Intro to Computer Science Course Syllabus

Roosevelt HS Mr. Davidson

Introduction to Computer Science*: This course is an introduction to computer science and software engineering for all students interested in developing software applications, not just using them. Through a project-oriented approach, students will explore a variety of programming systems and languages to create interactive applications and systems. By collaborating in a hands-on environment, students will learn problem solving, software design, debugging strategies, and the foundations of computer science (data structures, procedures, and algorithms). Students will work on projects (both individual and team) in the areas of graphics and games, animation and art, electronics systems, and interactive fashion, all using open-source software tools such as Scratch, Arduino, Processing, and Python.*

WHAT

This course will give you the knowledge and skills to understand the fundamental principles and practices of computer programming. There are no prerequisites other than a basic familiarity with computer software, a curious spirit, and a willingness to experiment and learn.

WHY

In today's digital society, we are all users of computers, networks, and software. In this course, students will get a chance to go beyond being a consumer of software products and to become a producer of them. This knowledge could lead directly to a career path in computing, an interest in studying the field more in college, or just a better understanding of how computers work. It also should be lots of fun along the way!

HOW

Understanding computational thinking (problem solving with computers) is at the heart of the practice of computer science and software engineering. You will explore this discipline by designing programs, systems, and games, using the tools of computational thinking – processes and algorithms. This approach, known as "constructivism," emphasizes learning by designing and making things.

Through a combination of classwork, assignments, quizzes/tests, and project work, you will learn the fundamentals of computer science and designing software systems. A series of exercises and assignments lead up to a final project, for which you will design an interactive software system, with the possibility to work in small teams. There will be flexibility in the topic for the final project, allowing you to explore subjects that interest you.

TOPICS

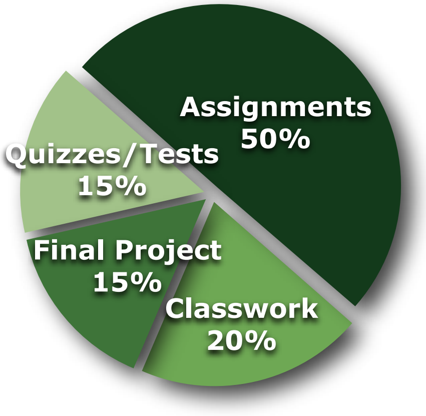
A summary of the units of study and topics for the course is listed below.

Unit	Topics	Duration
Computational Thinking	Problem Solving System Design Algorithms	1 week
Elements of Programming	Control Flow Iteration Variables Events Conditionals Timers Arrays	4 weeks
Computer Science Fundamentals	Data Types Control Structures Operators Functions Libraries	3 weeks
Software Engineering	Software Design Programming Tools Debugging Documentation	4 weeks
Final Project	Concept & Proposal Design Documentation Project Plan Prototype Implementation User Testing Communication	6 weeks

GRADES

Grades will be based on the components as shown below.

Assignments	50%
Classwork	20%
Final Project	15%
Quizzes/Tests	15%



There will be opportunities to earn extra credit for optional reading, writing, design, or presentation projects of relevance to the course subject matter. Credit for professionalism will be earned by a variety of leadership, collaboration, and participation activities.

LATE WORK

This course is structured so that you can accomplish most of the required work during class sessions, because much of it requires software and supplies that are in our lab. But things always come up, from absences to illness to just needing extra time. Late work will be accepted, without regard to cause, because I would rather have you do the work and learn the material we cover than not.

However, to be fair and to encourage you to keep up with the work, late assignments will be marked down 10%. And I won’t accept late work more than two weeks past the due date, without extenuating circumstances.

MATERIALS

Please be sure to have a composition book for the class (as well as writing instruments, of course), as you will need it for notes and keeping a journal. If you intend to work on your projects outside of school, you will need a flash drive to transport digital files back and forth.

COURSE WEBSITE

Additional information about this course can be found on the course website. I intend to use the site, with its blog for announcements, as the main source of all assignments, reference materials, and communications.

I think this will be a powerful way to support your learning, in addition to being convenient for everyone (students, parents, and teacher).

You can find the course site at this link:
http://rooseveltcs.org/courses/intro-to-cs/

Please bookmark it and I'll see you online!

ANDREW DAVIDSON

ahdavidson@seattleschools.org

rooseveltcs.org

Room 319 | (206) 252-4853