COMPUTER SCIENCE

Degrees: Bachelor of Science
Specializations: Computer Science
Computer Information Systems
Fast Track BS to MS
Software Engineering
Minors: Computer Information Systems
Computer Science
Game Development
Information Technology
Certificates: 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.W. Bolyard, J.W. Coffey, D. Edwards, E. El-Sheikh, G. LaForte, J.D. Lewis, 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 [MAC X311]	4
+MAC	2312	Analytic Geometry & Calculus II [MAC X312]	4
+PHY	2048/L	University Physics I/Lab [PHY X048/X048L]	4
+PHY	2049/L	University Physics II/Lab [PHY X049/X049L or X049C]	4
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
COP	4634/L	Networks and Systems I	4
COP	4635/L	Networks and Systems II	4
CIS	3512	Software Documentation	3
COT	3011/L	Algorithms and Program Design	4
COP	3411/L	Data Structures and Algorithms I	4
COP	4412/L	Data Structures and Algorithms II	4
COP	4020	Programming Languages	4
COP	4331	Object-Orient Programming	4
CIS	4592	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

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

+ 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	3032	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	4610C	Theory and Fundamentals of Operating Systems	3
CNT	4007C	Theory and Fundamentals of Networks	3
COP	3022/L	Intermediate Computer Programming	4
COP	3813	Internet Programming	3
COP	4027/L	Advanced Computer Programming	4
COP	4710	Database Systems	3
COP	4814	Network-Centric Software Applications	3
COT	3100/L	Discrete Structures	4

Choose one of the following:

CAP	4770	Data Mining	3
COP	4723	Database Administration	3

Major-Related (12 sh)

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

Upper Division Electives (0 sh)

COMPUTER SCIENCE FAST-TRACK BS TO MS

Common Prerequisites (25 sh)

Same as Computer Science Specialization

General Studies (36 sh)

Same as Computer Science Specialization

Lower -Division Electives (0-12 Hours)

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 study course, CGS2060: Excursion in Computing is recommended as a lower-division elective.

Major Courses (74 Hours)

Undergraduate Courses

CDA	3101/L	Computer Organization	4
COP	4634/L	Systems and Networks I	4
COP	4635/L	Systems and Networks II	4
CIS	3512	Software Documentation	3
COT	3011/L	Algorithms and Program Design	4
COP	3411/L	Data Structures and Algorithms I	4
COP	4412/L	Data Structures and Algorithms II	4
COP	4020/L	Programming Languages	4
COP	4331/L	Object-Orient Programming	4
CIS	4592	Capstone Research Experience	4
COT	4420	Theory of Computation	3

Graduate Courses

CDA	6415	Advanced Computer Systems	4
COP	6025	Advanced Programming Languages	4

6000 level advisor-approved elective 3
5000/6000 level advisor-approved elective 15

Choose one:

CIS	6971	Thesis Course offered as 1-6 sh per semester	6
COT	6931	Computer Science Project (normally 3 sh in consecutive semesters)	6

Major-Related Courses (6 Hours)

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

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 Specialization

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, 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	3031	Software Engineering II	3
CEN	4721	Human-Computer Interaction	3
COP	4653	Embedded/Wireless Systems	3
CEN	4053	Software Engineering Management	3
CIS	4385	Cyber-Security Forensics	3
CIS	3512	Software Documentation	3
CIS	4327C	Capstone Systems Project	3
CIS	4610C	Theory and Fundamentals of Operating Systems	3
CNT	4007C	Theory and Fundamentals of Networks	3
COT	3011	Algorithms and Program Design	4
COP	3411/L	Data Structures and Algorithms I/Lab	4
COP	4710	Database Systems	3
COP	4412/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, Information Technology, 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.

COT	3011/L	Algorithms and Program Design/Lab	4
COP	3411/L	Data Structures and Algorithms I/Lab	4
Advisor approved Computer Science elective			3-4

Choose one:

CEN	4634/L	Networks and Systems I/Lab	4
COP	4331/L	Object-Oriented Programming/Lab	4
COP	4412/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	4814	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
COT	3701C	Game Design	3
CAP	4029	Game Programming 2	3
CAP	4033C	3D Modeling and Animation	3
PHY	3013	Physics and Mathematics for Game Programming	3

Information Technology Minor (18 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 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. IT, CS, and CIS majors may not earn this minor. Students must complete the required courses with a grade of C- or higher.

Choose one:

CGS	3464	Programming Using Visual Basic for Non-Majors	3
COP	2253	Programming Using Java	3
COP	2334	Programming Using C++	3

Required courses:

COP	2830	Script Programming	3
CGS	3604	Applications of Information Technology	3
CNT	4014C	IT Administration	3
COP	4710	Database Systems	3
CTS	4817	Web Server Administration	3