LINC 60E: EDUCATIONAL APPLICATIONS FOR AUGMENTED, ALTERNATE & VIRTUAL REALITY

Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2023
Units:	3
Hours:	3 lecture per week (36 total per quarter)
Advisory:	Basic computer skills and knowledge of Macintosh or Windows operating systems; basic skills and knowledge using web browsers, email, bookmarking, searching and downloading.
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

Description

This course provides a hands-on overview of new and emerging technologies for augmented reality (AR) and virtual reality (VR), as well as alternate reality games (ARGs), from an educational perspective. Students explore AR and VR applications and media and analyze their use for instructional purposes. Issues of equity and accessibility, along with practical strategies for integrating these experiences into the classroom, are centered in discussions throughout the course. Students create projects, media, and environments that support teaching and learning goals using AR, VR, and ARGs.

Course Objectives

The student will be able to:

a. Understand the primary elements, methods, and devices of virtual, augmented, and alternate reality, and distinguish between the three modes
b. Analyze the purposes, benefits, and limitations of using virtual, augmented, and alternate reality in educational settings
c. Prepare learning environments to use AR, VR, and ARGs
d. Explore and analyze tools and methods for communication and collaboration within AR, VR, and ARGs
e. Use AR, VR, and ARGs as drivers for exploration and inquiry
f. Create materials to be used within immersive learning environments, and bring materials in and out of varied virtual environments
g. Use AR, VR, and ARGs to develop learning experiences through narratives and storytelling
h. Interweave transmedia experiences involving virtual and augmented reality through the development of an educational ARG
i. Evaluate immersive experiences in virtual, augmented, and alternate reality based on educational technology frameworks, standards, and subject area applications
j. Develop plans for successful implementation of VR, AR, and ARGs in specific educational settings, accounting for both institutional and individual learner needs
k. Follow a design thinking process to design, develop, implement, and evaluate a student-centered project that utilizes virtual, augmented, or alternate reality to meet a specific educational objective

Course Content

a. Primary elements
    i. VR key terms, methods, devices
    ii. AR key terms, methods, devices
    iii. ARG key terms, methods, devices
    iv. Comparing and contrasting the three modes
b. Use educational settings
    i. Student benefit
    ii. Transformed classrooms
    iii. Engagement and investment
    iv. Opportunity and empathy
    v. Standards alignment
    vi. Pedagogy of immersive environments
c. Preparation
    i. Technical knowledge
    ii. Hardware and software
    iii. Cost and funding
    iv. Learning environments
    v. Devices
d. Collaboration
    i. Meeting environments
    ii. Team tasks and challenges
    iii. Integrating desktop tools
    iv. Collaborative design
    v. Managing groups in VR
    vi. Merging media formats through AR
e. Exploration
    i. 360 video and documentary
    ii. Global exploration
    iii. Simulations
    iv. Group exploration
    v. AR and tinkering
    vi. Scavenger hunts and immersive reality
f. Creation
    i. 360 filming
    ii. 360 interactive elements
    iii. 3-D graphic design
    iv. Scanning and viewing objects in AR and VR
    v. Bringing VR creations to the real world
g. Storytelling
    i. Empathy stories
    ii. Interactive stories
    iii. Transmedia storytelling
h. ARGs

i. Mixed reality
ii. Blending digital, VR, and AR
iii. Transmedia learning
iv. Developing and evaluating learning goals
v. Storyboarding and narrative structures

i. Evaluation
i. Evaluative methods
1. Frameworks: SAMR, TPACK
2. Standards: Common Core, ISTE
ii. Applications
1. Sciences
2. Humanities
3. 4Cs
4. Workforce/Entrepreneurship

j. Successful implementation
i. Purpose
ii. Equity and access
iii. Accessibility
iv. Space
v. Training
vi. Adaptations and alternatives
vii. Tool selection
viii. Network considerations

k. Project
i. Empathize and ideate
ii. Design and prototype
iii. Iterate and test
iv. Evaluate and revise

Lab Content

Not applicable.

Special Facilities and/or Equipment

1. When offered on/off campus: Lecture room equipped with projector, whiteboard, and a demonstration computer connected online. Computer laboratories equipped with computers or laptops with internet access
2. When taught via the internet: Students must have current email accounts and ongoing access to computers with web browsing capability and internet access

Method(s) of Evaluation

Methods of Evaluation may include but are not limited to the following:

Developing a project that utilizes virtual, augmented, or alternate reality
Presenting the project to peers for feedback
Making constructive contributions to class discussions
Providing peer reviews to other class members showing their own understanding of the class content

Method(s) of Instruction

Methods of Instruction may include but are not limited to the following:

Lecture presentations delivered in student-centered learning style, during which students take notes, follow demonstrations, or complete an activity

Facilitated discussions of live presentations, readings, or video presentations
Presentations in small group and whole class situations

Representative Text(s) and Other Materials

Akcayir, Gokce. Designing, Deploying, and Evaluating Virtual and Augmented Reality in Education. 2020.

Donally, Jaime. The Immersive Classroom: Create Customized Learning Experiences with AR/VR. 2021.

Frehlich, Craig. Immersive Learning: A Practical Guide to Virtual Reality's Superpowers in Education. 2020.

Instructor-assigned notes, materials, and resources, including instructional materials, open education resources, multimedia, and websites.

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

a. Reading assignments include analysis of texts, selected examples, and student projects
b. Writing assignments include a course project and multiple developmental projects, reflections, discussion responses, and peer feedback on projects
c. Outside assignments include project planning and development, participation in online peer collaboration activities, and project development through an iterative process

When taught online, these methods may take the form of multimedia and web-based presentations. Assignments will be submitted online as well.

Discipline(s)

Instructional Design/Technology