

**CMCI STUDIO**  
**CRITICAL MAKING STUDIO**  
**APRD-5019-001: Critical Making Studio 4**  
**Spring 2019**  
**Wednesday, 9am – 12pm**

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**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 Studio 4 is a second 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 shaping and reshaping the world around us. In this course students work towards becoming fluent across digital and physical creative practices used in the development of new products and services. This includes building skills in physical computing and virtual reality technologies, tools, and workflows to design and prototype branded and experience driven products.

## **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 practice, 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, workshop, and studio work sessions. Informal critiques will take place weekly in the course of discussion about projects. Students will develop deliverables based on 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 three 5-week phases. Each phase consists of a series of instructor led project-driven topics structured as workshops and studio work sessions covering digital and physical making. It is expected that all students are active participants in each session.

### **Phase 1: Physical Computing**

In this phase students will become familiar with tools and workflows used to prototype and develop hardware based, interactive, and connected systems. Students will work with low-cost and powerful microcontrollers such as Arduino and Raspberry Pi in combination with input/output devices such as sensors and actuators to realize new modes of interaction and connectivity. In addition, students will become familiar with the tools of electronics prototyping and production such as PCB design, milling, and

assembly. By surveying these topics, it is possible to develop a greater understanding of the technical requirements and challenges found in the development of hardware based products.

#### Phase 2: The XR Continuum

In this phase students will be exploring the XR Continuum to become familiar with the tools, technologies, and applications of XR (VR/AR/etc...) as a platform for designing immersive experiences. The phase will focus on virtual reality technologies (software & hardware), scripting in the C# programming language, and the digital-physical relationship between interactive, responsive, and connected hardware systems, objects, and devices.

#### Phase 3: Final Projects

In this phase students will propose and realize a final project to present at the spring showcase event.

### COURSE WORKLOAD

This course is 3 credit hours. This means a student 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 with other studio courses.

Assignments for the course consist of project-based and process oriented blog posts as well as weekly research, readings, and making. Many of which will be decided each week in class. In general, anything with deliverables is "due" the following week by the start of class time. Refer to the Course Deliverables section for more information.

### COURSE DELIVERABLES

Critical making courses are project-based and largely driven by student research areas. As such, each deliverable is expected to vary based on the project parameters and requirements. The course website outlines the general criteria for course deliverables throughout the semester. Any changes to deliverables and/or course schedule can be found on the website: <http://make.cmci.studio/>.

### EVALUATION

Work for Critical Making Studio 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 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.

### ATTENDANCE

All students are expected to attend every class session. If missing is unavoidable, notify faculty and any teammates you are currently working with as far in advance as possible.

### RESOURCES

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

## **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 differences of race, color, culture, religion, creed, politics, veteran's status, sexual orientation, gender, gender identity and gender expression, age, disability, and nationalities. 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.

<https://www.colorado.edu/policies/student-classroom-and-course-related-behavior>

<https://www.colorado.edu/osccr/>

### **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.

### **Disability**

If you qualify for accommodations because of a disability, please submit to your professor a letter from Disability Services in a timely manner (for exam accommodations provide your letter at least one week prior to the exam) so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities. Contact Disability Services at 303-492-8671 or by e-mail at [dsinfo@colorado.edu](mailto:dsinfo@colorado.edu). If you have a temporary medical condition or injury, see Temporary Medical Conditions: Injuries, Surgeries, and Illnesses guidelines under Quick Links at Disability Services website and discuss your needs with your professor.

More Information:

<https://www.colorado.edu/disabilityservices/students>

<https://www.colorado.edu/disabilityservices/students/temporary-medical-conditions>

### **Religious Observance**

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.

<https://www.colorado.edu/policies/observance-religious-holidays-and-absences-classes-andor-exams>

### **Discrimination and Harassment**

The University of Colorado Boulder (CU-Boulder) is committed to maintaining a positive learning, working, and living environment. The University of Colorado does not discriminate on the basis of race, color, national origin, sex, age, disability, creed, religion, sexual orientation, or veteran status in admission and access to, and treatment and employment in, its educational programs and activities. (Regent Law, Article 10, amended 11/8/2001). CU-Boulder will not tolerate acts of discrimination or harassment based upon

Protected Classes or related retaliation against or by any employee or student. For purposes of this CU-Boulder policy, "Protected Classes" refers to race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, or veteran status. Individuals who believe they have been discriminated against should contact the Office of Discrimination and Harassment (ODH) at 303-492-2127 or the Office of Student Conduct (OSC) at 303-492-5550. Information about the ODH, the above referenced policies, and the campus resources available to assist individuals regarding discrimination or harassment can be obtained at <http://hr.colorado.edu/dh/>.

## **Honor Code**

All students of the University of Colorado at Boulder are responsible for knowing and adhering to the academic integrity policy of this institution. Violations of this policy may include: cheating, plagiarism, aid of academic dishonesty, fabrication, lying, bribery, and threatening behavior. All incidents of academic misconduct shall be reported to the Honor Code Council ([honor@colorado.edu](mailto:honor@colorado.edu); 303-735-2273). Students who are found to be in violation of the academic integrity policy will be subject to both academic sanctions from the faculty member and non-academic sanctions (including but not limited to university probation, suspension, or expulsion).

More Information:

<https://www.colorado.edu/policies/academic-integrity-policy>

<https://www.colorado.edu/osccr/honor-code>

## **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.