

# COMPUTER SCIENCE

Degrees: Bachelor of Science  
 Specializations: Computer Science, Computer Information Systems  
 Minors: Computer Science, Computer Information Systems, Information Technology, Internet Technologies  
 Certificate: Information Technology  
 Department: Computer Science  
 Building 79, Room 102  
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<http://www.cs.uwf.edu/csadvisor@cs.uwf.edu>  
 College: Arts and Sciences  
 Semester Hours Required for Degree: 120

Faculty: L.W. van Haar (Chairperson), S. Bagui, J.C. Bezdek, J.W. Bolyard, A.J. Cañas, J.W. Coffey, D. Edwards, T. Elbert (Emeritus), E. El-Sheikh, K.M. Ford, R. Harbor (Emeritus), 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 two specializations. The Computer Science (CS) Specialization includes the theoretical foundations of computer science and the study of algorithms, data structures, software engineering, computer architecture, and the concepts of programming languages.

The Computer Information Systems Specialization (CIS) provides the student with a foundation in information systems principles complemented by comprehensive instruction in principles of computer languages, problem solving, database concepts, and software engineering applications.

Contact the department for information concerning the certificate program.

## 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 are advised to check prerequisite requirements for all courses. Minimum grade requirements vary among departments.

Students should consult with their academic advisor for courses which may satisfy both the General Studies requirements and common prerequisites.

Electives in both the CS and CIS options may be chosen from the following list, provided the course is not a degree program requirement, and the student has all the specified prerequisites for the course:

CAP 4401	Introduction to Digital Image Processing .....	3
CAP 4410	Introduction to Computer Vision.....	3
CAP 4730	Computational Structures in Computer Graphics .....	3
CEN 4400	Introduction to Operations Research .....	3
CEN 4540	Computer & Network Security .....	3
CIS 4327	Systems Project .....	3

CIS 4340	Software Methods for Remote Databases.....	3
COP 3813	Internet Programming .....	3
COP 3835	Web Based Programming .....	3
COP 4173	Advanced Visual Basic Programming .....	3
COP 4331	Object Oriented Programming .....	3
COP 4710	Database Systems.....	3
COT 4400	Analysis of Algorithms .....	3
COT 4420	Theory of Computation.....	3

Cooperative education courses (up to 3 credits) are also acceptable electives.

Advanced topics courses (CAP, CDA, CEN, CIS, COP, and COT prefixes only) may be acceptable electives. In addition, 3000-5000 level electives that further the objectives of an individual program may also be chosen from the offerings of other departments (math, business, engineering, or the natural sciences). However, these additional elective choices require the approval of the Chairperson of the Computer Science Department.

Course descriptions are listed alphabetically by prefix in the back of this *Catalog*.

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## COMPUTER SCIENCE SPECIALIZATION

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### **General Studies (36 sh)**

For additional information see the General Studies section of this *Catalog*. Students should take MAC 2311 and MAC 2312 to satisfy the mathematics component, PHY 2048/2048L and PHY 2049/2049L to satisfy the natural sciences component, and PHI 2603 to satisfy the humanities/values component of General Studies.

### **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.

Students should take COP 2253 as part of the common prerequisites or as a lower division elective.

### **Major (36-39 sh)**

CDA 3100	Microprocessor Systems .....	3
CEN 4516	Computer Networks .....	3
CIS 3021	Science of Computing .....	3
COP 3022	Intermediate Computer Programming .....	3
COP 3530	Data Structures & Algorithms .....	3
COP 4020	Programming Languages.....	3
COP 4600	Operating Systems.....	3
COT 3100	Applications of Discrete Structures .....	3
COT 4400	Analysis of Algorithms .....	3
COT 4420	Theory of Computation.....	3

*Choose two:*

CEN 3031	Introduction to Software Engineering.....	3
COP 4601	Software Systems .....	3
COP 4710	Database Systems .....	3

*If not taken in the lower division:*

COP 2253	Programming Using Java.....	3
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### **Major-Related (21-24 sh)**

ENC 3240	Technical Writing .....	3
MAD 3107	Discrete Mathematics and Applications .....	3
MAS 3105	Linear Algebra .....	3
STA 4321	Introduction to Mathematical Statistics I.....	3
	3000/4000 level electives chosen in consultation with advisor.....	9-12

List of pre-approved electives available in department.

### **Upper Division Electives (0 sh)**

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## COMPUTER INFORMATION SYSTEMS SPECIALIZATION

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### **General Studies (36 sh)**

For additional information see the General Studies section of this *Catalog*. Computer Information Systems majors should take STA 2023 and MAC 2233 to satisfy the mathematics component, ECO 2013 to satisfy the social science/socio-political component, and PHI 2603 to satisfy the humanities/values component of General Studies.

### **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 (39 sh)

CDA 3100	Microprocessor Systems .....3
CEN 3031	Introduction to Software Engineering .....3
CEN 4400	Introduction to Operations Research .....3
CEN 4516	Computer Networks .....3
CIS 3021	Science of Computing .....3
CIS 4327	Systems Project .....3
COP 3022	Intermediate Computer Programming .....3
COP 3530	Data Structures & Algorithms .....3
COP 4020	Programming Languages .....3
COP 4600	Operating Systems .....3
COP 4601	Software Systems .....3
COP 4710	Database Systems .....3
COT 3100	Applications of Discrete Structures .....3

### Major-Related (21 sh)

ENC 3240	Technical Writing .....3
MAD 3107	Discrete Mathematics and Applications .....3
3000/4000 level advisor-approved electives .....15	

### Upper Division Electives (0 sh)

## MINORS

The Department of Computer Science offers four Minors: Computer Science, Computer Information Systems, Information Technology, and Internet Technologies. Students must complete all course work for the minor with a grade of "C-" or higher. Electives in all minor options may be chosen from the following categories, provided the course is not a minor program requirement and the student has all the specified prerequisites for the course:

CAP 3/4xxx	Computer Applications
CDA 3/4xxx	Computer Design/Architecture
CEN 3/4xxx	Computer Engineering
CGS 3/4xxx	Computers, General Studies
CIS 3/4xxx	Computer Science and Information Systems
COP 3/4xxx	Computer Programming
COT 3/4xxx	Computing Theory

Consult the Computer Science Department for a suggested sequence of 3000/4000 level elective courses appropriate for each minor.

### Computer Science Minor (24-25 sh)

The Computer Science Minor provides students with knowledge of both basic hardware and software aspects of computer systems. Fundamentals of computer architectures and programming experience utilizing assembly language to high-level languages prepare students in this minor for software development on a variety of computing platforms. CS and CIS majors may not earn this minor.

CDA 3100	Microprocessor Systems .....3
CIS 3021	Science of Computing .....3
COP 2253	Programming Using Java .....3
COP 3022	Intermediate Computer Programming .....3
COP 3530	Data Structures & Algorithms .....3
COT 3100	Applications of Discrete Structures .....3
MAD 3107	Discrete Mathematics and Applications .....3

Choose one:

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

### Computer Information Systems Minor (18 sh)

The Computer Information Systems Minor provides students with basic knowledge of the software aspects of computer systems. Students will be exposed to the utilization of various software packages and gain programming experience with Active Server Pages (ASP) and database systems that facilitate managing information in business environments. CS and CIS majors may not earn this minor.

CGS 2570	Personal Computer Applications .....3
CIS 3021	Science of Computing .....3
CIS 4340	Software Methods for Remote Databases .....3
COP 2253	Programming Using Java .....3
COP 4710	Database Systems .....3
3000/4000 level advisor-approved computer elective .....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
CGS 3823	Web Page Design .....	3

*Choose one:*

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

*Choose one:*

COP 3813	Internet Programming .....	3
COP 3835	Web Based Programming .....	3