEN	4XX1/L	Networks and Systems II	4
CIS	3XX0	Software Documentation	3
COP	3XX0/L	Algorithms and Program Design	4
COP	3XX2/L	Data Structures and Algorithms	4
COP	4XX0/L	Data Structures and Algorithms II	4
COP	4020	Programming Languages.....	4
COP	4331	Object-Orient Programming	4
COT	4XX0	Capstone Research Experience	4
COT	4420	Theory of Computation.....	3
		List of pre-approved concentration courses available in the department	12

Major-Related (6 sh)

MAS 3105	Linear Algebra	3
MHF 3202	Set Theory and Logic	3

Choose one of the following:

CAP 4770	Data Mining	3
COP 4723	Database Administration	3

Upper Division Electives (0 sh)

**COMPUTER INFORMATION SYSTEMS
SPECIALIZATION**

General Studies (36 sh)

For additional information see the General Studies section of this *Catalog*. The following courses are recommended to complete general studies requirements:

- CGS 2060 as Lecture science
- PHI 2603 as Humanities/Contemporary Values
- STA 2023 & MAC 2233 as Mathematics
- ECO 2013 as Social Science: Socio-political

Common Prerequisites (27 sh)

State mandated common prerequisites must be completed prior to graduation, but are not required for admission to the program. Courses in brackets indicate substitutes from Florida public community/junior colleges and universities.

ACG 2021	Principles of Financial Accounting.....	3	[ACG X021]
ACG 2071	Principles of Managerial Accounting	3	[ACG X071]
CGS 2570	Personal Computer Applications	3	[CGS X060, X100, or X570]
COP 2253	Programming Using Java	3	[Equivalent Java Programming Course]
COP 2334	Programming Using C++	3	[Equivalent C++ Programming Course]
+ECO 2013	Principles of Economics Macro	3	[ECO X013]
ECO 2023	Principles of Economics Micro.....	3	[ECO X023]
+MAC 2233	Calculus with Business Applications	3	[MAC X233]
+STA 2023	Elements of Statistics	3	[STA X023]

+ Indicates common prerequisites which can be used to satisfy General Studies requirements.

Lower Division Electives (0-6 sh)

Sufficient 1000/2000 level electives to complete at least 60 semester hours in the lower division. Current UWF students may use elective courses at any level (1000-4999) to meet this elective requirement.

Major (48 sh)

CEN 3031	Software Engineering I	3
CEN 3XX0	Software Engineering II	3
CEN 4400	Introduction to Operations Research.....	3
CEN 4721	Human-Computer Interaction	3
CIS 3512	Software Documentation	3
CIS 4327C	Systems Project.....	3
CIS 4XX0C	Theory and Fundamentals of Operating Systems.....	3
CIS 4XX1C	Theory and Fundamentals of Networks.....	3
COP 3022/L	Intermediate Computer Programming	4
COP 3813	Internet Programming.....	3
COP 4XX1/L	Advanced Computer Programming	4
COP 4710	Database Systems	3
COP 4XX2	Network-Centric Software Applications	3
COT 3100/L	Discrete Structures	4

Major-Related (12 sh)

3000/4000 level advisor approved electives.....12
List of approved courses available in the department

Upper Division Electives (0 sh)

**SOFTWARE ENGINEERING
SPECIALIZATION**

General Studies (36 sh)

For additional information see the General Studies section of this *Catalog*.

The following courses are recommended to complete general studies requirements:

- PHI 2603 as Humanities/Contemporary Values
- MAC 2311 & MAC 2312 as Mathematics
- PHY 2048/2048L & PHY 2049/2049L as Natural Science
- ECO 2013 as Social Science: Socio-political

Common Prerequisites (25 sh)

Same as Computer Science

Lower Division Electives (12 sh)

Sufficient 1000/2000 level electives to complete at least 60 semester hours in the lower division. Current UWF students may use elective courses at any level (1000-4999) to meet this elective requirement.

If not taken as a general studies course, the following courses are recommended as lower-division electives:

ACG 2021	Principles of Financial Accounting	3
CGS 2060	Excursions of Computing	3
ECO 2023	Principles of Economics Micro	3
SPC 2016	Basic Communication Skills.....	3

Major (49 sh)

CDA 3101/L	Introduction to Computer Organization/Lab	4
CEN 3031	Software Engineering I.....	3
CEN 3XX0	Software Engineering II.....	3
CEN 4721	Human-Computer Interaction.....	3
CEN 4XX2	Embedded/Wireless Systems	3
CEN 4XX3	Software Engineering Management.....	3
CEN 4XX4	Cyber-Security Forensics.....	3
CIS 3512	Software Documentation.....	3
CIS 4327C	Capstone Systems Project.....	3
CIS 4XX0C	Theory and Fundamentals of Operating Systems	3
CIS 4XX1C	Theory and Fundamentals of Networks	3
COP 3XX0	Algorithms and Program Design	4
COP 3XX2/L	Data Structures and Algorithms I/Lab	4
COP 4710	Database Systems.....	3
COP 4XX0/L	Data Structures and Algorithms II/Lab	4

Major-Related (6 sh)

MAN 3240	Behavior in Organizations.....	3
COM 4110	Business and Professional Communication	3

Upper Division Electives (5 sh)

The remainder of the program will be comprised of electives that students can select without limitation.

However, students will be advised to select additional 3000/4000 level courses to total at least 48sh at the 3000/4000 level if necessary. If students do not require additional 3000/4000 level courses, they may take 1000/2000 level courses at UWF.

MINORS

The Department of Computer Science offers five minors: Computer Science, Computer Information Systems, Game Development, Internet Technologies, and Information Technology. Students must complete all course work for the minor with a grade of "C-" or higher. See below for specific minor requirements for each track.

Computer Science Minor (14-16 sh)

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. CS and CIS majors may not earn this minor.

COP	3XX0/L	Algorithms and Program Design/Lab.....	4
COP	3XX2/L	Data Structures and Algorithms I/Lab.....	4
		Advisor approved Computer Science elective	3-4

Choose one:

CEN	4XX0/L	Networks and Systems I/Lab.....	4
COP	4331/L	Object-Oriented Programming/Lab.....	4
COP	4XX0/L	Data Structures and Algorithms II/Lab.....	4
COT	4420	Theory of Computation	3

Computer Information Systems Minor (19-20 sh)

The Computer Information Systems Minor provides students with basic knowledge of the software aspects of computer systems. Students will be utilize various software packages and gain programming, database, and web experience that facilitate managing information in net-centric business environments. CS and CIS majors may not earn this minor.

CEN	4721	Human-Computer Interaction	3
COP	2253	Java Programming.....	3
COP	3022/L	Intermediate Computer Programming	4
COP	4XX2	Network-Centric Software Applications	3
COP	4710	Database Systems.....	3

Choose one:

MAC	2233	Calculus with Business Applications.....	3
MAC	2311	Analytic Geometry and Calculus I.....	4

Game Development Minor (15 sh)

Students completing this minor will explore the popular field of game development. Students will be able to apply the game design principles and develop 2D and 3D games with software that is popular in the industry. Example software includes Flash 9.0 with ActionScript 3.0, 3Ds max, and 3D game studio. Students will be able to create first person shooter games, puzzle games, racing games, and educational games. CS and CIS majors can receive this minor.

CAP	3028	Introduction to Computer Game Programming.....	3
CAP	3XX0C	Game Design	3
CAP	4029	Game Programming 2.....	3
CAP	4XX0C	3D Modeling and Animation	3
PHY	3XX0	Physics and Mathematics for Game Programming.....	3

Information Technology Minor (21 sh)

The Information Technology Minor will enable students from all majors to acquire basic knowledge and skills in IT and computer applications through the completion of seven courses in the Department of Computer Science. Students will learn the nature and source of electronically stored data. They will have the opportunity to learn and apply a variety of software programs, and they will enhance computer skills appropriate to their fields of study. CS and CIS majors may not earn this minor.

CGS	2570	Personal Computer Applications.....	3
CGS	3604	Applications of Information Technology	3

Upper Division Computer Science Courses

3000-4000 level courses taught by the Department of Computer Science for which prerequisites, if any, have been satisfied ... 12

Choose one:

CGS	3464	Programming Using Visual Basic for Non-Majors	3
CGS	3823	Web Page Design	3
COP	2253	Programming Using Java.....	3
COP	2334	Programming Using C++.....	3

Internet Technologies Minor (18 sh)

The Internet Technologies Minor provides students with the skills necessary to utilize state-of-the-art tools to interface with the Internet. This minor includes courses addressing ecommerce, computer graphics applications, web page design, and the socio-economic impact of these emerging technologies. CS and CIS majors may not earn this minor.

CGS	3172	Web Design for e-Commerce.....	3
CGS	3523	Computer Graphics Applications.....	3
CGS	3559	Exploring the Internet	3
COP	3813	Internet Programming	3
CGS	3823	Web Page Design	3

Choose one:

COP	2253	Programming Using Java.....	3
COP	2334	Programming Using C++.....	3