MAKR M928: LASER CUTTING AND ENGRAVING PRODUCTION SHOP

Originator
csadnik

College
Moorpark College

Discipline (CB01A)
MAKR - MakerSpace

Course Number (CB01B)
M928

Course Title (CB02)
Laser Cutting and Engraving Production Shop

Banner/Short Title
Lzr Cttng and Engrve Prod Shop

Credit Type
Noncredit

Start Term
Spring 2022

Catalog Course Description
Offers practical experience in laser cutting and engraving. Covers workflows, operation of equipment, and the production of projects within a team environment.

Taxonomy of Programs (TOP) Code (CB03)
1030.00 - *Graphic Art and Design

Course Credit Status (CB04)
N (Noncredit)

Course Transfer Status (CB05) (select one only)
C (Not transferable)

Course Basic Skills Status (CB08)
N - The Course is Not a Basic Skills Course

SAM Priority Code (CB09)
C - Clearly Occupational

Course Cooperative Work Experience Education Status (CB10)
C - Is Part of a Cooperative Work Experience Education Program

Course Classification Status (CB11)
J - Workforce Preparation Enhanced Funding

Educational Assistance Class Instruction (Approved Special Class) (CB13)
N - The Course is Not an Approved Special Class

Course Prior to Transfer Level (CB21)
Y - Not Applicable

Course Noncredit Category (CB22)
I - Short-Term Vocational

Funding Agency Category (CB23)
A - Primarily Developed Using Economic Development Funds

Course Program Status (CB24)
1 - Program Applicable

General Education Status (CB25)
Y - Not Applicable

Support Course Status (CB26)
N - Course is not a support course

Field trips
Will not be required

Grading method
(L) Letter Graded

Alternate grading methods
(P) Pass/No Pass Grading

Does this course require an instructional materials fee?
No

Repeatable for Credit
Yes
Number of times a student may enroll in this course
Unlimited

Units and Hours

Carnegie Unit Override
No

Total in-Class (full semester or term)
Total Minimum Contact/In-Class Hours (for full semester or term; not weekly)
20
Total Maximum Contact/In-Class Hours (for full semester or term; not weekly)
20

Total Student Learning

Total Student Learning
Total Minimum Student Learning Hours
20
Total Maximum Student Learning Hours
20

Prerequisites
MAKR M925

Entrance Skills

Entrance Skills
MAKR M925

Prerequisite Course Objectives

MAKR M925-code and prepare files for cutting/engraving on the laser cutter.
MAKR M925-demonstrate ability to manually focus the laser.
MAKR M925-adjust the settings on the laser cutter to cut/engrave a variety of materials.
MAKR M925-demonstrate proper laser cutter safety protocols.
MAKR M925-perform manual cleaning of the lens and mirrors.
MAKR M925-arrange documents for cutting/engraving.
MAKR M925-operate the computer to laser cutter interface software.
MAKR M925-demonstrate the ability to troubleshoot issues when using the laser cutter.
MAKR M925-identify what materials are appropriate to cut/engrave with the laser cutter.

Requisite Justification

Requisite Type

Prerequisite

Requisite

MAKR M925

Requisite Description

Course in a sequence

Level of Scrutiny/Justification

Part of a sequence of courses in a certificate of completion or a certificate of competency (noncredit only)

Student Learning Outcomes (CSLOs)

	Upon satisfactory completion of the course, students will be able to:
1	demonstrate the ability to operate the laser cutter
2	demonstrate communication skills within a team environment
3	demonstrate the ability to assess and troubleshoot production problems
4	demonstrate workflow skills

Course Objectives

	Upon satisfactory completion of the course, students will be able to:
1	operate the laser cutter
2	demonstrate communication skills within a team environment
3	demonstrate the ability to identify and asses production problems
4	demonstrate the ability to troubleshoot production problems
5	create and execute workflows for laser cutter production jobs

Course Content

Lecture/Course Content

1. (90%) Laser Cutter
a. safety
b. job preparation
c. job production
d. maintenance
e. workflows
2. (10%) Production Team
a. communication
b. team work

Methods of Evaluation

Which of these methods will students use to demonstrate proficiency in the subject matter of this course? (Check all that apply):

Problem solving exercises
Skills demonstrations
Written expression

Methods of Evaluation may include, but are not limited to, the following typical classroom assessment techniques/required assignments (check as many as are deemed appropriate):

Group projects
Journals
Oral analysis/critiques
Quizzes
Skills demonstrations

Instructional Methodology

Specify the methods of instruction that may be employed in this course

Class activities
Class discussions
Demonstrations
Group discussions
Instructor-guided use of technology
Large group activities
Problem-solving examples
Small group activities

Describe specific examples of the methods the instructor will use:

• Instructor will guide group discussions in which students will work as a team to develop workflows for production jobs.
• Instructor will assist students in troubleshooting problems with production.
• Instructor will demonstrate how to create a workflow for a production job.

Representative Course Assignments

Writing Assignments

• Create written workflows for production laser cutter jobs.
• Complete peer and team evaluations.

Critical Thinking Assignments

• Identify what went wrong when a laser-cut job fails.
• Determine the most effective way to set-up a laser cutter file to maximize the amount of material used in a job.

Reading Assignments

• Read from laser cutter user manual about how to safely perform a cleaning of the mirrors and lens.
• Read from laser cutter user manual about how to manually focus the laser.

Skills Demonstrations

• Demonstrate the ability to perform maintenance on the laser cutter.
• Demonstrate the ability to communicate workflow issues within a team environment.

Outside Assignments

Textbooks and Lab Manuals

Resource Type

Other Instructional Materials

Description

Instructor-generated Laser Engraving/Cutting Packet containing worksheets, guided activities, key terms, and machine component diagrams.

Resource Type
Manual

Description
Universal Laser Systems User Guide. Universal Laser Systems, Inc., 2008, https://users.wpi.edu/~gfischer/files/VLS460_Laser_Cutter_Manual.pdf. Accessed 28 April 2021.

Library Resources

Assignments requiring library resources
Research using the Library's print and online resources.

Example of Assignments Requiring Library Resources
Use the library to locate reference items for design principles and elements.

Primary Minimum Qualification
GRAPHIC ARTS

Review and Approval Dates

Department Chair
04/14/2021

Dean
04/14/2021

Technical Review
4/29/2021

Curriculum Committee
5/4/2021

DTRW-I
05/13/2021

Curriculum Committee
MM/DD/YYYY

Board
06/15/2021

CCCCO
MM/DD/YYYY

DOE/accreditation approval date
MM/DD/YYYY