LINC 78A: COMPUTATIONAL THINKING FOR EDUCATORS

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

- Apply computational thinking concepts to chosen content area of teaching.
- Define and explain abstraction, automation, and analysis.

Description

Computational thinking is an essential problem solving skill in the digital age. This course, which is designed for educators, provides instruction in components of computational thinking, including: data analysis, abstraction, and algorithms. A variety of tools will be used to demonstrate coding and debugging experiences. Students will learn how to add computational thinking concepts into many content areas with a special emphasis on related NGSS and Common Core Math computational thinking practices, including opportunities to integrate these concepts into instructional practices in multiple and interdisciplinary areas within education.

Course Objectives

The student will be able to:
A. Define and explain abstraction, automation and analysis
B. Apply computational thinking concepts to chosen content area of teaching
C. Apply computational thinking concepts to an interdisciplinary instructional practice of teaching

Course Content

A. Understand the various components of computational thinking using a variety of problem solving skills
1. Abstraction
2. Automation
3. Analysis
B. Computational thinking concepts in specific content area of teaching
1. Development of a project, unit plan or lesson plan that exhibits computational thinking concepts
2. Learn to collect and analyze data to solve problems
3. Work on debugging code to strengthen CT skills
4. Work on computational thinking lessons that integrate with relevant content area
C. Apply computational thinking concepts to an interdisciplinary instructional practice of teaching
1. Development of a project, unit plan or lesson plan that exhibits computational thinking concepts

Lab Content

Not applicable.

Special Facilities and/or Equipment

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

Method(s) of Instruction

During periods of instruction the student will be:
A. Listening actively to lecture presentations delivered in student-centered learning style by taking notes, following demonstrations, or completing an activity
B. Participating in facilitated discussions of live presentations, readings or video presentations
C. 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 Prottsman. 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

A. 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