



Computer Science Discoveries

Game Lab/JavaScript • Fall 2019

Course description

Game Lab/JavaScript introduces students to computer science as a vehicle for problem solving, communication, and personal expression. As a whole, this semester focuses on the visible aspects of computing and computer science, and encourages students to see where computer science exists around them and how they can engage with it as a tool for exploration and expression.

Course objectives

Students will be able to successfully compile their work to create a game they can publish and share.

Prerequisites

None

Materials Needed

•Pencils •Internet Access •Computer •Notebooks

Grading Scale

A+	98-100	C+	82-84
A	93-97	C	77-81
B+	90-92	D+	74-76
B	85-89	D	70-73
		F	Below 70

Daily Participation

Will be 15% of final grade. If you miss class you can make up points.

Semester Test Grade

Will count 10% per semester

Q1 grades + Q2 grades= 90% Semester Grade= 10%

Q3 grades + Q4 grades= 90% Semester Grade= 10%

Course Final

Students will work individually or in a group to develop a subject content game for a teacher. They will be presenting this game to the teacher for feedback.

Course outline

Unit 1 is a highly interactive and collaborative introduction to the field of computer science, as framed within the broader pursuit of solving problems. You'll practice using a problem solving process to address a series of puzzles, challenges, and real world scenarios. Next, you'll learn how computers input, output, store, and process information to help humans solve problems. The unit concludes with a project in which you design an application that helps solve a problem of your choosing.

Unit 3 you'll build on your coding experience as you program animations, interactive art, and games in Game Lab. The unit starts off with simple shapes and builds up to more sophisticated sprite-based games, using the same programming concepts and the design process computer scientists use daily. In the final project, you'll develop a personalized, interactive program.

Unit 4 introduces the broader social impacts of computing. Through a series of design challenges, you will learn how to better understand the needs of others while developing a solution to a problem. The second half of the unit consists of an iterative team project, during which teams have the opportunity to identify a need that they care about, prototype solutions both on paper and in App Lab, and test solutions with real users to get feedback and drive further iteration.

Unit 5 is about the importance of data in solving problems and highlights how computers can help in this process. The first chapter explores different systems used to represent information in a computer and the challenges and tradeoffs posed by using them. In the second chapter you'll learn how collections of data are used to solve problems, and how computers help to automate the steps of this process. The chapter concludes by considering how the data problem solving process can be applied to an area of your choosing.

Unit 6 explores the role of hardware platforms in computing and how different sensors can provide more effective input and output than the traditional keyboard, mouse, and monitor. Using App Lab and Adafruit's Circuit Playground, you'll develop programs that utilize the same hardware inputs and outputs that you see in the smart devices, looking at how a simple rough prototype can lead to a finished product. The unit concludes with a design challenge to use the Circuit Playground as the basis for an innovation of your own design.

Course grading

The main forms of assessment for this course is the notebook, lesson activities, and completion of projects. The following items will be evaluated in the student's notebook:

- Daily entries
- Proper formatting was used for each entry
- Lesson questions have been answered
- Lesson objectives have been met
- Correct code

Tests/Quizzes will also be used to assess how much the student has learned after lessons.