

LINC 84: FUNDAMENTALS OF MAKERSPACE DESIGN & INSTRUCTION

Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2021
Units:	3
Hours:	3 lecture per week (36 total per quarter)
Advisory:	Basic skills using standard computer systems and internet-based technologies.
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 introductory course in makerspace coordination is for students, teachers, educators, and trainers who are interested in becoming makerspace coordinators in schools, libraries, or business settings. Students will develop foundational knowledge and skills in makerspace design, set-up, and management. Practiced skills include the following: designing engaging spaces with learners in mind; developing learning activities that promote creativity, making, and design thinking; creating policies and procedures to ensure safety and accessibility; selecting and maintaining equipment; managing instructional materials. Special emphasis is placed on applying best practices for managing and using makerspaces in instructional settings.

Course Objectives

The student will be able to:

1. Identify and describe the attributes of an ideal makerspace, considering its intended functions and impact on users.
2. Research and compare different types of makerspaces, taking into account factors such as location, audience, purpose, and funding.
3. Practice using a "maker mindset" and making in a variety of contexts, while engaging in ongoing documentation and reflection.
4. Determine critical roles required for the development and operation of a makerspace, and develop a plan to engage and manage a makerspace team.
5. Develop and articulate a specific vision for a makerspace, taking into account its purpose and users.
6. Use a design thinking approach to identify and empathize with potential users of a makerspace, collecting and analyzing both concrete and anecdotal data.
7. Assess existing resources, programs, and offerings within the community through research and data collection methods.
8. Consider global trends and best practices and create connections between makerspace activities and current events or global issues.

9. Create a thematic structure for organizing makerspace materials, equipment, and activities, and draft a design plan for this structure.
10. Identify and select appropriate equipment and materials for a makerspace, considering budget, space, and audience.
11. Develop policies and procedures related to safety and organization, effectively communicating them to users.
12. Use a variety of methods to craft makerspace challenges and activities to encourage user engagement.

Course Content

1. Attributes
 - a. Personalized
 - b. Deep
 - c. Empowering
 - d. Equitable
 - e. Differentiated
 - f. Intentional
 - g. Inspiring
2. Different makerspaces
 - a. Educational spaces, including both lower- and upper- grade levels and adult education
 - b. Manufacturing spaces, corporate, and production facilities
 - c. Hobby and design spaces
 - d. Artistic production spaces
 - e. Virtual spaces
3. Practice making
 - a. Maker mindset
 - b. Design and engineering cycle
 - c. Tinkering to learn
 - d. Design challenges
 - e. Iteration
 - f. Cataloging progress through reflection
4. Critical roles
 - a. Coordination and management
 - b. Funding and fundraising
 - c. Equipment and maintenance
 - d. User interaction and training
 - e. Organizational structure outline
 - f. Recruitment planning
5. Articulate a vision
 - a. Organizational context and organizational goals/mission statement
 - b. Audience context and needs
 - c. Identify defining characteristics
 - d. Call to action
 - e. Vision display plan
6. Understand users
 - a. Potential user qualities
 - b. Data sampling and collection methods
 - c. Organizing and interpreting anecdotal data
 - d. Data visualization methods
 - e. Drawing conclusions from data
7. Community resources

- a. Research methods
 - b. Community outreach
 - c. Evaluating programs and offerings
 - d. Formative assessments
 - e. Applying and interpreting standards
8. Global trends
 - a. Current events
 - b. Broad themes
 - c. Global challenges
 - d. User interests and needs
 - e. Meaningful making
 - f. Developing introductions to design challenges
 9. Thematic structure
 - a. Identifying themes
 - b. Spatial organization
 - c. Equipment placement considerations
 - d. Materials placement considerations
 - e. Design plan
 10. Equipment and materials
 - a. Funding sources
 - i. Fundraising and donation resources
 - ii. Existing and recycled resources
 - iii. Digital and open educational resources
 - b. Tools
 - c. Devices
 - d. Equipment considerations
 - i. Mobility
 - ii. Open-ended exploration opportunities
 - iii. Audience needs and interests
 - iv. Empowerment and engagement potential
 - v. Relevance to community and themes
 - vi. Maintenance needs and costs
 - e. Budget development
 11. Policies and procedures
 - a. User information collection and organization policies
 - i. Membership information
 - ii. Liability information
 - iii. Training information
 - iv. Medical and emergency information
 - b. Safety
 - i. Equipment risks
 - ii. Tool risks
 - iii. Space use
 - iv. Weapon creation policies
 - c. Materials
 - i. Organizational structures
 - ii. Reservations
 - iii. Responsible use
 - iv. Check in/out procedures
 - v. Access policies
 - d. Communication of policies and procedures
 - i. Membership forms
 - ii. Orientations

- iii. Displays and signage
 - iv. Digital communication and archive
12. Challenges and activities
 - a. Mentors
 - b. Guest presentations
 - c. Project menus
 - d. Transliterate making
 - e. Activity stations
 - f. Video challenges
 - g. SCAMPER Method

Lab Content

Not applicable.

Special Facilities and/or Equipment

1. When offered on campus: Lecture room equipped with computer projector system, whiteboard, and internet connectivity. Computer laboratories with internet connectivity and computers or internet enabled devices running standard operating systems (e.g., iOS, MacOS, Windows, Android, Linux)
2. When taught online via Canvas students must have current email accounts and/or ongoing access to computers with email and web browsing capability

Method(s) of Evaluation

Designing and developing makerspace plans, products, and projects
 Presenting the products or projects to peers, capturing feedback, and using it for revision and reflection
 Making constructive contributions to class discussions and peer review feedback

Method(s) of Instruction

The student will be writing notes, listening, and participating in lecture presentation
 The student will be observing an instructor-led demonstration and/or actively practicing the demonstrated skills
 The student will be presenting and communicating their ideas in discussion and/or participating in peer reviews

Representative Text(s) and Other Materials

Fleming, Laura. [The Kickstart Guide to Making Great Makerspaces, 1st ed.](#). 2018.

Thomsett-Scott, Beth. [Makerspace and Collaborative Technologies, 1st ed.](#). 2020.

Pepper, Kylie, Erica Halverson, and Yasmin B. Kafai. [Makeology Vol 1: Makerspaces as Learning Environments, 1st ed.](#). 2016.

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

1. Writing assignments include a major course project and multiple developmental projects, online discussion response, and critical analysis of peer's projects.

2. Outside assignments include conducting project development, planning, reading, and developing the project through an iterative process.
3. When taught online these methods may take the form of video, audio, animation and webpage presentations. Writing assignments are completed online.

Discipline(s)

Instructional Design/Technology