

COMPUTING TECHNOLOGY AND SOFTWARE DEVELOPMENT

Bachelor of Applied Science in Computing Technology and Software Development (CIP# 1101101034)

School of Engineering, Technology & Advanced Manufacturing

- Cloud Computing
- Software Development

The Bachelor of Applied Science in Computing Technology and Software Development provides students the opportunity to earn a degree which prepares students to analyze software problems, plans, and solutions to design a logical plan for program requirements; implement software solutions and communicate effectively in writing and orally regarding the solutions; demonstrate collaborative skills in team settings to plan and accomplish software solutions; and apply ethical concepts to design solutions. The curriculum emphasizes practical, real-world problems.

Potential Careers

- Software Developers
- System Software Developers
- Computer and Information Systems Managers
- Computer Systems Analysts

Salary & Earnings Information

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

Contacts

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

For the most up-to-date information, visit valenciacollege.edu/bachelordegrees (<https://valenciacollege.edu/bachelordegrees/>)

Application Fee

There is no application fee for this program.

Admission Requirements

Students must submit official transcripts from all prior colleges and universities and must meet the following criteria:

- Satisfactory completion of all State Common Program Prerequisites with a grade of C or higher:
 - COP 1000C or COP 2334*, and
 - CGS 2545C or COP 1540C*, and
 - CTS 1134C or CET 2179C or CTS 1650*, and
 - MAC 1105, MGF 1130, STA 2023 or higher level math.
- Completion of one of the following:

- an Associate in Arts (A.A) degree** from a regionally accredited institution with a minimum of 60 semester hours of course work and a 2.0 overall Grade Point Average (GPA), or
- an Associate in Science (A.S.) degree** in of the following areas: Computer Programming & Analysis, Computer Information Technology, or Network Engineering Technology from a regionally accredited institution with a minimum of 60 semester hours of course work and a 2.0 overall Grade Point Average (GPA), or
- at least 60 semester credit hours of college level course work at a regionally accredited institution, including 15 credits that are applicable to Valencia College's General Education Program requirements, with a minimum of a 2.0 overall Grade Point Average (GPA) .

*Course not offered at Valencia but will be accepted for admission if transferred from another Florida public institution

**Other Associate or higher degrees must be formally evaluated by the Computing Technology Department for admission.

Program Requirements for Students Entering with an Associate in Science Degree

Program Outcomes

1. Analyze software problems, plans, and solutions to design a logical plan for program requirements.
2. Implement software solutions and communicate effectively in writing and orally regarding the solutions.
3. Demonstrate collaborative skills in team settings to plan and accomplish software solutions.
4. Apply ethical concepts to design solutions.

Students with an A.S. degree

Students who have completed an Associate in Science (A.S.) degree from a regionally accredited institution must complete:

Computing Technology & Software Development Core Courses

BUL 2241 or CGS 2091C	BUSINESS LAW I * SOCIAL, LEGAL AND ETHICAL ISSUES IN INFORMATION TECHNOLOGY	3
ECO 2013 or ECO 2023	PRINCIPLES OF ECONOMICS-MACRO PRINCIPLES OF ECONOMICS-MICRO	3
ENC 1102	FRESHMAN COMPOSITION II ^{++~}	3
GEB 1011	INTRODUCTION TO BUSINESS ¹	3
SPC 1608 or SPC 1017	FUNDAMENTALS OF SPEECH [~] INTERPERSONAL COMMUNICATION	3
STA 2023	STATISTICAL METHODS ⁺⁺	3
Humanities	See Gen. Ed. Institutional Requirements ^{++~} (GR)	3
Math or Science	See Gen. Ed. Requirements	3
CEN 4333C	ADVANCED DATABASE DEVELOPMENT ⁺⁺	3
ETI 4448C	APPLIED PROJECT MANAGEMENT ⁺⁺	3
CEN 3100C	TECHNICAL WRITING AND COMMUNICATION FOR SOFTWARE DEVELOPERS ⁺⁺	3

Credit from Core Courses	36
Credits from Concentration (see below)	24
Total Credits	60

Concentrations

Cloud Computing

The Cloud Computing concentration is designed to help students excel in cloud computing in the areas of architecting, development, and systems administration. Project-based courses allow students to apply industry practices and prepare students for a career in the cloud field. Students will gain experience through critical thinking, problem solving, teamwork and communication of ideas.

Concentration Requirements

CIS 3083C	CLOUD MANAGEMENT AND DESIGN ⁺⁺	3
CIS 3080	CLOUD ADMINISTRATOR ESSENTIALS ⁺⁺	3
CIS 3304C	MANAGEMENT INFORMATION SYSTEMS	3
CIS 3641	CLOUD DEVELOPER ESSENTIALS ⁺⁺	3
CIS 3652	CLOUD DATA ANALYTICS ESSENTIALS ⁺⁺	3
CTS 3700	DATA CENTER OPERATIONS ESSENTIALS ⁺⁺	3
CAP 3612	MACHINE LEARNING ESSENTIALS ⁺⁺	3
Electives: Choose 6 hours from the list below or any upper division CEN, CIS, CTS, or COP course. At least 3 credits must be a CEN or COP prefix.		
CEN 3942	INTERNSHIP IN COMPUTING TECHNOLOGY & SOFTWARE DEVELOPMENT ⁺⁺	3-9
CEN 4350C	OPEN SOURCE WEB TECHNOLOGIES ⁺⁺	3-9
CEN 4360C	MOBILE DEVICE SOFTWARE DEVELOPMENT ⁺⁺	3
CEN 4370C	.NET SOFTWARE DEVELOPMENT USING C# ⁺⁺	3
CET 3464C	SOFTWARE APPLICATIONS IN ENGINEERING TECHNOLOGY ⁺⁺	3
COP 3275C	C/C++ PROGRAMMING FOR ENGINEERING TECHNOLOGY ⁺⁺	3
ETI 3116	QUALITY ASSURANCE WITH TESTING METHODS ⁺⁺	3
ETS 3663	ENGINEERING MANAGEMENT AND COMMUNICATION ⁺⁺	3
ACG 3024	ACCOUNTING AND FINANCIAL ANALYSIS FOR MANAGERS ⁺⁺	3
FIN 3402	FINANCIAL ANALYSIS AND PLANNING ⁺⁺	3
MAN 3240	PRINCIPLES OF ORGANIZATIONAL BEHAVIOR ⁺⁺	3
MAN 3353	MANAGEMENT THEORY AND PRACTICES ⁺⁺	3
MAN 4162	CUSTOMER RELATIONS FOR MANAGERS ⁺⁺	3
MAR 3023	MARKETING MANAGEMENT ⁺⁺	3
CEN 3727C	USER INTERFACE AND USER EXPERIENCE ⁺⁺	3
COP 3330C	OBJECT ORIENTED PROGRAMMING ⁺⁺	3

CEN 3024C	SOFTWARE DEVELOPMENT I ⁺⁺	3
Total Credits from Concentration		24

Software Development

The Software Development concentration prepares students for careers in the fast-growing field of computer programming and software development. Project-based course work provides students with an in-depth knowledge of current languages, APIs, and frameworks. Courses focus on object-oriented programming, systems development, agile methods, software testing and installation. Students will be well-prepared to enter the field upon graduation with experience in hands-on, project-based software development.

Concentration Requirements

COP 3330C	OBJECT ORIENTED PROGRAMMING ⁺⁺	3
or COP 2805C	ADVANCED JAVA PROGRAMMING	
CEN 3024C	SOFTWARE DEVELOPMENT I ⁺⁺	3
CEN 4025C	SOFTWARE DEVELOPMENT II ⁺⁺	3
CEN 4802C	SOFTWARE INTEGRATION, CONFIGURATION, AND TESTING ⁺⁺	3
CEN 4910C	SOFTWARE DEVELOPMENT PROJECT ⁺⁺	3
CEN 4930C	SEMINAR IN ADVANCED SOFTWARE DEVELOPMENT ⁺⁺	3
Electives: Choose 6 hours from the list below or any upper division CEN, CIS, CTS, or COP course. At least 3 credits must be a CEN or COP prefix.		
CEN 3942	INTERNSHIP IN COMPUTING TECHNOLOGY & SOFTWARE DEVELOPMENT ⁺⁺	3-9
CEN 4350C	OPEN SOURCE WEB TECHNOLOGIES	3
CEN 4360C	MOBILE DEVICE SOFTWARE DEVELOPMENT ⁺⁺	3
CEN 4370C	.NET SOFTWARE DEVELOPMENT USING C# ⁺⁺	3
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ETI 3116	QUALITY ASSURANCE WITH TESTING METHODS	3
ETS 3663	ENGINEERING MANAGEMENT AND COMMUNICATION ⁺⁺	3
ACG 3024	ACCOUNTING AND FINANCIAL ANALYSIS FOR MANAGERS ⁺⁺	3
FIN 3402	FINANCIAL ANALYSIS AND PLANNING	3
MAN 3240	PRINCIPLES OF ORGANIZATIONAL BEHAVIOR ⁺⁺	3
MAN 3353	MANAGEMENT THEORY AND PRACTICES ⁺⁺	3
MAN 4162	CUSTOMER RELATIONS FOR MANAGERS ⁺⁺	3
MAR 3023	MARKETING MANAGEMENT ⁺⁺	3
CEN 3727C	USER INTERFACE AND USER EXPERIENCE ⁺⁺	3
COP 4530C	APPLIED DATA STRUCTURES AND ALGORITHMS ⁺⁺	3

CIS 3083C	CLOUD MANAGEMENT AND DESIGN	3
CIS 3080	CLOUD ADMINISTRATOR ESSENTIALS ⁺⁺	3
CIS 3641	CLOUD DEVELOPER ESSENTIALS ⁺⁺	3
CIS 3652	CLOUD DATA ANALYTICS ESSENTIALS ⁺⁺	3
CTS 3700	DATA CENTER OPERATIONS ESSENTIALS ⁺⁺	3
CAP 3612	MACHINE LEARNING ESSENTIALS ⁺⁺	3
Total Credits from Concentration		24

+ This course must be completed with a C or better.
 * This course has a prerequisite; check description in Valencia catalog.

Graduation Requirements:

In addition to completing the course requirements detailed in the curriculum in order to graduate, students must:

- Earn a minimum 2.0 Valencia College and Overall GPA.
- Complete all Core course work with a minimum grade of C (2.0) in all courses.
- Satisfy Valencia’s 36 credit hour General Education requirements and Gordon Rule requirements unless you hold an Associate in Arts or Bachelor’s degree or have completed the entire general education program at a regionally accredited institution.
- Satisfy the civic literacy requirement. As per Florida Rule 6A-10.04213, prior to the award of an associate in arts or baccalaureate degree, students initially entering a Florida College System institution in the 2021-22 school year*, and thereafter must demonstrate competency in civic literacy prior to graduation by:
 - a. receiving a passing score on the Florida Civic Literacy Exam (FCLE), and
 - b. successful completion of one of the following:
 - successfully passing POS 2041 U.S. GOVERNMENT, or AMH 2010 UNITED STATES HISTORY TO 1877 or AMH 2020 U.S. HISTORY 1877 TO PRESENT or
 - successfully passing a prescribed assessment: AP Government & Politics: United States Test** (passing score =3), or AP United States History Test** (passing score = 4), or CLEP American Government** (passing score = 50) CLEP History of the United States I** (passing score = 50)
 - *The Department of Education has provided guidance that the Civic Literacy requirement is based on the student’s governing catalog year (e.g., it is for all students who have a catalog year of Fall 2021 or after even if they had previously attended a Florida public institution).
 **receiving a passing score will satisfy both the FCLE and course requirements.
- Complete at least 25% of the 120 credit hour degree program (30 credits) at Valencia College, based upon the Florida College System’s requirement of a 2+2 admission into the baccalaureate program. Fifteen of those hours must be 3000 or 4000 level courses from the program course list.
- Submit an application for graduation through Atlas by the deadline date listed in the Academic Calendar in the online official catalog. The student must have at least the minimum number of college-level

credits for the degree, including all courses currently registered, in order to submit a graduation application.

- Fulfill all financial obligations to Valencia College.
- Foreign Language: Successfully complete the Florida foreign language requirement: two years high school or one year of college (at least eight credits) in a single foreign language. American Sign Language is acceptable. Foreign language taken at the college level does not satisfy the General Education credits.

Total Semester Credits required – 120 credit hours in addition to completing the Foreign Language Requirement above. The credit courses required may vary depending on the credits the student brings to the BAS program. Additional courses to complete the required 120 credit hours for graduation must apply to the degree and be approved by a Student Success Coach.

Students who have completed core courses prior to entering the BAS program may substitute lower level COP, COT, CIS, CTS, or CET prefix courses or CGS 2786C with Student Success Coach approval.

Program Requirements for Students Entering with an Associate in Arts Degree

Program Outcomes

1. Analyze software problems, plans, and solutions to design a logical plan for program requirements.
2. Implement software solutions and communicate effectively in writing and orally regarding the solutions.
3. Demonstrate collaborative skills in team settings to plan and accomplish software solutions.
4. Apply ethical concepts to design solutions.

Students with an A.A. degree

Students who have completed an Associate in Arts (A.A.) degree from a regionally accredited institution must complete:

CGS 2100C	COMPUTER FUNDAMENTALS AND APPLICATIONS	3
STA 2023	STATISTICAL METHODS ⁺⁺	3
Choose from any lower level CGS, CIS, COP, CTS, or COT prefix, or a CET course with program chair approval, or any upper division BASCTSD elective.		12
Total Credit Hours		18

Computing Technology & Software Development Core Courses

Core Requirements		
GEB 1011	INTRODUCTION TO BUSINESS ¹	3
CEN 3100C	TECHNICAL WRITING AND COMMUNICATION FOR SOFTWARE DEVELOPERS ⁺⁺	3
BUL 2241 or CGS 2091C	BUSINESS LAW I SOCIAL, LEGAL AND ETHICAL ISSUES IN INFORMATION TECHNOLOGY	3
CEN 4333C	ADVANCED DATABASE DEVELOPMENT ⁺⁺	3
ETI 4448C	APPLIED PROJECT MANAGEMENT ⁺⁺	3

Total Credits from Core Courses	36
Total Credits from Concentration	24
Total Credits	60

+ 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.

(GB) denotes Gordon Rule course.

¹ (To fulfill this requirement, students with GEB 1011 are advised to take any GEB, MAN, MNA, MKA, ACG, CGS, CIS, COP, CTS, or COT course, if not otherwise a common course prerequisite or required by the BAS program, or a CET course with program chair approval.)

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Concentration Requirements

CIS 3304C	MANAGEMENT INFORMATION SYSTEMS	3
CIS 3083C	CLOUD MANAGEMENT AND DESIGN ⁺⁺	3
CIS 3080	CLOUD ADMINISTRATOR ESSENTIALS ⁺⁺	3
CIS 3641	CLOUD DEVELOPER ESSENTIALS ⁺⁺	3
CIS 3652	CLOUD DATA ANALYTICS ESSENTIALS ⁺⁺	3
CTS 3700	DATA CENTER OPERATIONS ESSENTIALS ⁺⁺	3

CAP 3612	MACHINE LEARNING ESSENTIALS ⁺⁺	3
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 - successfully passing a prescribed assessment:
 - AP Government & Politics: United States Test** (passing score =3), or
 - AP United States History Test** (passing score = 4), or
 - CLEP American Government** (passing score = 50)
 - CLEP History of the United States I** (passing score = 50)
- *The Department of Education has provided guidance that the Civic Literacy requirement is based on the student's governing catalog year (e.g., it is for all students who have a catalog year of Fall 2021 or after even if they had previously attended a Florida public institution).
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Total Semester Credits required – 120 credit hours in addition to completing the Foreign Language Requirement above. The credit courses required may vary depending on the credits the student brings to the BAS program. Additional courses to complete the required 120 credit hours for graduation must apply to the degree and be approved by an advisor.

Students who have completed core courses prior to entering the BAS program may substitute lower level COP, COT, CIS, CTS, or CET prefix courses or CGS 2786C with Student Success Coach approval.