LINC 84F: VINYL CUTTER FUNDAMENTALS

Foothill College Course Outline of Record

Heading	Value
Units:	1
Hours:	1 lecture per week (12 total per quarter)
Advisory:	Experience with basic computer and internet functions; experience with vector-based graphic design software is recommended, but not required.
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

Intended for makerspace educators and interested makers, this course provides an overview of the safe use and maintenance of vinyl cutter machines, ranging from hobbyist to industrial capacities. Students will design and produce projects on the vinyl cutter, working with a variety of materials, blades, tools, and mats to address different functional needs. Students will use design software to create and import images, separate layers, and determine outcomes based on both hardware and media. Products developed include stickers, pop-up art, t-shirts, mixed media projects, boxes, and large-format vinyl pieces. Special emphasis will be placed on reinforcing design thinking concepts and the development of vinyl cutter makerspace projects to meet the needs of a variety of users.

Course Objectives

The student will be able to:

1. Identify the major parts and functions of a vinyl cutter and explain the role of each part in the machine's operation.
2. Correctly determine which settings to use, including blade-type, speed, mat-type, and special tools in order to cut, draw, and score a variety of material types.
3. Use design software to create and cut projects, determining outcomes based on both hardware and media.
4. Perform machine cleaning and maintenance routines to ensure ongoing machine performance and safety.
5. Use design thinking concepts to design and create mixed media projects that address specified user needs.
6. Design and produce three-dimensional objects by cutting, scoring, and assembling flat materials.
7. Embed designs into cloth by demonstrating safe procedures for using a heat press.

Course Content

1. Parts and functions
   a. Frame
   b. Rollers
   c. Blades
   d. Blade housing system
   e. CNC system
   f. Bed
   g. Mats
   h. Control platform
   i. Model diagram of parts in operation
2. Settings
   a. Material identification
   b. Mats
      i. Grip strength
      ii. Dimensions
      iii. Media requirements
   c. Blades
      i. Precision
      ii. Deep cutting
      iii. Rotary
   d. Alternative tools
      i. Pens
      ii. Scoring wheel
      iii. Embosser
   e. Weeding tools
      i. Weeder
      ii. Tweezers
      iii. Pick
      iv. Transfer tape
   f. Power
   g. Speed
   h. Z-axis
3. Design software
   a. Text tools
   b. Line and shape tools
   c. Object manipulation
      i. Weld
      ii. Attach
      iii. Flatten
      iv. Slice
      v. Contour
   d. Importing graphics
      i. Converting designs
      ii. Identifying and separating layers
   e. Mat separation
4. Cleaning and maintenance
   a. Blade loading and unloading
   b. Blade maintenance and replacement procedures
   c. Mat loading and unloading
   d. Mat grip maintenance procedures
   e. Mat grip testing

  f. Weeding tool safety procedures and maintenance
  g. Troubleshooting issues
5. Mixed media
  a. Design thinking
  b. Media-specific cutting considerations
   i. Vinyl
   ii. Paper
   iii. Craft board
   iv. Leather
   v. Cloth
  c. Adjusting design elements based on media
  d. Mat selection and media placement
  e. Design placement and adjustment
  f. Weeding procedures
  g. Design transfer
6. Three-dimensional design
  a. Pop-up design functions and features
  b. Kirigami
  c. Material thickness accommodations
  d. Notches and dividers
  e. Scoring
  f. Single-piece box design
7. Heat transfer
  a. Function and process
  b. Heat-transfer vinyl properties
  c. Image and design reversing
  d. HTV weeding procedures and considerations
  e. Design placement
  f. Heat press
   i. Timing and temperature settings
   ii. Preparing media
   iii. Silicone sheeting
   iv. Safe operation and maintenance

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. Makerspace or computer laboratories with internet connectivity and computers or internet enabled devices running standard operating systems (e.g., iOS, MacOS, Windows, Android, Linux), and vinyl cutters
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

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

Designing and developing makerspace projects and products
Presenting the product or project to peers, capturing feedback, and using it to revise the product or project

Making constructive contributions to class discussions and peer review feedback

Method(s) of Instruction

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

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

Ceceri, Kathy. Make: Paper Inventions, 1st ed.. 2015.

Griffith, Lia. Cutting Machine Crafts, 1st ed.. 2018.

Bendix, Simone, and Helene Bendix. Paper Poetry: Creative Papercutting Projects, 1st ed.. 2018.

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 educational 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