

Computer Science Principles

Course Overview and Syllabus

Grade level: 11–12

Prerequisite Courses: Algebra I

Credits: 1.0

Course Description

Computers are key to many aspects of daily life and many careers. Students will explore the foundations of computer science using videos, hands-on activities, programming, investigations, and projects. They will learn how computers work and how they communicate to form networks. They will experience much of what computer programmers do in planning, developing, testing, and refining software. Students will explore the need to design accessible software and how that can be accomplished. Security is a key topic, and students will learn techniques for recognizing and guarding against security threats. Every unit has two to three projects, giving students the opportunity to not only write programs, but also to develop security policies, analyze real-world data, solve network problems, plan a mobile app, and more. They will learn valuable skills working in teams. Interwoven throughout the course are spotlights on a wide variety of careers and roles in computer science.

Course Objectives

Throughout the course, you will meet the following goals:

- Collect, interpret, and present data
- Understand network security concerns and how to protect against them
- Program in Python
- Create an artificial intelligence decision tree to solve a problem
- Compare algorithms in terms of efficiency and clarity
- Use the software development life cycle to design, code, and test applications

Student Expectations

This course requires the same level of commitment from you as a traditional classroom course. Throughout the course, you are expected to spend approximately 5–7 hours per week online on:

- Interactive lessons that include a mixture of videos, readings, and tasks
- Assignments in which you apply and extend learning in each lesson
- Assessments, including quizzes, tests, and cumulative exams

Communication

Your teacher will communicate with you regularly through discussions, email, chat, and system announcements. You will also communicate with classmates, either via online tools or face to face, as you collaborate on projects, ask and answer questions in your peer group, and develop your speaking and listening skills.

Grading Policy

You will be graded on the work you do online and the work you submit electronically to your teacher. The weighting for each category of graded activity is listed below.

Grading Category	Weight
Lesson Quizzes	20%
Unit Tests	20%
Cumulative Exams	20%
Assignments	10%
Projects	30%

Scope and Sequence

When you log into Edgenuity, you can view the entire course map—an interactive scope and sequence of all topics you will study. The units of study are listed below:

- Unit 1:** Computing Systems
- Unit 2:** Networks and the Internet
- Unit 3:** Data and Analysis
- Unit 4:** AI and Algorithms
- Unit 5:** Variables and Control
- Unit 6:** Modularity
- Unit 7:** Development and Security
- Unit 8:** Platforms and Development Tools
- Unit 9:** Algorithms and Programming
- Unit 10:** Impacts of Computing