



## Instructor Information

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**Prerequisite:** Exploring Computer Science

## Introduction

This course introduces students to the foundational concepts of computer science and explores the impact computing and technology have on our society. With a unique focus on creative problem solving and real-world applications, this course gives students the opportunity to explore several important topics of computing using their own ideas and creativity, use the power of computing to create artifacts of personal value, and develop an interest in computer science that will foster further endeavors in the field.

## Course Overview

The course utilizes a blended classroom approach. The content is a mix of web-based and physical activities. Students will write and run code in the browser, create digital presentations, and engage in collaborative exercises with classmates. There is no textbook, but the instructor will utilize tools and resources provided by:

CodeHS.com / Code.org / Edhesive.com / Albert.io

Each unit of the course is broken down into lessons. Lessons consist of video tutorials, short quizzes, example programs to explore, written programming exercises, free response exercises, collaborative creation projects and research projects.

## Computational Thinking Practices

### Computational Solution Design

- Determine design/method approach
- Explain how collaboration affects the process

### Abstraction in Program Development

- Generalize data through variables
- Manage complexity in a program

### Computing Innovations

- Explain impact of a computing innovation
- Evaluate based on legal/ethical factors

### Algorithms and Program Development

- Represent algorithmic process
- Implement algorithms in a program

### Code Analysis

- Explain how a code segment/program functions
- Use error discovery to correct algorithms

### Responsible Computing

- Collaborate in the development of solutions
- Use safe/secure methods using computer devices

## Conceptual Framework

### Big Idea 1: Creative Development

- Use a formal iterative design process
- Use experimentation and multiple perspectives

### Big Idea 2: Data

- Interpret, transform, and present data
- Explain data values, compression, and data sets

### Big Idea 3: Algorithms & Programming

- Use a formal iterative design process
- Use experimentation and multiple perspectives

### Big Idea 4: Computing Systems and Networks

- Interpret, transform, and present data
- Explain data values, compression, and data sets

### Big Idea 5: Impact of Computing

- Beneficial and harmful effects
- Legal/Ethic concerns, bias, and digital divide

### Create Performance Task

- Create and develop your program with video
- Explain your abstraction, iteration, and procedure functions

## Student Requirements

**Internet access at home (recommended)** → If a student does not finish assignments during class time, it is the student's responsibility to complete the work outside of class. (Home, Library, etc.)

**Submitting Assignments** → Students are required to submit work electronically and on time. If a student is absent, s/he will have one additional day per absence day to turn in work. Late work will NOT be accepted.

**Be Punctual – Prepared – Productive**

## Grading Policy

Grades are cumulative throughout each grading period and will be based on formative and summative assessments to support students' educational and professional growth/progress.

**A = 90% - 100%**

**B = 80% - 89%**

**C = 70% - 79%**

**D = 60% - 69%**