

COMPUTER SCIENCE (CS)

The Department of Computer Science sponsors courses of study leading to a Bachelor of Science degree with a major in Computer Science (CS) or with a major in Computer Science - Computer Information Systems (CIS) option. The Department also sponsors minors in both Computer Science and Computer Information Systems, and a computer networking (CN) certification program.

CS and CIS curricula emphasize structured programming, problem solving, and software engineering, and require significant hands-on experience using hardware and software resources available in state-of-the-art computer laboratories maintained by the Department. To ensure up-to-date content, CS and CIS curricula are continually undergoing revision. Complementing the department's full-time faculty, several highly qualified, practicing, computer professionals serve as adjunct faculty. In addition to teaching, the adjunct faculty assist full-time faculty to revise courses and to design courses of study that are responsive to the dynamic external computer science environment—the demands of business, industry, government, and research organizations.

The CS curriculum is designed to prepare students for the job market and/or for graduate school. With regard to the student's immediate objective to analyze problems and design software solutions as part of a software development team in industry, government, and/or a research organization, or to meet admission requirements of graduate programs in Computer Science, approved electives should be chosen carefully.

The CIS curriculum focuses on problem solving in a business environment. The goal of this curriculum is to prepare the student for the job market as a technically oriented member of an information technology development team.

The Computer Information Systems (CIS) program is a multi-disciplinary program comprised of both computer science and business courses. In addition to most of the computer programming courses, students take a wide range of business courses, including accounting, economics, management, and statistics. CIS majors take the same rigorous general education courses taken by all CS majors. Students pursuing the CIS degree should be good problem-solvers and critical thinkers as well as technically savvy. Most CIS majors select careers as systems analysts or programmers of business information systems.

Comprised of eight courses (See Course Descriptions), the Computer Networking (CN) curriculum is approved by the National Association of Communication Systems Engineers (NACSE), a non-profit, vendor neutral association of Information Science and Information Technology professionals. The student who successfully completes CN 301, CN 302, CN 303, CN 304, and a locally administered certification exam can certify as a NACSE Associate Network Specialist (NANS); the student who successfully completes all eight CN courses and a locally administered certification exam can certify as a NACSE Senior Network Specialist (NSNS). The course textbooks are provided as a licensed package covering all topics leading to the NANS or the NSNS certification including Web based supplemental materials. WestNet products are not authorized for participation in textbook buy-back, used textbook, sharing or redistribution programs.

Regarding work-based academic credit for CS and/or CIS courses, when the work experience has been evaluated and accepted as appropriate, a written examination covering the content area of the course(s) will be administered by the Department. If a passing grade is earned, academic credit will be awarded. Work-based academic credit will not be awarded for any CN course.

The Computer Science Department imposes the following requirements and restrictions on accepting computer science courses from other institutions:

- No RPG or computer applications courses will be accepted.
- Not more than 3 semester hours of FORTRAN will be accepted.
- Introduction to Information Systems and Basic Programming will not be accepted as electives.
- "System Analysis and Design" courses cannot be substituted for CS 451 or CS 452.
- "Work-based experience" credit cannot be substituted for CS 451 or CS 452.
- Locally administered certification examination.

Computer Networking Minor

A student majoring in computer science or computer information systems may complete a minor in Computer Networking by completing 16 semester hours of CN courses. Students in other majors must complete the following additional courses:

MA 308 Discrete Mathematics	3 semester hours
CS 309 Introduction to Digital Logic Design	3 semester hours
CS 317 Computer Science I (C++)	3 semester hours
CS 318 Computer Science II (C++)	3 semester hours
CS 409 Computer Organization and Architecture	3 semester hours
CS 415 Computer System Software	3 semester hours
TOTAL ADDITIONAL COURSES	18 semester hours

Computer Science Minor

A minor in Computer Science requires 22 semester hours distributed in the following way:

MA 308 Discrete Mathematics	3 semester hours
CS 309 Introduction to Digital Logic Design	3 semester hours
CS 309L Digital Design Lab	1 semester hour
CS 318 Computer Science II (C++)	3 semester hours
CS 372 Data Structures	3 semester hours
CS 409 Computer Organization and Architecture	3 semester hours
CS 414 Programming Language	3 semester hours
** Computer Science Elective (300-400 level)	3 semester hours
TOTAL HOURS IN MINOR:	22 semester hours

**CIS 440 is the ONLY CIS course that will apply toward a CS minor.

Other CIS courses will not apply toward a CS minor.

Bachelor of Science - Computer Science Major
MAJOR CODE: 11.0101A

Program components for the Bachelor of Science degree with a major in Computer Science include:

1. **APPLICABLE GENERAL UNIVERSITY REQUIREMENTS:**

To graduate, each student must:

- complete a minimum of 33 semester hours of the last 39 semester hours at ASU.
- complete 60 to 64 semester hours of upper level college/university credit (300-400 level courses).
- complete a minimum of 15 semester hours of upper (300/400) level coursework in his or her major at Athens State University, not including courses taken by consortium arrangement. School or departmental regulations may require more than 15 semester hours of coursework in the major at Athens State University.
- complete all course requirements for major(s).
- complete all course requirements for minor (if applicable).
- complete all of the general education requirements for the degree.
- attain an overall grade point average of 2.0, a 2.0 on all coursework attempted at Athens State University and at least a 2.0 in the major field. School or departmental regulations may require more than a 2.0 grade point average (see major requirements in each discipline).
- complete the total hour requirement as specified by the degree.
- complete the teacher certification requirements (if applicable).

EACH STUDENT MUST ASSUME RESPONSIBILITY FOR KNOWING THE ACADEMIC REQUIREMENTS FOR THE DEGREE THAT IS BEING PURSUED.

2. **GENERAL EDUCATION REQUIREMENTS:**

Area I. Written Composition	6 semester hours	__ __
 Area II. Humanities/Fine Arts (12 semester hours)		
At least one fine arts course	3 semester hours	__
At least one literature course	3 semester hours	__
Other Humanities/Fine Arts courses	6 semester hours	__ __
 Area III. Mathematics and Natural Sciences (11 semester hours)		
Precalculus Algebra <u>or</u> Precalculus Algebra and Trigonometry	3 semester hours	__
Natural Sciences (lab based)	8 semester hours	__ __
 Area IV. History/Behavioral and Social Sciences (12 semester hours)		
At least one history course	3 semester hours	__
Other History/Behavioral or Social Science courses	9 semester hours	__ __ __
 <u>TOTAL GENERAL EDUCATION REQUIREMENTS</u>		
<u>41 SEMESTER HOURS</u>		

3. **MAJOR PREREQUISITE COURSES (PRE-PROFESSIONAL COURSES):**

**Precalculus Trigonometry	3 semester hours	___
Calculus I	4 semester hours	___
Calculus II	4 semester hours	___
Calculus III	4 semester hours	___
C++	3 semester hours	___
Computer Programming Class	3 semester hours	___
General electives	0-5 semester hours	___

**If Precalculus Algebra (3 semester hours) is completed to satisfy the Area III mathematics requirement, the student should complete Precalculus Trigonometry (3 semester hours) in addition to Precalculus Algebra. Completion of Precalculus Algebra and Trigonometry (4 semester hours) will satisfy both the Area III mathematics requirement and the Area V requirement for Trigonometry.

TOTAL MAJOR PREREQUISITE HOURS: 19-23 SEMESTER HOURS

TOTAL GEN. ED. REQ. & MAJOR PREREQUISITE HOURS: 60-64 SEMESTER HOURS

4. **PROFESSIONAL COURSES:**

Linear Algebra or		
MA 310 Matrices and Linear Algebra	3 semester hours	___
MA 308 Discrete Mathematics	3 semester hours	___
MA 320 Modern Algebra	3 semester hours	___
Two of the following:	6 semester hours	___
MA 316 Vector Analysis		
MA 421 Differential Equations		
MA 423 Numerical Analysis		
MA 331 Applied Statistics of Probability I		
CN 301 Networking Fundamentals	2 semester hours	___
CS 309 Introduction to Digital Logic Design	3 semester hours	___
CS 309L Digital Design Lab	1 semester hour	___
CS 318 Computer Science II (C++)	3 semester hours	___
CS 340 Assembly Language Programming	3 semester hours	___
CS 372 Data Structures	3 semester hours	___
CS 409 Computer Organization and Assembly Language Programming	3 semester hours	___
CS 414 Programming Languages	3 semester hours	___
CS 415 Computer Systems Software	3 semester hours	___
CS 417 Object Oriented Applications	3 semester hours	___
CS 451 Software Engineering	3 semester hours	___
CS 452 Senior Software Engineering Project	3 semester hours	___
CS 452L Senior Software Engineering Project Lab	1 semester hour	___
CS 472 Data Structures and Algorithm Analysis	3 semester hours	___
Upper Level 300/400 Computer Science Electives***	6 semester hours	___

***Any computer science (CS), computer information systems (CIS), or computer networking (CN) course to be used as an upper level computer science elective must have prior approval of the student's Faculty Advisor.

TOTAL PROFESSIONAL HOURS 58 SEMESTER HOURS

5. The Computer Science major must complete a minimum of 24 semester hours of upper division 300/400 level coursework in computer science (CS), Computer Information Systems (CIS), or Computer Networking (CN) at Athens State University. At least 6 semester hours of CS, CIS, or CN electives must be completed at Athens State University.

6. A minor is not required.

7. **GENERAL ELECTIVES 6 Semester Hours** ___

8. **TOTAL HOURS FOR GRADUATION 124-128 SEMESTER HOURS**

9. **Pre-assessment and Exit Examinations:**

The Department of Computer Science requires all CS majors to complete both an entrance and an exit examination. Used to place the student in the appropriate initial course in the CS or CIS curriculum, the **entrance examination** is developed by the Department: this examination will be graded locally and the results known immediately. Used to assess the CS and CIS programs of study, the **exit examination** is a nationally recognized and normed examination. For a CS major to graduate from Athens State University, the exit examination must be completed; however, the result of this examination is not a criterion for graduation.

Bachelor of Science - Computer Science Major
(Computer Information Systems Option)
MAJOR CODE: 11.0101B

Program components for the Bachelor of Science degree with a major in Computer Science - Computer Information Systems Option) include:

1. **APPLICABLE GENERAL UNIVERSITY REQUIREMENTS.**

To graduate, each student must:

- complete a minimum of 33 semester hours of the last 39 semester hours at ASU.
- complete 60 to 64 semester hours of upper level college/university credit (300-400 level courses).
- complete a minimum of 15 semester hours of upper (300/400) level coursework in his or her major at Athens State University, not including courses taken by consortium arrangement. School or departmental regulations may require more than 15 semester hours of coursework in the major at Athens State University.
- complete all course requirements for major(s).
- complete all course requirements for minor (if applicable).
- complete all of the general education requirements for the degree.
- attain an overall grade point average of 2.0, a 2.0 on all coursework attempted at Athens State University and at least a 2.0 in the major field. School or departmental regulations may require more than a 2.0 grade point average (see major requirements in each discipline).
- complete the total hour requirement as specified by the degree.
- complete the teacher certification requirements (if applicable).

EACH STUDENT MUST ASSUME RESPONSIBILITY FOR KNOWING THE ACADEMIC REQUIREMENTS FOR THE DEGREE THAT IS BEING PURSUED.

2. **GENERAL EDUCATION REQUIREMENTS:**

Area I.	Written Composition	6 semester hours	__	__
Area II.	Humanities/Fine Arts (12 semester hours)			
	At least one fine arts course	3 semester hours	__	
	At least one literature course	3 semester hours	__	
	Other Humanities/Fine Arts courses	6 semester hours	__	__
Area III.	Mathematics and Natural Sciences (11 semester hours)			
	Precalculus Algebra or higher	3 semester hours	__	
	Natural Sciences (lab based)	8 semester hours	__	__
Area IV.	History/Behavioral and Social Sciences (12 semester hours)			
	At least one history course	3 semester hours	__	
	Economics (ECO 231 Principles of Economics) required	3 semester hours	__	
	Other History/Behavioral or Social Science courses	6 semester hours	__	__
<u>TOTAL GENERAL EDUCATION REQUIREMENTS</u>		<u>41 SEMESTER HOURS</u>		

3.	MAJOR PREREQUISITE COURSES (PRE-PROFESSIONAL)	
	Business Calculus	3 semester hours ____
	Principles of Accounting	3 semester hours ____
	Business Statistics	3 semester hours ____
	Microcomputer Applications	3 semester hours ____
	C++ Programming	3 semester hours ____
	Computer Programming Courses	6 semester hours ____
	General electives	2 semester hours ____
	TOTAL MAJOR PREREQUISITE HOURS:	19-23 SEMESTER HOURS

TOTAL GEN. ED. REQ. & MAJOR PREREQUISITE HOURS: 60-64 SEMESTER HOURS

4.	PROFESSIONAL COURSES:	
	MG 350 Financial Management	3 semester hours ____
	MG 346 Principles of Management	3 semester hours ____
	MG 353 Project Management	3 semester hours ____
	MK 331 Marketing Principles	3 semester hours ____
	MA 308 Discrete Mathematics	3 semester hours ____
	CS 309 Digital Logic Design	3 semester hours ____
	CS 309LDigital Logic Design Lab	1 semester hour ____
	CS 318 Computer Science II (C++)	3 semester hours ____
	CIS 325 The Digital Enterprise	3 semester hours ____
	CIS 365 Visual Application Development	3 semester hours ____
	CS 372 Data Structures	3 semester hours ____
	CS 417 Object Oriented Applications	3 semester hours ____
	CIS 440 Database Systems	3 semester hours ____
	CIS 450 Human-Computer Interaction	3 semester hours ____
	CS 451 Software Engineering	3 semester hours ____
	CS 452 Software Engineering Project	3 semester hours ____
	CS 452L Software Engineering Project Lab	1 semester hour ____
	Upper Level Computer Science Electives*	6 semester hours ____

*Any computer science (CS), computer information systems (CIS), or computer networking (CN) course to be used as an upper level computer science elective must have prior approval of the student's Faculty Advisor.

TOTAL PROFESSIONAL HOURS 53 SEMESTER HOURS

5. The Computer Information Systems major must complete a minimum of 24 semester hours of upper division 300/400 level coursework in computer science (CS), Computer Information Systems (CIS), or Computer Networking (CN) at ASU. At least 6 semester hours of CS, CIS, or CN electives must be completed at Athens State University.

6. A minor **is not** required.

7. **GENERAL ELECTIVES 11 Semester Hours ____**

8. **TOTAL HOURS FOR GRADUATION 124-128 SEMESTER HOURS**

9. **Pre-assessment and Exit Examination:**

The Department of Computer Science requires all CS majors to complete both an entrance and an exit examination. Used to place the student in the appropriate initial course in the CS or CIS curriculum, the **entrance examination** is developed by the Department: this examination will be graded locally and the results known immediately. Used to assess the CS and CIS programs of study, the **exit examination** is a nationally recognized and normed examination. For a CS major to graduate from Athens State University, the exit examination must be completed; however, the result of this examination is not a criterion for graduation.

Computer Information Systems Minor

A minor in Computer Information Systems requires 21 semester hours distributed in the following way:

MA 308 Discrete Mathematics	3 semester hours
CS 317 Computer Science I (C++)	3 semester hours
CS 318 Computer Science II (C++)	3 semester hours
CIS 325 The Digital Enterprise	3 semester hours
CIS 365 Visual Application Development	3 semester hours
Computer Science or Computer Information Systems electives (300-400 level)	6 semester hours
TOTAL HOURS IN MINOR:	21 semester hours