

COMPUTER PROGRAMMING AND ANALYSIS (SOFTWARE DEVELOPMENT)

Associate in Science Degree (CIP# 1511020101)

This program is designed for students who wish to develop skills in computer software development and analysis. The core courses provide knowledge and hands-on training in the foundations of computer technology, computer programming, programming analysis and design, and Web applications development. This program is designed for students who seek immediate employment, and it provides the option for transfer to a Bachelor's degree.

Students are strongly encouraged to consult a Student Success Coach in the department office for assistance in determining the best education plan for their career goals.

Although scheduling may not always provide for the following progression of courses, students should use the foundation, intermediate and advanced course sequence as a guide in program planning.

All degree-seeking students must satisfy entry testing requirements and satisfactorily complete all mandatory courses in reading, student success, mathematics, English, and English for Academic Purposes in which the student is placed.

Alternative Ways to Earn Credit toward this Degree

Graduates of specific programs at Orange Technical College and Osceola Technical College, as well as other institutions may be eligible to receive college credit for courses in this program. You may also be eligible to receive credit toward this degree if you have earned one of the approved Gold Standard industry certifications or Career Pathways credit. To learn more about Valencia's award of credit options, visit <https://valenciacollege.edu/academics/programs/as-degree/credit-industry-certification-agreements.php>. Eligible students should contact the Student Success Coach in their academic department for more information about the requirements for the award of credit.

College Credit Technical Certificates

The Computer Programming A.S. degree also offers the following college credit certificate programs. These certificates can put you on the fast-track to reaching your career goals. They are designed to equip you with a specialized skill set for entry-level employment or to upgrade your skills for job advancement. Most can be completed in one year or less, and all of the courses in the certificates are embedded in the A.S. degree. You can earn the certificates as you progress through your A.S. Degree or as a separate, stand-alone credential. Click on the Certificate tab at the top of the page for more information about the certificates that are offered.

Computer Programming Specialist (18 credits) (CIP # 0511020103)

- Computer Programming Specialization
- Web Development Specialization

Computer Programming (33 credits) (CIP # 0511020200)

- Computer Programming Specialization
- Web Development Specialization

Artificial Intelligence Foundations (9 credits)

Start Right

Degree-seeking students enrolling at Valencia for the first time will have a limited range of courses from which to choose for their first 18 college-level credits. Within the first 18 college credit hours, you will be required to take ENC1101 (3 credits), and if applicable, SLS 1122 (3 credits) and a mathematics course appropriate to your selected meta-major (3 credits). The remaining courses will be chosen from the General Education Core Courses in humanities (3 credits), science (3 credits), or social science (3 credits), and/or the introductory courses within the A.S. degree programs. For specific courses see the *Foundation Courses* on the "Program Requirements" tab. For course sequencing recommendations, see your Student Success Coach or create an education plan by logging into MyVC, clicking on the LifeMap tab and clicking My Education Plan.

Potential Careers

- Computer Programmer
- Senior Programmer
- Programmer Analyst
- Systems Programmer
- Programmer Specialist
- Web Programmer
- Web Developer
- Web Master

Salary & Earnings Information

For career information related to this program, please visit **O*Net OnLine** (<https://www.onetonline.org/>).

Contacts

Future Students

To learn more information about this program, contact Enrollment Services at enrollment@valenciacollege.edu or call 407-582-1507 or visit <https://valenciacollege.edu/computer-programming> (<https://valenciacollege.edu/computer-programming/>).

Current Students

Your Student Success Coach contact information can be found in MyVC. Log into MyVC, click on the Courses tab, and check your Academic Profile information to find a link to your Coach.

East Campus Faculty Program Chair

Sanika Paranjape: 407-582-2351
sparanjape@valenciacollege.edu (dbrunick@valenciacollege.edu)

West Campus Faculty Program Chair

Joan Alexander: 407-582-1542
jalexander@valenciacollege.edu

Osceola Campus Faculty Program Chair

Denise Ross, Program Chair: 407-582-4818
deross@valenciacollege.edu

Internship and Workforce Services

If you need assistance with job resources or in locating an internship, please visit: valenciacollege.edu/internship (<https://valenciacollege.edu/internship/>).

Program Outcomes

- Develop software utilizing industry standard tools and practices.
- Collaborate with technical and non-technical stakeholders.
- Incorporate ethical principles into problem-solving approaches.

Foundation Courses

COP 1000C	INTRODUCTION TO PROGRAMMING CONCEPTS ⁺¹	3
CGS 2545C	DATABASE MANAGEMENT SYSTEMS ⁺	3
CGS 2100C	COMPUTER FUNDAMENTALS AND APPLICATIONS ⁺	3
CGS 2091C	SOCIAL, LEGAL AND ETHICAL ISSUES IN INFORMATION TECHNOLOGY ⁺	3
COP 2822C	WEB DEVELOPMENT I ⁺	3
ENC 1101	FRESHMAN COMPOSITION I ^{++~}	3
Science	See Gen. Ed. Core Requirement [~]	3
Mathematics	See Gen. Ed. Core Requirement ^{++~}	3

Intermediate Courses

COP 2800C	JAVA PROGRAMMING ⁺⁺	3
COP 2047C PYTHON I ⁺⁺		3
CTS 1142C	INFORMATION TECHNOLOGY PROJECT MANAGEMENT ^{++P1}	3
Humanities	See Gen. Ed. Core Requirement [~]	3
POS 2041	U.S. GOVERNMENT ^{++~}	3
or AMH 2010	UNITED STATES HISTORY TO 1877	
or AMH 2020	U.S. HISTORY 1877 TO PRESENT	
Select one of the following:		3
COP 2220C	C PROGRAMMING ⁺⁺	
COP 2836C WEB DI ⁺⁺		
COP 2360C	C# PROGRAMMING ⁺⁺	

Advanced Courses

COP 2830C	SCRIPTING LANGUAGES ⁺⁺	3
CIS 2910C	IT CAPSTONE ⁺⁺²	3
CIS 2942	INTERNSHIP IN COMPUTER PROGRAMMING ⁺⁺	1
or CGS 2650	SOCIAL NETWORKING FOR JOB SEARCH	
Select one of the following:		3
COP 2224C	C++ PROGRAMMING ⁺⁺	
COP 2362C	ADVANCED C# PROGRAMMING ⁺⁺	
COP 2805C	ADVANCED JAVA PROGRAMMING ⁺⁺³	

Computer Programming and Analysis Elective 8

Total Credit Hours 60

Computer Programming and Analysis Electives

Any course in the course description section of the Valencia catalog with the subject prefix of CAI, CAP, CET, CGS (except CGS 1060C), CIS, COP, COT, or CTS.

⁺ This course must be completed with a grade of C or better.

^{*} This course has a prerequisite; check description in Valencia catalog.

[~] This is a general education course.

¹ Students with prior programming experience will be allowed to substitute a higher-level course for this course, with departmental approval.

- ² CIS 2910C IT CAPSTONE is taken in the last semester or with departmental approval and satisfactory completion of all mandated discipline specific foundation and intermediate technical courses.
- ³ Students continuing on to the BAS in Computing Technology and Software Development are required to take COP 2805C Advanced Java Programming.

(GB) denotes a Gordon Rule course.

Notes:

Specialized courses may not be offered every session or on every campus.

Expand your career opportunities with a Bachelor's Degree in Computing Technology and Software Development from Valencia. This degree builds on your skills, and prepares you for a highly specialized, in-demand career as a software developer. For more information, go to: Bachelor's Degree in Computing Technology and Software Development (<https://catalog.valenciacollege.edu/degrees/bachelorofscience/computingtechnologyandsoftwaredesign/>). Students who wish to continue their education should consult with a Student Success Coach to discuss transfer options and requirements, and determine the best education plan for their career goals.

Students wishing to transfer credits from this program to another institution must accept responsibility for securing approval from the transfer institution for acceptance of this degree.

Computer Programming with Specializations in:

- Computer Programming
- Web Development

Technical Certificate

Foundation Courses

COP 1000C	INTRODUCTION TO PROGRAMMING CONCEPTS ⁺¹	3
CTS 1131C	COMPUTER MAINTENANCE ESSENTIALS	3
COP 2822C	WEB SITE DEVELOPMENT ⁺	3
CGS 2545C	DATABASE MANAGEMENT SYSTEMS ⁺	3
	Computer Programming and Analysis Electives	9
	Specialization (See below)	12

Total Credit Hours 33

Computer Programming Specialization

This certificate prepares students with computer programming skills in various languages. The content includes evaluating technical needs and software problems, developing a logical plan for a software solution, and writing, designing and maintaining computer programs to meet user requirements.

Program Outcomes

- Analyze technical problems as related to customer requirements.
- Design a logical plan for the development of a software solution.
- Implement software solutions including documentation.
- Evaluate software problems, plans, and solutions for correctness and appropriateness.

Select one of the following:	3
COP 2220C C PROGRAMMING ⁺⁺	
COP 2800C JAVA PROGRAMMING ⁺⁺	
COP 2360C C# PROGRAMMING ⁺⁺	
COP 2830C SCRIPTING LANGUAGES [*]	3
Computer Programming and Analysis Electives	6
Total Credit Hours	12

Web Development Specialization

This certificate prepares and equips students with various web programming skills and web development tools. The content includes assessing customer needs and technical requirements, and developing, implementing and maintaining web-based software solutions to meet user needs.

Program Outcomes

- Analyze technical problems as related to customer requirements.
- Design a logical plan for the development of a software solution.
- Implement software solutions including documentation.
- Evaluate software problems, plans, and solutions for correctness and appropriateness.

COP 2830C	SCRIPTING LANGUAGES [*]	3
CGS 2786C	WEB DEVELOPMENT TOOLS [*]	3
COP 1812C	XML AND WEB SERVICES [*]	3
	Computer Programming and Analysis Electives	3
Total Credit Hours		12

+ This course must be completed with a grade of C or better

* This course has a prerequisite; check description in Valencia catalog.

¹ Students with prior programming experience who pass a waiver examination will be allowed to substitute a higher-level course for this course.

Notes:

Specialized courses may not be offered every session or on every campus.

This certificate program is eligible for Financial Aid.

Computer Programming Specialist with Specializations in

- Computer Programming
- Web Development

Technical Certificate

COP 1000C	INTRODUCTION TO PROGRAMMING CONCEPTS ⁺¹	3
CTS 1131C	COMPUTER MAINTENANCE ESSENTIALS	3
	Computer Programming and Analysis Electives	6
Specialization (See below)		6
Total Credit Hours		18

Computer Programming Specialization

This certificate prepares students with foundation skills in software development. The content includes evaluating technical and software problems, developing software solutions, and writing computer programs to meet customer needs and requirements.

Program Outcomes

- Analyze technical problems as related to customer requirements.
- Design a logical plan for the development of a software solution.
- Implement software solutions including documentation.
- Evaluate software problems, plans, and solutions for correctness and appropriateness.

Select one of the following:	3
COP 2220C C PROGRAMMING ⁺⁺	
COP 2800C JAVA PROGRAMMING ⁺⁺	
COP 2360C C# PROGRAMMING ⁺⁺	
Computer Programming and Analysis Electives	3
Total Credit Hours	6

Web Development Specialization

This certificate prepares students with foundation skills in web programming. The content includes evaluating technical problems and requirements, and developing web-based software solutions to meet customer needs.

Program Outcomes

- Analyze technical problems as related to customer requirements.
- Design a logical plan for the development of a software solution.
- Implement software solutions including documentation.
- Evaluate software problems, plans, and solutions for correctness and appropriateness.

COP 2822C	WEB SITE DEVELOPMENT ⁺	3
COP 2830C	SCRIPTING LANGUAGES [*]	3
Total Credit Hours		6

+ This course must be completed with a grade of C or better.

* This course has a prerequisite; check description in Valencia catalog.

¹ Students with prior programming experience who pass a waiver examination will be allowed to substitute a higher-level course for this course.

Notes:

Specialized courses may not be offered every session or on every campus.

Artificial Intelligence Foundations

The certificate in Artificial Intelligence Foundations is a three-course program designed for students from any discipline who want to explore the applications of AI in diverse industries, understand the phases of a typical AI project, and examine the ethical implications of adopting AI technologies.

Program Outcomes

- Analyze technical problems using Artificial Intelligence.
- Evaluate the ethics and societal impacts of Artificial Intelligence and the responsible use of Artificial Intelligence

COP 1000C	INTRODUCTION TO PROGRAMMING CONCEPTS ¹	3
CAI 2000	INTRODUCTION TO ARTIFICIAL INTELLIGENCE	3
CAI 2300	INTRODUCTION TO PRACTICAL NATURAL LANGUAGE PROCESSING	3
or CAI 2100	INTRODUCTION TO PRACTICAL MACHINE LEARNING	
or CAI 2200	INTRODUCTION TO PRACTICAL DEEP LEARNING	
Total Credit Hours		9

Notes:

1 Must be completed with C or better. Students with industry programming experience may substitute a higher level course with department approval.

Specialized courses may not be offered every session or on every campus.