COMPUTER SCIENCE, ASSOCIATE IN SCIENCE DEGREE

Banner code: 2_AS_CS
Control number: 35877
Financial aid: Eligible

The Computer Science Department provides students opportunities to study the computing environment for business and scientific solution automation. Students who enroll in the Associate in Science in Computer Science degree prepare for transfer education at a four-year university. An advanced degree such as a baccalaureate degree will prepare students for careers related to business and science programming solutions, and management. Computer Science Majors are introduced to computing history and evolution, software development, structures and procedures for data manipulation, object oriented methodology, symbolic logic tools for computational algorithms, and computing solutions at machine language level of implementation. Critical thinking and problem solving skills are acquired through individual and group project assignments. Students are encouraged to develop academic and programming skills enabling them to be successful in further study or employment. Students will be prepared to transfer in order to complete a baccalaureate degree in Computer Science.

Program Level Learning Outcomes

Upon completion of this program, students will be able to:

1. Design software components and specification to satisfy small business and scientific problem requirements.
2. Design and implement algorithms that include basic computation techniques, simple I/O, conditional and iterative structures, and the definition of functions.
3. Utilize object oriented principles for class hierarchies and inheritance.
4. Implement programs at machine language level using fundamental high-level programming constructs.
5. Describe formal tool of symbolic logic as they relate to real-life situation, program correctness, database queries, and algorithms.

Associate Degree Graduation Requirements

(See GWC website (http://www.goldenwestcollege.edu) for the most up-to-date information on Associate Degree Requirements (https://catalog.cccd.edu/golden-west/general-education/asssociate-degree/).)

1. Completion of General Education Requirements by one of the following methods:
   a. Completion of a minimum of 18 units as listed under Areas A through E, including the Cultural Diversity Requirement.
   b. Completion of a minimum of 39 units of CSU General Education requirements. Students who complete this pattern are also eligible to receive the Certificate of Achievement in CSU General Education Breadth (https://catalog.cccd.edu/golden-west/general-education/csu-ge/).
   c. Completion of a minimum of 34 (UC) or 37 (CSU) units of Intersegmental General Education Transfer Curriculum (IGETC) requirements. Students who complete this pattern are also eligible to receive the Certificate of Achievement in IGETC (https://catalog.cccd.edu/golden-west/general-education/igetc/).
2. Completion of a Major or Area of Emphasis—a minimum of 18 units.
3. Completion of additional elective units to a total of 60 units.
4. 2.0 overall Grade Point Average at GWC and 2.0 overall Grade Point Average for all colleges attended.
5. At least 12 units completed at GWC.

Students should consult a GWC counselor in order to select the best pathway to meet their educational goals. For students who intend to transfer, the choice of general education will be specific to both their major and transfer institution.

Course	Title	Units
Required Courses		
CS G153	Java Programming, Introduction	4
or CS G175	C++ Programming	
CS G154	Data Structures with Java	4
or CS G189	Data Structures With C++	
CS G242	Computer Architecture and Organization	3
CS G262	Discrete Structures	3
MATH G180	Calculus 1	5
MATH G185	Calculus 2	5
PHYS G185	Calculus Based Physics: Mechanics	4
PHYS G280	Calculus Based Physics: Electricity/ Magnetism	4
Major Total		**32**
GE Pattern (Local, CSU GE-Breadth, or IGETC)		**18-39**
Total Units		**60**

Recommended Program Sequence

These sequences are general course maps for students to finish all major and general education requirements for two-year completion of degrees, completion of short-term certificates, and/or fulfillment of transfer requirements. However, this may not be an appropriate path for all students. The two-year sequence is based on English and Math placement and meeting other course prerequisites. **Students are advised to meet with a GWC Counselor to review course selections and sequences to ensure that completion of this program will meet a student's transfer and career goals.**

Year 1:

Course	Title	Units
Semester 1		
CS G175	C++ Programming	4
or CS G153	Java Programming, Introduction	
MATH G180	Calculus 1	5
ENGL G100	Freshman Composition ^	4
Elective coursework for a total of 3 units		3
Units		*16*

Course	Title	Units
Semester 2		
CS G189	Data Structures With C++	4
or CS G154	Data Structures with Java	
PHYS G185	Calculus Based Physics: Mechanics	4

Course	Title	Units
Area E: Lifelong Understanding and Self-Development or Area A: English Language, Area B: Natural Sciences, Area C: Arts & Humanities, Area D: Social & Behavioral Sciences		3
Area C: Arts & Humanities course		3
Elective coursework for a total of 3 units		3
Units		*17*

Year 2:

Course	Title	Units
Semester 3		
CS G242	Computer Architecture and Organization	3
MATH G185	Calculus 2	5
Area D: Social & Behavioral Sciences course		3
Elective coursework for a total of 3 units		3
Units		*14*

Course	Title	Units
Semester 4		
CS G262	Discrete Structures	3
PHYS G280	Calculus Based Physics: Electricity/ Magnetism (Spring)	4
Cultural Diversity requirement [#]		3
Elective coursework for a total of 3 units		3
Units		*13*
Total minimum units required		**60**

[#] Cultural Diversity requirement (https://catalog.cccd.edu/golden-west/general-education/associate-degree/) list of approved courses

[^] Program sequence may not be recommended for students who self-place into ENGL G100S. Students should see a Counselor for appropriate advisement.