

Modern Making

Overview

Modern Making introduces students to the principles of making and design thinking through fabricating or producing a finished product.

AVP [Gabriel Meehan \(/about-us/contact-us/faculty-and-staff-directory/gabriel-meehan\)](/about-us/contact-us/faculty-and-staff-directory/gabriel-meehan)
Faculty Project Manager [Thomas Capaletti \(/about-us/contact-us/faculty-and-staff-directory/thomas-capaletti\)](/about-us/contact-us/faculty-and-staff-directory/thomas-capaletti)
Phone (916) 558-2312
Email [capalet@scc.losrios.edu \(mailto:capalet@scc.losrios.edu\)](mailto:capalet@scc.losrios.edu)

Modern Making (MAKR) Courses

MAKR 140 Introduction to Making

Units: 2
Hours: 18 hours LEC; 54 hours LAB
Prerequisite: None.
Catalog Date: June 1, 2020

This highly immersive, hands-on introductory survey course introduces students to the principles of making and design thinking through fabricating or producing a finished product. Students learn to design and build physical things or spaces, make them work, and integrate them with electronics, software, or mediums of innovation. Students will gain knowledge of common fabrication techniques and skill using the associated tools, such as: 3D printing, CNC (Computer Numerical Control) machining, laser cutting, woodworking and metalworking, large printer and cutter usage, electronics, microcontroller programming, textile making, weaving looms, food and beverage making and processing, and more. Students will use this knowledge and skill in both individual and team settings, and participate in a capstone project. Supplies are provided for all assigned projects. Students who have taken this course as MAKR 299 are not eligible to enroll in this course.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- gain knowledge of common fabrication techniques and skill in using them.
- identify and describe all materials that can be manipulated with the makerspace equipment.
- produce and present a simple modern making project in a team-based environment.
- understand and demonstrate safety procedures at the Makerspace.
- proficiently use the ethics and culture in a Makerspace environment.
- demonstrate and articulate the steps to design, make, and test a completed prototype.

MAKR 151 Makerspace Lab I

Units: 0.5 - 1
Hours: 27 - 54 hours LAB
Prerequisite: None.
Catalog Date: June 1, 2020

This lab course provides access to workshops in the methodologies and practices of making in a contemporary Makerspace / fabrication laboratory environment. Via hands-on trainings, workshops, and instruction, students will gain experience using a variety of equipment used in the Makerspace to design and build projects using materials and equipment such as wood, plastics, metals, textiles, organic matter, 3D printing, milling, electronics, large format printing, sewing machines, looms, and food and beverage processors. Supplies are provided for all training projects for this course but not for larger scale commercial projects. Students have access to all equipment after completing the required safety training and any relevant workshops. Students who have taken this course as MAKR 299 are not eligible to enroll in this course.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- understand and demonstrate safety procedures at the Makerspace.
- gain knowledge of common fabrication techniques and skill in using them.
- demonstrate and articulate the steps to design, make, and test a completed prototype.

MAKR 152 Makerspace Lab II

Units: 1
Hours: 54 hours LAB
Prerequisite: MAKR 151 with a grade of "C" or better
Catalog Date: June 1, 2020

This lab course provides access to intermediate-level workshops in the methodologies and practices of making in a contemporary Makerspace / fabrication laboratory environment. Via hands-on trainings, workshops, and instruction, students will gain experience using a variety of equipment used in the Makerspace to design and build projects using materials and equipment such as wood, plastics, metals, textiles, organic matter, 3D printing, milling, electronics, large format printing, sewing machines, looms, and food and beverage processors. Supplies are provided for all training projects for this course but not for larger scale commercial projects. Students have intermediate-level access to all equipment after completing the required safety training and any relevant workshops.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- understand and demonstrate additional safety procedures at the Makerspace.
- gain additional knowledge of common fabrication techniques and skill in using them.
- demonstrate an understanding of additional aspects of prototyping and machine operations.

MAKR 153 Makerspace Lab III

Units:	1
Hours:	54 hours LAB
Prerequisite:	MAKR 152 with a grade of "C" or better
Catalog Date:	June 1, 2020

This lab course provides access to advanced-level workshops in the methodologies and practices of making in a contemporary Makerspace / fabrication laboratory environment. Via hands-on trainings, workshops, and instruction, students will gain experience using a variety of equipment used in the Makerspace to design and build projects using materials and equipment such as wood, plastics, metals, textiles, organic matter, 3D printing, milling, electronics, large format printing, sewing machines, looms, and food and beverage processors. Supplies are provided for all training projects for this course but not for larger scale commercial projects. Students have advanced-level access to all equipment after completing the required safety training and any relevant workshops.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- understand and demonstrate additional safety procedures at the Makerspace.
- gain knowledge of advanced fabrication techniques and skill in using them.
- demonstrate an advanced understanding of all aspects of prototyping and machine operations.

MAKR 155 Wood Maker

Units:	1
Hours:	54 hours LAB
Prerequisite:	None.
Catalog Date:	June 1, 2020

Learn to safely make usable prototypes from different types of wood materials with traditional woodworking tools and methods. Supplies are provided for all training projects for this course but not for larger scale commercial projects. Students have access to all equipment after completing the required safety training and any relevant workshops. Students who have taken this course as MAKR 299 are not eligible to enroll in this course.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- identify, select, maintain, and safely operate hand and power tools, and several woodworking machines.
- be able to safely use a table saw, belt sander, drill press, band saw, bench grinder.
- describe the steps in the woodworking process.
- demonstrate the ability to construct a basic wood object from a paper drawing and digital rendering.

MAKR 156 Print Maker

Units:	1
Hours:	54 hours LAB
Prerequisite:	None.
Catalog Date:	June 1, 2020

Apply graphic design principles and commercial production standards for digital printing using large format and specialty printing devices using industry equipment. Projects include the creation of banners, stickers, T-shirts, posters, decals, static cling, laser cutting and engraving, and vehicle wraps and associated technologies. Supplies are provided for required projects for this course.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- take 2D designs in raster or vector file types and print on a large format printer.
- create banners include mounting preparation such as grommets.
- create die cut stickers.
- use hot transfer equipment to make t-shirts and other fabric-based items.
- engrave designs on various materials using laser cutters.

MAKR 201 Introduction to App Development with Swift

Units:	3
Hours:	45 hours LEC; 27 hours LAB
Prerequisite:	None.
Catalog Date:	June 1, 2020

This course introduces the fundamental concepts of app development and programming. Topics include design thinking, data types, control structures, functions, arrays, and the mechanics of running, testing, and debugging. Students who have taken this course as MAKR 299 are not eligible to enroll in this course.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- explain the purpose of computer programming languages.
- explain and use programming language elements including syntax, data types, conditional statement, control structures, procedures, arrays, classes, and objects.
- create programs based on specifications.
- use Integrated Development Environment (IDE) for the editing, building, debugging, and testing of programs.
- apply proper documentation and formatting of source code.
- integrate design thinking principles into app design.

MAKR 202 App Development with Swift

Units:	3
Hours:	45 hours LEC; 27 hours LAB
Prerequisite:	MAKR 201 and 201 with grades of "C" or better; or equivalent (e.g. CISP 301).
Catalog Date:	June 1, 2020

This course delves deeper into app development and programming and introduces the fundamental concepts of structured and object-oriented programming. Topics include user interface design, control flow, variable scope, and using arrays to display data. Students who have taken this course as MAKR 299 are not eligible to enroll in this course.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- analyze problems and design algorithms using pseudocode, flowcharts, and/or structured charts.
- demonstrate a basic understanding of object-oriented programming by using structs and classes in software projects.
- use object-oriented programming techniques to develop programs that include elements such as inheritance and polymorphism.
- document and format code in a consistent manner.
- apply single- and multi-dimensional arrays in software.
- use a symbolic debugger to find and fix runtime and logical errors in software.
- integrate fundamentals of design for user interface.

MAKR 203 Advanced App Development with Swift

Units:	3
Hours:	45 hours LEC; 27 hours LAB
Prerequisite:	MAKR 202 and 202 with grades of "C" or better
Catalog Date:	June 1, 2020

This course focuses on Advanced App Development. Topics include complex user input, animations, interfacing with the web, and the design cycle. Students will apply techniques for testing and debugging software.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- identify and explain a programming development life-cycle, including planning, analysis, design, development, and maintenance.
- analyze problems and design algorithms using pseudocode, flowcharts, and/or structured charts.
- integrate design thinking principles into app design.
- apply advanced techniques to enhance user experience through persistence, web interface, and animations.

MAKR 295 Independent Studies in Modern Making

Units:	1 - 3
Hours:	54 - 162 hours LAB
Prerequisite:	None.
Catalog Date:	June 1, 2020

This course involves an individual student or small groups of students in study, research, or activities beyond the scope of regularly offered courses, pursuant to an agreement among college, faculty members, and students. Independent Studies in Making offers students a chance to do research and/or experimentation that is more typical of advanced studies in digital fabrication and making.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- demonstrate facility with the materials, tools, and techniques specific to the proposed makerspace project.
- demonstrate an understanding of the process by which specific ideas are developed into finalized makerspace projects.

- demonstrate the ability to produce and present projects in a professional, industry-standard manner.

MAKR 299 Experimental Offering in Modern Making

Units: 0.5 - 4
Prerequisite: None.
Catalog Date: June 1, 2020

MAKR 499 Experimental Offering in Modern Making

Units: 0.5 - 4
Prerequisite: None.
Catalog Date: June 1, 2020

CHECK OUT OUR MAKERSPACE! (</STUDENT-RESOURCES/SUPPORT-SERVICES/MAKERSPACE>)

