

LINC 78C: PROJECT BASED TECHNOLOGY PROJECTS

Foothill College Course Outline of Record

Heading	Value
Units:	2
Hours:	2 lecture per week (24 total per quarter)
Advisory:	Experience with internet software tools, browsers, hyperlinks, online media resources, and basic skills using a computer.
Degree & Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	CSU
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Student Learning Outcomes

- Using text-based coding language (e.g., C++ or Python) to control micro-controller devices.
- Understand physical computing concepts, and how to connect micro-controllers to various outside items such as LEDs, speakers, motors, etc.

Description

Intended for educators and others, this course will provide opportunities to integrate technology into project based learning. Use of Arduinos, Raspberry Pi, Microbit or other micro-controllers, and control of these devices using code in text based languages, such as C or Python, to enhance project based learning will be covered.

Course Objectives

The student will be able to:

- Understand physical computing concepts, and how to connect micro-controllers to various outside items, such as LEDs, speakers, motors, etc.
- Use text based coding language (e.g.: C++ or Python) to control micro-controller devices.
- Build projects independently to express creativity, combining skills in making with that of coding.
- Create and modify existing project based learning lessons to integrate technology in all content areas using micro-controllers.

Course Content

- Physical computing concepts
 - Connecting to other objects
 - Receiving input from other devices
 - Providing output to other devices
- Integration of code to control micro-controller devices
 - Basic text based coding concepts
 - Use of existing loops and scripts to build projects
- Creation of independent projects
 - Development of original code to personalize or develop original content

- Integration of micro-controllers with other personally created physical items (3-D prints, hand crafted items, etc.)
- D. Adapt and/or modify existing projects
 - Access and download existing projects from online collections
 - Adapt existing projects to develop new and original items or functionality

Lab Content

Not applicable.

Special Facilities and/or Equipment

- When offered on/off campus: Lecture room equipped with LCD projector, whiteboard, and a demonstration computer connected online. Computer laboratories equipped with online PCs and/or Macintosh computers, network server access, and 3-D printer(s).
- When taught via the internet: Students must have current email accounts and/or ongoing access to computers with email software, web browsing capability, and access to the World Wide Web.

Method(s) of Evaluation

The student will demonstrate proficiency by:

- Developing a project utilizing work created for the participant's specific purposes, whether educational, business-related or personal.
- Presentation of their web-based design and project to peers.
- Making constructive contributions to class discussions.

Method(s) of Instruction

During periods of instruction the student will be:

- Listening actively to lecture presentations delivered in student-centered learning style by taking notes, following demonstrations, or completing an activity
- Participating in facilitated discussions of live presentations, readings or video presentations
- Presenting in small group and whole class situations

Representative Text(s) and Other Materials

Instructor-assigned notes and materials.

Example textbook:

Krauss, Jane, and Kiki Prottzman. [Computational Thinking and Coding for Every Student: The Teacher's Getting-started Guide](#). Thousand Oaks, CA: Corwin, a SAGE, 2017. Print.

Additional information, notes, handouts, syllabus, assignments, tests, and other relevant course material will be delivered by email and on the World Wide Web, and discussion may be handled with internet communication tools.

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

- Each week requires the student to read and analyze selected websites or student projects related to that week's topic.

B. Each week's topic requires a written response to a prompt that is turned in to the instructor for review. Each prompt is designed to be a draft of a section of the student's completed project. Instructor feedback should be reflected in the final product.

C. Each week's topic requires the student to participate in a weekly discussion prompt based on that week's readings and assignment. Students are to respond to other students' responses offering support, suggestions, alternative ideas, and resources.

Discipline(s)

Instructional Design/Technology