

CMCI STUDIO
CRITICAL MAKING STUDIO
Critical Making Studio 1: Finding Your Superpower Through Digital and Physical Making
Fall 2020

Sections:

APRD-5005-001, Monday, 9:30 am – 12:30 pm

APRD-5005-003, Monday, 1:30 pm – 4:30 pm

Instructor: RJ Duran

Email: rj.duran@colorado.edu

Slack: [@rjduran](#). [#cmstudio](#) on [cmcistudio.slack.com](#).

Office hours by appointment.

Nothing is a mistake. There's no win and no fail, there's only make. ~ John Cage

COURSE DESCRIPTION

Critical Making 1 is a first semester project-based studio course that provides a foundation in the creative process of making with new and emerging digital and physical technologies responsible for building the products and services shaping the world we live in.

In this course students work towards becoming fluent with digital and physical tools and technologies supporting their creative visions for new products and services. This includes working with modern web technologies (languages, frameworks, API's) to produce functional prototypes, surveying Computer-Aided Design (CAD) tools for 3D modeling and visualization and leveraging digital fabrication tools (3D Printing, Laser Cutting, CNC Milling) to rapidly produce physical objects and prototypes.

The course will culminate in a final project leveraging the various digital and physical tools, techniques, skills, and knowledge gained throughout the semester. Project examples include web-based applications, connected experiences, smart devices, everyday / enchanted / functional objects, media-based installations, and product-based experiences.

COURSE OBJECTIVES

1. Develop students' awareness of current research and creative application of emerging technologies for making; Analyze and deconstruct systems of logic, design, and pattern to understand fundamental frameworks, concepts, and patterns of thought; Develop the ability to collect and filter information, formulate questions, and propose hypotheses.
2. Establish design protocols for students to exercise the interplay of critical thinking and critical making; Sharpen senses in design methodologies and emerging practices; Learn by evaluating, imitating, questioning, and recreating processes or systems of logic, design, and pattern.
3. Further students' creative practices and proficiencies that support the generation of quality work through hands-on making across a variety of materials and disciplines.
4. Advance creative work through critique, reflection, presentation, and documentation.

CLASS EXPERIENCE

This studio course is project-based and hands-on. Each week will consist of instructor-led discussions introducing new concepts. Students will work individually and in groups with class time being a combination of lecture sessions and working sessions. Informal critiques will take place frequently in class discussions. Students will develop deliverables in response to project parameters and their areas of interest. Deliverables will reach varying levels of fidelity based on project structure and instructor expectations.

SCHEDULE

The course is organized into weekly meetings consisting of instructor led project-driven topics organized as workshops and studio work sessions. It is expected that all students are active participants in each session. The final 4 weeks are dedicated to developing a final project and presenting it to the class.

Week	Date	Topic	Location*
Phase 1: Make Everyday			
1	Aug 28	Orientation Week / Intro to CM1 (<i>Friday Class</i>)	Studio
2	Aug 31	Tools: Software, Editors, Terminal, Version Control	Zoom
3	Sept 7	Labor Day, No Class	
Phase 2: The Modern Web			
4	Sept 14	Intro to Web Development	Zoom
5	Sept 21	Web Applications & Frameworks	Studio
6	Sept 28	Data, API's & Connectivity	Zoom
Phase 3: Digital Design Foundations			
7	Oct 5	Intro to CAD: Rhino & Fusion 360	Studio
8	Oct 12	Visualization & Rendering	Zoom
9	Oct 19	From CAD to CAM	Zoom
Phase 4: Becoming Physical			
10	Oct 26	Intro to Digital Fabrication	Zoom
11	Nov 2	Fabrication Workflows	Studio
12	Nov 9	Materials (<i>Final Project Proposal Due</i>)	Studio
Phase 5: Final Project			
13	Nov 16	Final Projects	Studio
14	Nov 23	Final Projects	Studio
15	Nov 30	Final Projects	Studio
16	Dec 7	Final Project Presentations	

* Class location may vary throughout the semester. Check the course website for up to date information.

Phase 1: Make Everyday

Students will be introduced to the foundations of critical making and variety of on and off-campus resources for producing projects. The first few weeks of the course allow time and space for students to investigate their personal stories, motivations, goals, and interests in making. As they become aware of their goals and the tools available, the possibilities for realizing projects at a variety of scales and fidelity begin to take shape.

Phase 2: The Modern Web

Students will increase their digital fluency with tools and workflows used in the production of web-based projects, namely, technology stacks used for modern web development. Through hands-on experimentation students will gain basic knowledge of full-stack development using the languages of the Internet (HTML / CSS / JS) and related frameworks such as Node.js, leading towards a greater understanding of computational foundations in practice and digital product development.

Phase 3: Digital Design Foundations

Students will become familiar with industry standard tools and workflows used in the design to representation pipeline common in digital and physical product development. This includes, exploring the 2D/3D CAD modeling tools found in Autodesk Fusion 360 and Rhino 3D and producing high fidelity outputs using accessible rendering solutions. In addition, students will begin to work spatially and

parametrically in preparation for digital fabrication methods such as 3D printing, laser cutting, and CNC machining.

Phase 4: Becoming Physical

Students will gain a working understanding of digital fabrication tools, application, workflows, and material possibilities for use in physical product design. Utilizing Computer-Aided Machining (CAM) based tools (3D Printing, Vinyl / Laser Cutting, and CNC Milling) students will produce physical output from digital designs in a variety of materials.

Phase 5: Final Project

Students will develop a final project utilizing any of the tools and techniques explored throughout the semester.

COURSE DELIVERABLES

Course deliverables consist of assignments and a final project. Assignments are assigned weekly with deliverables to be submitted as blog posts on a blog managed by the student.

Assignments are typically due by the start of the next class period, unless otherwise noted, and submitted on the **#cmstudio** slack channel.

Final projects can be done independently or as a group of 2-3 people. In groups, the workload must be distributed as decided by the team members and guided by project parameters. All students are required to provide documentation of their unique contributions to the project.

This studio-based course is 3 credit hours which means students should expect to dedicate at least 2-3 hours per credit hour. This translates into 6-9 hours per week. Consider 6 hours a minimum expectation for one studio course and plan accordingly.

EVALUATION

Work for Critical Making 1 is evaluated based on the following:

1. Attendance and Participation. This is a project-based course and will involve the presentation of concepts, sketches, and prototypes as well as the critique of fellow classmates. All students are expected to be active participants in both activities.
2. Quality and Quantity of project deliverables. This studio-based course requires a healthy level of *creative immersion and balance* to be successful. Explore your creative process through making and always deliver to the best of your abilities. Achieve quality through quantity.
3. Collaboration will also be a factor of evaluation if you choose to work on projects in teams of no more than 2-3 people. The division of duties on any project needs to be clearly defined and documented by all team members and will factor into individual evaluations.

GRADING & ATTENDANCE

Grades for the course will follow the standard A through F letter grading system and will be determined by the following breakdown:

Participation – 25%

- All students are expected to attend and participate in every class session. You are expected to contribute to discussions, engage in group work, give feedback to your peers, and otherwise fully participate in class.
- If missing is unavoidable, notify faculty and any teammates you are currently working with as far in advance as possible.

Assignments – 50%

- Quality and clarity of documentation
- Engagement with the subject matter
- Deliverables completed

Final Project – 25%

RESOURCES

All course resources can be found at <http://make.cmci.studio/>.

Updated: August 27, 2020

Appendix: University Policies & Procedures

A full list of CU's academic policies can be found online at <https://www.colorado.edu/policies>.

Classroom Behavior

Students and faculty each have responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation or political philosophy. Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. For more information, see the policies on [classroom behavior](#) and the [Student Code of Conduct](#).

Requirements for COVID-19

As a matter of public health and safety due to the pandemic, all members of the CU Boulder community and all visitors to campus must follow university, department and building requirements, and public health orders in place to reduce the risk of spreading infectious disease. Required safety measures at CU Boulder relevant to the classroom setting include:

- maintain 6-foot distancing when possible,
- wear a face covering in public indoor spaces and outdoors while on campus consistent with state and county health orders,
- clean local work area,
- practice hand hygiene,
- follow public health orders, and
- if sick and you live off campus, do not come onto campus (unless instructed by a CU Healthcare professional), or if you live on-campus, please alert [CU Boulder Medical Services](#).

Students who fail to adhere to these requirements will be asked to leave class, and students who do not leave class when asked or who refuse to comply with these requirements will be referred to [Student Conduct and Conflict Resolution](#). For more information, see the policies on [COVID-19 Health and Safety](#) and [classroom behavior](#) and the [Student Code of Conduct](#). If you require accommodation because a disability prevents you from fulfilling these safety measures, please see the "Accommodation for Disabilities" statement on this syllabus.

Before returning to campus, all students must complete the [COVID-19 Student Health and Expectations Course](#). Before coming on to campus each day, all students are required to complete a [Daily Health Form](#). In this class, you may be reminded of the responsibility to complete the [Daily Health Form](#) and given time during class to complete it.

Students who have tested positive for COVID-19, have symptoms of COVID-19, or have had close contact with someone who has tested positive for or had symptoms of COVID-19 must stay home and complete the [Health Questionnaire and Illness Reporting Form](#) remotely. In this class, if you are sick or quarantined, please notify CMCI STUDIO faculty by email or Slack.

Accommodation for Disabilities

If you qualify for accommodations because of a disability, please submit your accommodation letter from Disability Services to your faculty member in a timely manner so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities in the

academic environment. Information on requesting accommodations is located on the [Disability Services website](#). Contact Disability Services at 303-492-8671 or dsinfo@colorado.edu for further assistance. If you have a temporary medical condition, see [Temporary Medical Conditions](#) on the Disability Services website.

Preferred Student Names and Pronouns

CU Boulder recognizes that students' legal information doesn't always align with how they identify. Students may update their preferred names and pronouns via the student portal; those preferred names and pronouns are listed on instructors' class rosters. In the absence of such updates, the name that appears on the class roster is the student's legal name.

Honor Code

All students enrolled in a University of Colorado Boulder course are responsible for knowing and adhering to the Honor Code. Violations of the policy may include: plagiarism, cheating, fabrication, lying, bribery, threat, unauthorized access to academic materials, clicker fraud, submitting the same or similar work in more than one course without permission from all course instructors involved, and aiding academic dishonesty. All incidents of academic misconduct will be reported to the Honor Code (honor@colorado.edu; 303-492-5550). Students found responsible for violating the academic integrity policy will be subject to nonacademic sanctions from the Honor Code as well as academic sanctions from the faculty member. Additional information regarding the Honor Code academic integrity policy can be found at the [Honor Code Office website](#).

Sexual Misconduct, Discrimination, Harassment and/or Related Retaliation

The University of Colorado Boulder (CU Boulder) is committed to fostering an inclusive and welcoming learning, working, and living environment. CU Boulder will not tolerate acts of sexual misconduct (harassment, exploitation, and assault), intimate partner violence (dating or domestic violence), stalking, or protected-class discrimination or harassment by members of our community. Individuals who believe they have been subject to misconduct or retaliatory actions for reporting a concern should contact the Office of Institutional Equity and Compliance (OIEC) at 303-492-2127 or cureport@colorado.edu. Information about the OIEC, university policies, [anonymous reporting](#), and the campus resources can be found on the [OIEC website](#).

Please know that faculty and instructors have a responsibility to inform OIEC when made aware of incidents of sexual misconduct, dating and domestic violence, stalking, discrimination, harassment and/or related retaliation, to ensure that individuals impacted receive information about options for reporting and support resources.

Religious Holidays

Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. Please notify me as quickly as possible regarding any possible absences so that we can plan your work accordingly.

See the [campus policy regarding religious observances](#) for full details.

Athletic Events

The Boulder Campus has two separate but similar policies governing conflicts between a student's athletic events and his or her classes and exams. One policy governs students involved in intercollegiate varsity athletic events. The other policy governs students involved in Club Sports events. Each policy is accompanied by a detailed report with guidance on how instructors may deal with conflicts when they arise. Both policies may be viewed in detail on the Boulder Faculty Assembly's website:

Policy on conflicts involving Intercollegiate Athletics,
<http://www.colorado.edu/FacultyGovernance/committees/IAC.html>

Policy on conflicts involving Club Sports
<http://www.colorado.edu/FacultyGovernance/committees/studentaffairs.html>

The two policies are substantially similar, having the following terms in common:

- That it is the student's responsibility to notify each instructor, in the first week of the semester and in writing, about any known conflicts between academic requirements and athletic events.
- That instructors have full authority to decide whether and/or how to accommodate those conflicts. While an instructor has the right to refuse to make accommodations, he or she is permitted to provide such accommodations.
- That coaches are forbidden from initiating contact with instructors regarding schedule conflicts, grades, or academic progress. The Intercollegiate Athletics Office of Academic Support Services and the Recreation Center's Collegiate Club Sports coordinators may contact instructors about certain topics. There is no rule preventing faculty from contacting these support organizations. Policy terms that are specific to intercollegiate varsity events, as opposed to club sports events, include: That intercollegiate varsity athletic events during final exams, which are normally forbidden by university policy, must be approved in writing by the BFA Intercollegiate Athletics Committee well in advance of the event. Students involved in these events must then work with their instructors in regard to any missed work.

Departmental Policy on Class Attendance

In an effort to accommodate student demand for courses, the Department of Advertising, Public Relations and Media Design (APRD) will administratively drop enrolled students who do not attend both of the first two class meetings in a semester of term.

CMCI Diversity, Equity, and Inclusion (DEI)

A Commitment and Invitation from Our College: CMCI strives to be a community whose excellence depends on diversity, equity, and inclusion. We aim to understand and challenge systems of privilege and disadvantage in higher education, such as those based on class, race, ethnicity, gender, sexuality, and dis/ability. We seek to reach across social and political divides and to make space for voices historically underrepresented in higher education and marginalized in society. In other words, diversity is not just a future reality for which we try to prepare students. It is a priority we want to put into practice here, now, and together, in order to foster places of learning where all members can thrive. Our question for you is, how are we doing? Please contact the CMCI diversity team (email [Lisa Flores](#) or visit the [CMCI Diversity, Inclusion, and Equity Staff](#) page)...

- if you need support or other resources but don't know where to turn
- if any aspect of your educational experience with CMCI does not reflect the commitment expressed here, or if you want to share a positive instance of this commitment in action
- if you have any questions, concerns, or ideas related to diversity
- We want to hear from you so that we can do better, and to support you however we can!