

COMPUTER SCIENCE

The Computer Science Program is designed for students who are developing computer programming skills in preparation to transfer to a four-year college or university. These courses meet the needs of students at various levels of competence, from the novice to the expert, by fostering the student's ability to solve computer science problems. This program presents the latest methods of computer science that are implemented in solving problems of science, industry and government while also preparing students for additional formal education in this rapidly changing field.

Faculty

| Name | Office Room Number | Phone | Email |
|----------------|--------------------|--------------|--------------------------|
| Solis, Roberto | NB 100 | 626-914-8853 | rsolis@citruscollege.edu |

Contact Information

Division

Career, Technical and Continuing Education

Dean

Kimberly Mathews

Administrative Secretary

Angie Alvarez

Division Office

TE 147

Division Phone Number

626-852-6402

Email

computerscience@citruscollege.edu

Discipline Website

<https://www.citruscollege.edu/academics/programs/cs> (<https://www.citruscollege.edu/academics/programs/cs/>)

Learning Outcomes

This discipline prepares students to do the following:

- Work extensively with arithmetic computations and operations related to program structure, recursive functions, data manipulation, binary trees, polymorphisms, problem analysis and algorithm design.
- Improve skills in critical and analytical thinking while working in areas including problem analysis and algorithm design, operands and arguments, stack abstract data manipulation, heap manipulating, linked lists, binary trees, polymorphisms, and the effective use of contemporary compilers to design, debug, execute and deploy programs.

Courses

CS 111

Introduction to Programming Concepts and Design

4 Units (AA/AS; CSU; UC)

72 lecture hours

Equivalent to: CSIS 110, CSIS 111

Grade Mode: Pass/No Pass, Standard Letter

Strongly recommended: ENGL 101.

An introduction to the principles of computer programming and software development. Topics covered include the program development cycle, developing algorithms, data and control structures, structured programming, and object-oriented programming. Data types, expressions, control structures, functions, file and stream I/O, and structured and abstract data types are introduced in this course. Microsoft's Visual Studio to help illustrate programming concepts common to modern high-level programming languages. Students must wait two years before retaking this course.

CS 112

Introduction to Python Programming

3 Units (AA/AS; CSU; UC)

54 lecture hours

Grade Mode: Standard Letter

Strongly recommended: CS 111.

An introduction to the principles of computer programming and software development using the Python programming language. Topics covered include language syntax, variables, data types, conditional statements, loops, strings, input/output, lists, and usage of classes.

CS 140

Java Programming

3 Units (AA/AS; CSU; UC)

54 lecture hours, 18 lab hours

Equivalent to: CSIS 140

Grade Mode: Pass/No Pass, Standard Letter

Prerequisite(s): CS 111.

Strongly recommended: MATH 150.

An introduction to the Java language and object oriented programming. General concepts and techniques of computer programming to be covered include expressions, flow control, methods, program structure, Java classes, overloading, object references, inheritance, Java library packages, exceptions, file I/O, applets, GUI, and event handling.

CS 157

iOS Programming I

3 Units (AA/AS; CSU; UC)

54 lecture hours

Grade Mode: Standard Letter

Prerequisite(s): CS 111.

Introduction to iOS programming using Apple's Swift programming language. Students will learn to develop applications that can be run on Apple's iPhone, iPads, Apple Watch and the Apple TV. Students will use the Xcode IDE to develop iOS Apps.

CS 177**Unity Game Programming I****3 Units (AA/AS; CSU; UC)****54 lecture hours****Grade Mode: Standard Letter***Strongly recommended: CS 225.*

This is the first course in Unity game programming using the C# programming language. The goals of this course are to provide introductions to event driven programming, game engine scripting, game engine class structures, learning to plan and to report on a significant programming project, learn how to work in programming teams, and learn to use standard game development environments, in particular the Unity3D development platform.

CS 225**Object Oriented Programming****3 Units (AA/AS; CSU; UC)****54 lecture hours, 18 lab hours****Equivalent to: CSIS 225****Grade Mode: Standard Letter***Strongly recommended: CS 111; MATH 150.*

This course introduces the discipline of computer science using a high level language, C++, utilizing programming and practical hands-on problem solving. Topics include the use of functions and parameter passing, simple I/O, control structures, user-defined data types, arrays, searching and sorting, algorithms and debugging strategies, data abstraction, intro to pointers, concept of types and software development methods.

CS 232**Programming Concepts and Methodology II****3 Units (AA/AS; CSU; UC)****54 lecture hours, 18 lab hours****Grade Mode: Standard Letter***Prerequisite(s): CS 225.*

Application of software engineering techniques to the design and development of large programs; data abstraction and structures and associated algorithms.

CS 242**Computer Architecture and Organization****3 Units (AA/AS; CSU; UC)****54 lecture hours****Grade Mode: Standard Letter***Prerequisite(s): CS 225 (or concurrent enrollment).*

The organization and behavior of real computer systems at the assembly-language level. The mapping of statements and constructs in a high-level language onto sequences of machine instructions is studied, as well as the internal representation of simple data types and structures. Numerical computation is examined, noting the various data representation errors and potential procedural errors.

CS 252**Discrete Structures****3 Units (AA/AS; CSU; UC)****54 lecture hours****Grade Mode: Standard Letter***Prerequisite(s): CS 225.*

This course is an introduction to the discrete structures used in Computer Science with an emphasis on their applications. Topics covered include: functions, relations and sets; basic logic; proof techniques; basics of counting; graphs and trees; and discrete probability.

CS 257**iOS Game Programming I****3 Units (AA/AS; CSU; UC)****54 lecture hours****Grade Mode: Standard Letter***Prerequisite(s): CS 157.*

This course deals with 2D game programming for the iOS platform. Students are expected to have Xcode and Swift programming experience.

CS 277**Unity Game Programming II****3 Units (AA/AS; CSU; UC)****54 lecture hours****Grade Mode: Standard Letter***Prerequisite(s): CS 177.*

This is the second course in Unity game programming using the C# programming language in the Unity 3D development environment. Topics include scripting, simple AI, animations, and path finding.

Programs

Associate Degree

- ADT in Computer Science (<http://catalog.citruscollege.edu/disciplines/computer-science/computer-science-adt/>)

Certificate of Achievement

- Gaming and Applications Development (<http://catalog.citruscollege.edu/disciplines/computer-science/gaming-applications-development-certificate-achievement/>)