



Certificate/AS-Computer Software Developer 19-20

Recommended Program Sequence

All courses with a + sign indicate a pre-requisite or co-requisite

Term 1 (Semester: Maximum 19 units, 15 units recommended)	Units	Term 5 (Semester: Maximum 19 units, 15 units recommended)	Units
CIS 101, Introduction to Computer Information Science	3	CIS 113+, Data Structures	3
MATH 128+, College Algebra for Liberal Arts <i>or</i> MATH 150+, Calculus & Analytic Geometry <i>or</i> MATH 220+, Linear Algebra	3	CIS 123, Assembly Language and Computer Architecture	3
General Education Area D1 (English 101+)	3	General Education Area A (Science)	3
General Education Area E (Additional Breadth)	3	General Education C (Humanities)	3
General Elective	3	Program Elective	3
Total	15	Total	15
Term 2: (Intersession(6/3)-Summer (9/6) Max./Recommended units)		Term 2: (Intersession(6/3)-Summer (9/6) Max./Recommended units)	
Term 3 (Semester: Maximum 19 units, 15 units recommended)	Units	Term 7 (Semester: Maximum 19 units, 15 units recommended)	Units
CIS 111, Introduction to Programming & Algorithms	3	CA 131, Relational Database Management and Design	3
CIS 121, Computer Mathematics	3	CA 151, Microcomputer Operating Systems	3
CIS 161, Intro. to C Programming	3	Gen. Ed. Area F (Diversity Stds.)(BUS 212 or MGT 212 recommended)	3
PHIL 110, Intro. to Logic	3	General Education Area B (Social Science)	3
General Education Area D2	3	Program Elective	3
Total	15	Total	15
Term 2: (Intersession(6/3)-Summer (9/6) Max./Recommended units)		Transfer or Graduate	

Take Summer or Intersession classes if needed to complete the program in a timely manner.

The state requires all students to have a Comprehensive Educational Plan. Make a counseling appointment as soon as enrollment is established on any term. Come by the Counseling Center or call.

Certificate/Major Required Courses:	Units	AS General Education: At least 3 units from each of the following areas below: A, B, C, D1, D2, E, and F. Minimum Total GE Units Required 21	
CA 131, Relational Database Management and Design	3	Area A Natural Sciences: (min. 3 units)	
CA 151, Microcomputer Operating Systems	3		
CIS 101, Introduction to Computer Info. Science	3		
CIS 111, Introduction to Programming & Algorithms	3		
CIS 113+, Data Structures	3		
CIS 121, Computer Mathematics	3		
CIS 123, Assembly Language and Computer Architecture	3		
CIS 161, Introduction to C Programming	3		
MATH 128+, College Algebra for Liberal Arts or MATH 150+, Calculus & Analytic Geometry <i>or</i> MATH 220+, Linear Algebra	3-5		
PHIL 110, Intro. to Logic	3		
Program Electives (see below)	4-6	Area B Social & Behavioral Sciences: (min. 3 units)	
Total Minimum Units Required for Certificate/Major	36		
Program Electives: Complete 4-6 units from the following:			Area C Humanities: (min. 3 units)
CIS 157, Introduction to LINUX	3		
CIS 173+, Introduction to C++ Programming	3		
CIS 174, Introduction to C#.NET Programming	3		
CIS 175+, Java Programming	4		
CIS 199+, Occupational Work Experience	1-8		
MATH 128+, College Algebra for Liberal Studies	3		
MATH 140+, Precalculus	5		
MATH 150+, Calculus and Analytical Geometry	5		
MATH 220+, Linear Algebra	4		
<i>other requirements for degree</i>		Area D Arts & Humanities: (min. 3 units)	
General Education	21-27		
Proficiency (See Proficiency Requirements)	*		
Electives	0-3		
Minimum Units Required for AS Degree	60		
Other Requirements:			Area E Languages: (min. 3 units)
• Minimum grade of "C" required on each course			
• Maximum of 6 pass/no-pass units accepted for the Certificate			
• Maximum of 12 pass/no-pass units accepted for the Degree			
• Minimum of 9 units must be completed at AVC for the major/certificate			
• Refer to catalog or online website for course listings and descriptions			
• Substitutions, with prior permission, may be made for certain courses that not be offered in a two-year period			
		Area F Foreign Languages: (min. 3 units)	

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FTV 101, 103, 107, 108, 201, 203, 241, 251, 261
 GER 101, 102+, 201+, 202+
 HIST 115
 ID 150, 201
 LATN 101, 102+, 201+
 MUS 101, 105, 111, 131, 132+, 151+, 153+, 185+, 231+, 232+, 251A+,
 251B+, 253A+, 253B+
 MUSC 102, 103, 107, 108
 PHIL 105, 106, 108, 109
 PHOT 107
 PHTC 101+, 150+, 201+
 SPAN 101, 110SS, 102+, 201+, 202+, 210SS+, 220SS+
 THA 101, 102, 103, 110, 115A, 115B+, 116A+, 116B+, 117A+, 117B+,
 118A+, 118B+, 121A, 121B, 130, 133, 225+, 239

Area D Language & Rationality: (min. 3 units from (1) and 3 units from (2))

1. *Academic Composition:* Courses fulfilling the written composition requirement shall be designed to include both expository and argumentative writing.

ENGL 101+

2. *Communication and Analytical Thinking*

BUS 113+

CA 103

CIS 101, 111, 141, 157, 161

COMM 101, 103, 107, 109, 112, 114, 115, 217+, 219+

ENGL 102+, 103+

GEOG 201, 205

MATH 102+, 110+, 115+, 116+, 120+, 124+, 128+, 135+, 140+, 148+
 150+, 160+, 220+, 230+, 250+

PHIL 101, 106, 110, 201+

Area E - Additional Breadth: (min. 3 units)

From areas A**, B**, C**, D2, ** or

CFE 102 NF 100, 102, 103, 110, 150

COMM 103, 107, 219+ PSY 212

DFST 105 SOC 111, 116

HD 100, 101, 102, 103, 105

HE 101, 120, 201

ID 100, 120

KINT 100

LIB 107, 110

MUSC 108

Any DA activity course(s) from DA102-205, except DA 107A-C, 108, 109, and 111.

Any Kinesiology Fitness (KINF) activity course, Intercollegiate Athletics (IATH) activity course, or up to 4 units for military experience.

**** Courses must be taken from a discipline not previously selected.**

Area F Diversity Studies: (min. 3 units)

ANTH 102, 112	FTV 201, 203
BUS 212	HE 201+
CFE 116+	HIST 110, 111, 113
COMM 114, 217+, 219+	MUSC 107, 108
DFST 105, 106	POLS 202+
ECON 110	SOC 105, 110, 116+
ENGL 250+, 253+, 256+, 257+, 259+	THA 239

Proficiency Requirements

Proficiency requirements exist for the areas of Reading, Writing and Math. Students must demonstrate competency in each of these areas in order to be eligible for the associate degree.

A. READING

Complete ENGL 101 with a "C" or better or completion of READ 099 with a minimum grade of "P" (Pass), or completion of an Associate Degree or higher from a regionally accredited institution of higher education.

B. WRITING

Completion of ENGL 101 with a minimum grade of "C." NOTE: ENGL 101 may be taken with the Pass/No Pass option; however, students are cautioned that other colleges and universities may not accept ENGL 101 courses taken on a Pass/No Pass basis, especially for satisfaction of general education and major requirements. Students planning to transfer should check college catalogs for applicable policies.

C. MATHEMATICS

Completion of MATH 102 or higher or CIS 121 with a satisfactory grade or placement by AVC assessment into a math course higher than MATH 102.

***Fulfilling proficiencies** will not require any extra units if the competencies are demonstrated by including the required courses in the general education, or major requirements, or by satisfying the reading proficiency through AVC's policy.

Electives: The remaining number of units (up to a minimum of 60) are considered electives.

Any course that has already been counted toward (1) the general education requirements, or (2) the major, cannot be used as an elective. Any course with a designation of "AVC" at the end of a course description can be used as an elective.

Grade Point Average Requirement: An overall grade point average of 2.0 ("C" average) is required.

Double Counting: While a course might satisfy more than one general education requirement, it may not be counted more than once for these purposes. A course may be used to satisfy both a general education requirement and a major or area of emphasis requirement.

Residency: Minimum of 12 units completed at AVC with a minimum of 9 of those units completed from the certificate/major. (credit earned by examination will not be included in these 12 units) Title 5, Section 54000:<http://ccr.oal.ca.gov>

Requirements for Two or More Associate Degrees: To be eligible for multiple associate degrees, a student must have completed all of the graduation requirements for each degree.

Transfer: Students planning to continue studies at a four-year college or university after AVC should visit the Transfer Resource Center or the Counseling Center and consult with a counselor as soon as possible to develop a plan of studies. Additional preparation for the major information on official transfer articulation agreements from AVC to many CSU/UC campuses can be found at the following Web site: www.assist.org

The "Catalog Rights Policy" sets forth the criteria used for determining the degree requirements under which students may graduate. Please refer to the AVC Catalog for a detailed description or consult with a counselor.

Advisory: A condition of enrollment that a student is advised, but not required, to meet before or in conjunction with enrollment in a course or educational program.

Prerequisite: A condition of enrollment that a student is required to meet in order to demonstrate current readiness for enrollment in a course or educational program.

Prerequisites are enforced and a student will be blocked from enrolling or involuntarily dropped after enrolling if the student does not meet the stated prerequisite. A student must complete a course prerequisite with a satisfactory grade of A, B, C or P (pass).

Corequisite: A condition of enrollment consisting of a course that a student is required to simultaneously take in order to enroll in another course. Corequisites are enforced and a student will be blocked from enrolling if the student does not meet the stated co-requisite.