

Computer Science Work-Based Learning Syllabus

Course Description:

This half year course will teach you about the software development process used in industry, combined with your performing an *Industry Project* form of work-based learning (WBL). The lessons focus on the four primary steps of the software development process: Ideation and Validation (market analysis), Design, Implementation (coding), and Testing. You will learn about the concepts in class with your teacher, and work in small groups with an Industry Mentor throughout the course to create an original software product. At the end of the course, you will present your product to a review panel of industry professionals. You will also explore careers in Computer Science (CS), and learn employability skills.

Learning Objectives:

- Describe careers in computer science and their personal relevance to you.
- Explain a typical software industry product development process.
- Perform a typical software industry development process to create a software product.
- Demonstrate employability skills including resume writing, presenting work/products, professionally communicating, time management, and the growth mindset.
- Complete 80 hours of Work Based Learning

Prerequisites:

- Ability to do basic HTML programming.
- Ability to create Google Sites.
- Ability to create and administer surveys with Google Forms.
- Ability to create images and graphics using software tools.
- Ability to manage, analyze, and visualize data in spreadsheets.

Required Equipment/Software:

This course requires the use of a computing device which can be any form of computer/ chromebook/tablet with an Internet connection and sound (for videos). All work is done in the cloud, so there is no special software other than the Google Chrome web browser required.

Student Time Commitment:

- At least 2 hrs per week in class learning for 18 weeks. Typically one hour of instruction, one hour of project work, including time with Industry Mentors.
- At least 8 hrs total over the 18 week semester for site visits to Industry.
- Optional- 36 hrs total over the 18 weeks outside of class working on the project.(This commitment allows for a total of 80 hours of Work Based Learning.)

Course Material:

- **Videos** from [LinkedIn Learning](#) (job skills), and [Google/Udacity's Software Development course](#) (CS job skills).
- **Activity Sheets** for you to reflect on what you have learned from the videos and your progress on your project. [Suggested 20% of your grade]
- **Assignments** that have you use your skills applied to your project. [Suggested 20% of your grade]
 - **Final Project**, which is either a web page or an app created using the software development process and techniques taught in class. [Suggested 30% of your grade]
- **Presentation** of your software product to an Industry Panel. [Suggested 20% of your grade]
- **Employability Skills** - Use of employability skills in class and in your interactions with your Industry Mentor [Suggested 10% of your grade].

Course Topics:

Unit 0: CS Workplace

- Intro To CS WBL
- Employability skills
- Computer Science Careers
- Getting a Job In Computer Science

Unit 1: Ideation

- Finding Your Product
- Ideation and Validation
- Market Research
- User Research

Unit 2: Design

- Stages of Design
- Understand and Define
- User Experience (UX)
- User Interface (UI)

Unit 3: Implementation

- Agile Software Development Process
- Prototyping
- Coding
- Version control (Github)

Unit 4: Testing

- A/B Testing
- Analytics

Unit 5: Presenting Your Project

- Presentation Skills
- Presentation To An Industry Panel