

Middle School Computer Science

Course Overview and Syllabus

Grade level: 6–8

Prerequisite Courses: None

Credits: 1.0

Course Description

In this course, 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 with each other via networks. They will be introduced to programming using drag-and-drop preset blocks of code, and will write programs using a text-based programming language that will make their first coding experiences fun and approachable at no extra cost. Students will experience much of what computer programmers do in planning, developing, and testing software. They will explore the needs and methods for designing accessible software, and learn how to recognize and protect against common threats. Every unit has at least one project, giving students the opportunity to write programs, solve common computer problems, develop a cybersecurity policy, collect and analyze data, adapt a system for people with special needs, and more.

Course Objectives

Throughout the course, you will meet the following goals.

- Describe the parts of a computer system.
- Explain how various computer applications work and what they are used for.
- Identify different computing careers.
- Explain strategies for troubleshooting common hardware and software issues.
- Explain how computers communicate and how the internet works.
- Describe the common security threats of computing and how to avoid them.
- Describe various types of data and analysis techniques that best represent results in the form of graphs and charts.
- Develop processes and simple algorithms using various programming languages.
- Apply problem-solving skills to computing issues and programming problems.
- Describe the cultural impact of computing.

Student Expectations

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

- 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 Imagine Edgenuity, you can view the entire course map—an interactive scope and sequence of all topics you will study. The units of study are summarized below.

- Unit 1:** Basic Skills
- Unit 2:** Hardware and Software
- Unit 3:** Devices
- Unit 4:** Troubleshooting
- Unit 5:** Networks and the Internet
- Unit 6:** Cybersecurity
- Unit 7:** Data and Analysis
- Unit 8:** Algorithms and Programming
- Unit 9:** Computational Thinking and Problem Solving
- Unit 10:** Program Design
- Unit 11:** Cultural Impact of Computing