

MAKR 302: BASIC MAKERSPACE SKILLS II

Originator

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Justification / Rationale

Adjusting N.C. Hours. See T.A.3

Effective Term

Fall 2023

Credit Status

Noncredit

Subject

MAKR - Makerspace

Course Number

302

Full Course Title

Basic Makerspace Skills II

Short Title

BASIC MAKERSPACE SKILLS 2

Discipline**Disciplines List**

ALL DISCIPLINES

Modality

Face-to-Face

Hybrid

Catalog Description

Provides additional instruction on the skills and equipment used in makerspaces. More advanced practice is provided for skills related to makerspace safety, equipment safety, and prototyping. Equipment includes a CNC machine, resin 3D printer, resin casting, laser engraver/cutter, airbrush painting, vacuum forming, etc. Students will be able to learn independently and in groups to enhance their personal skills in using equipment safely and effectively to create and build items for personal and educational uses. After completing the two-course sequence of ENTR 301 and 302, students will receive training, badges, and a certificate of completion to safely use equipment at a beginning level. Students will be more prepared for entering STEM and maker career paths in education, community centers, and libraries. This course cannot be taken for credit.

Schedule Description

Introduces students and other individuals to the equipment and skills used in makerspaces. Class one of a two-course sequence.

Total Non-Credit Contact Hours

5

In-class Hours

5

Out-of-class Hours

10

Total Course Units

0

Total Semester Hours

15

Override Description

Noncredit course

Required Text and Other Instructional Materials**Resource Type**

Web/Other

Open Educational Resource

Yes

Year

2022

Description

Websites related to the making community, including Make Magazine (<https://makezine.com/blog/>), Instructables: How to Make Anything (<https://www.instructables.com/>), and Tinkering studio (<https://www.exploratorium.edu/tinkering>)

Resource Type

Book

Open Educational Resource

No

Author

Dougherty, Dale, and Ariane Conrad

Title

Free to Make: How the Maker Movement is Changing our Schools, our Jobs, and our Minds

Year

2016

Resource Type

Book

Author

Hirshberg, Peter, Dale Dougherty, and Marcia Kadanoff

Title

Maker City: A Practical Guide for Reinventing our Cities

Year

2016

ISBN #

978-1680452631

For Text greater than five years old, list rationale:

There have been no updated books published that cover the Maker movement.

Class Size Maximum

20

Course Content

This course will encompass several makerspace areas, focused on safety, basic equipment usage, and prototyping.

A. Basic makerspace safety (equipment not covered in ENTR 301)

1. Basic makerspace functions and work products
2. Safety procedures and use processes

3. Sample project ideas and demonstrations
 4. Uses in hobby, prototyping, and industrial contexts
 5. Acknowledgment of makerspace policies, procedures, and information
- B. Usage of basic level II equipment (laser cutter, vinyl/paper printers & cutters, embroidery machine, CNC wood mill, soldering, etc.)
1. Knowledge of individual machine capabilities and uses
 2. Understanding the difference between machines, their appropriate usage in the makerspace, and the work products that can be created
 3. Basic safety precautions while operating the machine
 4. Preparing the work area so that the equipment can be used appropriately and safely
 5. Knowledge and ability to use digital tools and files to create work products
 6. Demonstration of basic machine operation in the presence of makerspace staff
- C. Prototyping
1. Development of work products from concept to drawing/digital file
 2. Development of low/no cost prototype to develop a proof of concept
 3. Transferring design concepts from analog to digital format, so that they can be shared
 4. Documentation of products created demonstrating safety and proper techniques for usage

Course Objectives

	Objectives
Objective 1	Demonstrate specific use cases and safe operation of the basic level II makerspace equipment.
Objective 2	Apply knowledge to effectively use the equipment, including changing of materials and the manipulation of digital designs required by the machine.
Objective 3	Utilize skills to create work products and prototypes that clearly demonstrate an understanding of equipment safety measures, equipment specifics, and how software is connected to specific pieces of equipment.

Student Learning Outcomes

	Upon satisfactory completion of this course, students will be able to:
Outcome 1	Demonstrate basic makerspace equipment functions and uses.
Outcome 2	Develop products from concept to drawing to prototype.

Methods of Instruction

Method	Please provide a description or examples of how each instructional method will be used in this course.
Technology-based instruction	Students will complete activities and watch videos within Canvas related to makerspace safety and proper equipment usage.
Lecture	The student will be listening actively to lecture presentations delivered in a student-centered learning style by taking notes, following demonstrations, or completing an activity
Laboratory	Practice using basic makerspace equipment for different projects and purposes. Practice design thinking and prototyping to meet varying needs and goals.
Discussion	Discussions that allow students to interact with other students on makerspace equipment and possible projects.

Methods of Evaluation

Method	Please provide a description or examples of how each evaluation method will be used in this course.	Type of Assignment
Product/project development evaluation	Using the makerspace to develop and create a project	In Class Only
Self-paced testing	Completion of a Canvas shell to ensure understanding of equipment and safety requirements.	Out of Class Only
Oral and practical examination	Demonstration of required skill to appropriately and safely use equipment	In Class Only

Other	Out-of-class hours will be accounted for electronically through the learning management system.	Out of Class Only
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Assignments

Other Out-of-class Assignments

- Example reading assignment: Students will read, both in print and online, manuals and instructions relating to the appropriate and safe operation of a tool. Additionally, there will be written material that will accompany either video or direct instruction.
- Example writing assignments: Students will write responses to questions regarding the appropriate use of a tool, as well as describe specific use cases in the hobby, prototyping, and industrial settings.

Grade Methods

Pass/No Pass Only

Distance Education Checklist

Include the percentage of online and on-campus instruction you anticipate.

Online %

25

On-campus %

75

Lab Courses

How will the lab component of your course be differentiated from the lecture component of the course?

Students will learn about equipment and safety but will be required to go into the lab to demonstrate they can safely use the equipment in a real-world setting.

From the COR list, what activities are specified as lab, and how will those be monitored by the instructor?

Demonstrating the proper use of makerspace equipment and the development of a prototype will be within the lab and monitored by an instructor.

How will you assess the online delivery of lab activities?

N/A

Instructional Materials and Resources

Effective Student/Faculty Contact

Which of the following methods of regular, timely, and effective student/faculty contact will be used in this course?

Within Course Management System:

Discussion forums with substantive instructor participation
Online quizzes and examinations
Regular virtual office hours

External to Course Management System:

Direct e-mail
Posted audio/video (including YouTube, 3cm mediasolutions, etc.)
Synchronous audio/video

For hybrid courses:

Orientation, study, and/or review sessions
Scheduled Face-to-Face group or individual meetings

Briefly discuss how the selected strategies above will be used to maintain Regular Effective Contact in the course.

This class will be taught as a hybrid via Canvas and in the Makerspace lab. Instructors will use asynchronous text and video messages to interact with the students. Also, discussion boards and constant announcements will be used. Zoom virtual office hours with screen sharing and interaction capabilities will be available.

Other Information

MIS Course Data

CIP Code

52.0201 - Business Administration and Management, General.

TOP Code

050100 - Business and Commerce, General

SAM Code

C - Clearly Occupational

Basic Skills Status

Not Basic Skills

Prior College Level

Not applicable

Cooperative Work Experience

Not a Coop Course

Course Classification Status

Non-Enhanced Funding

Approved Special Class

Not special class

Noncredit Category

Workforce Preparation

Funding Agency Category

Not Applicable

Program Status

Program Applicable

Transfer Status

Not transferable

Allow Audit

No

Repeatability

Yes

Repeatability Limit

NC

Repeat Type

Noncredit

Justification

Non-credit courses are repeatable until students are comfortable that they have achieved the skills and knowledge required to meet the objectives and outcomes of the course.

Materials Fee

No

Additional Fees?

No

Files Uploaded

Attach relevant documents (example: Advisory Committee or Department Minutes)

LMI - Makerspaces.pdf

Approvals

Curriculum Committee Approval Date

11/01/2022

Academic Senate Approval Date

11/10/2022

Board of Trustees Approval Date

12/16/2022

Chancellor's Office Approval Date

01/07/2022

Course Control Number

CCC000635369