

USC Iovine and Young Academy

*Arts, Technology and the Business
of Innovation*

Course ID and Title: Making with Materials

Units: 2

Term—Day—Time:

Location: Creator Studio – Iovine & Young Hall, First Floor

Instructor: Jacob Patapoff

Office: IYH 104 – Creator Studio

Office Hours: By appointment

Contact Info: patapoff@usc.edu

IT Help: <https://uscedu.sharepoint.com/sites/IYASStudent/SitePages/IT-Resources.aspx>

Hours of Service: 8:30 a.m. – 6:30 p.m.

Contact Info: iyahelp@usc.edu

Course Description

Good designers must understand how to work with physical materials and the fabrication processes to actualize ideas into reality. This class will focus on digital and traditional fabrications techniques through assignments and class work, as well as a foundation in the materials science of the various materials. In this hands-on course, students will learn how to work various materials and fabrication techniques including but not limited to wood working, metal working, textiles, plastics, laser cutting and 3D printing.

Learning Objectives

Students will learn about the tools, processes, and techniques for fabricating products within different product category segmentations such as soft goods (i.e. – textiles, etc.) to hard goods (i.e. – wood, metal, plastic etc.). This will also include a foundation in the material science aspects of the different materials.

Prerequisite(s): None

Co-Requisite(s): None

Concurrent Enrollment: None

Recommended Preparation: Exploring Adobe Illustrator’s interface can be a valuable starting point.

Course Notes

Dress Code

Since class will mostly be held in the Creator Studio, please come dressed in shop attire - closed toe footwear, no loose-fitting clothing/jewelry, no dangling strings, ties, or scarfs. Tie long hair back and up.
<http://tiny.cc/usc-shop-rules>

Technological Proficiency and Hardware/Software Required

Adobe Creative Cloud

Google slides or equivalent for presentations/deliverables

Prusa Slicer (for 3D Printing) - https://help.prusa3d.com/article/install-prusaslicer_1903

Suggested but not required: Rhino3D - \$195

<https://www.rhino3d.com/store?audience=Educational>

Also available for free via USC Cloudapps as a virtual desktop with your USC login

<https://software.usc.edu/cloudapps-usc-edu/>

- For 3D modeling/3D printing

HOW TO PURCHASE SOFTWARE AT THE DISCOUNTED ACADEMY RATE

The following software are available for purchase online at the Iovine and Young Academy discounted rate:

Software	IYA Short-Term License at USC Bookstore
Adobe Creative Cloud	\$70 2023–2024 annual license (active through July 2023)

To purchase:

- Visit: <https://commerce.cashnet.com/IOVINE>
- Select the software license(s) you would like to purchase by clicking “View Details” or the software title, and make your purchase.
- You will receive an order confirmation receipt at the email address you provided.
- You will be notified by email when the software license has been activated.

If you have any questions about this process, please do not hesitate to contact Academy IT Support at iyahelp@usc.edu.

Required Readings and Supplementary Materials

Radical Matter: Rethinking Materials for a Sustainable Future – Kate Franklink and Caroline Till
<https://tinyurl.com/32nk62x2>

Optional Readings and Supplementary Materials

Materials and Design: The Art and Science of Material Selection in Product Design – Mike Ashby and Kara Johnson
<https://tinyurl.com/3urrvuj3>

Description and Assessment of Assignments

Class time will consist of in-class demonstrations and may include the entire class collectively participating in a large group critique or being broken up into having in-class studio time while the instructor conducts individual critique and feedback.

Students are responsible for all assignments, including homework, in-class work, critiques, presentations, demos, readings, process documentation and applicable archiving progress. It is the student's responsibility to obtain missed work and information if absent. Information is exchanged in group discussion and may not be imparted through handouts or notes; therefore, it is critical for students to attend class and be on time to succeed.

Participation

Assignments will be graded based on adherence to given guidelines, attention to craft and overall appropriateness. Taking initiative, progression and follow-through will also be considered. Both giving and receiving feedback will be critical to your success in the class; therefore, your participation grade is based on your active involvement in class and critiques. Assignments will be docked one full letter grade each week they are late. Absence is not an excuse for late work. Please be sure to communicate with the professor if you miss (or plan to miss) a class to arrange for homework submission.

Grades will be assigned according to a point system based on the following criteria:

- Competency in key concepts
- Effort/range of exploration
- Process and methodology
- Presentation/craftsmanship
- Participation in critiques

Grading Breakdown

A: Exceptional - Going above and beyond with exemplary work both quantitatively and qualitatively.

A-: Excellent – Meeting all homework requirements with a very high quality of what's expected with regard to content, creativity, attention to detail and craftsmanship.

B: Very good - Completing all assignments with a high level of proficiency but lacking in some areas of competency.

B-: Good - Completing assignments with an above adequate to adequate level of proficiency in the five areas of competency.

C+: Satisfactory - Completing assignments with a satisfactory level of proficiency in most areas of competency, and below adequate in some areas.

C: Unsatisfactory - Improvement needed in the five areas of competency listed in the grading criteria. Below expectation - Most likely caused by poor levels of execution, lack of participation in incomplete work, and overall lack of performance/effort.

C-: Well below expectation.

D: Significantly below expectation

Table 1 Grading Breakdown

Assessment Tool (assignments)	Points	% of Grade
Safety Training	50	5
Low Fidelity Prototyping	50	5
Low Fidelity Object	50	5
3D Printing/Scanning	50	5
3D Printed Object	50	5
Laser Cutting	50	5
Laser Cut Object	50	5
Textiles	50	5
Textile Object	50	5
Wood Joinery	50	5
Metal/Welding	100	10
Finishing and Documentation	100	10
Final Presentation	100	10
Documentation	100	10
Participation	100	10
TOTAL	1000	100

Grading Scale

Course final grades will be determined using the following scale:

Letter grade	Corresponding numerical point range
A	100-94
A-	94-90
B+	90-87
B	87-83
B-	83-80
C+	80-77
C	77-73
C-	73-70
D+	70-67
D	67-64
F	64 or below

Assignment Submission Policy

For assignments delivered in class (such as presentations), the work must be completed before the commencement of the class session in which the assignment is due.

Grading Timeline

Grades and feedback for all assignments will be returned to students within one week of submission.

Course Attendance Policy

The Academy maintains rigorous academic standards for its students and on-time attendance at all class meetings is expected. Each student will be allowed two absences over the course of the semester for which no explanation is required. Students are admonished to not waste excused absences on non-critical issues, and to use them carefully for illness or other issues that may arise unexpectedly. Except in the case of prolonged illness or other serious issue (see below), no additional absences will be excused. Each unexcused absence will result in the lowering of the final grade by $\frac{1}{3}$ of a grade (e.g., an A will be lowered to A-, and A- will be lowered to a B+, etc.). In addition, being tardy to class will count as one-third of an absence. Three tardies will equal a full course absence.

Students remain responsible for any missed work from excused or unexcused absences. Immediately following an absence, students should contact the instructor to obtain missed assignments or lecture notes and to confirm new deadlines or due dates. Extensions or other accommodations are at the discretion of the instructor.

Automatically excused absences normally may not be used for quiz, exam or presentation days. Using an excused absence for a quiz, exam or presentation, such as in the case of sudden illness or other emergency, is at the discretion of the instructor.

In the case of prolonged illness, family emergencies, or other unforeseen serious issues, the student should contact the instructor to arrange for accommodation. Accommodation may also be made for essential professional or career-related events or opportunities. Additionally, students who need accommodations for religious observations should provide advanced notice to instructors and student athletes should provide Travel Request Letters. All accommodations remain at the discretion of the instructor, and appropriate documentation may be required.

[Unless students provide an accommodation letter from USC's Office of Student Accessibility Services \(OSAS\)](#) or a letter from IYA Student Services detailing visa or travel restrictions, attendance and active participation is expected in the classroom. Any student with such accommodations should submit their accommodation document to the instructor as soon as possible to discuss appropriate accommodations.

Students who are experiencing illness should not attend class in person. Please inform the instructor in advance of any class sessions that you can't attend for medical reasons, and accommodations will be arranged to view recorded lectures and submit alternatives to any missed class participation. Students will not be penalized for not attending class in person under these circumstances.

Irvine and Young Hall Cleanout

The Academy is unable to store student projects and materials beyond the end of the semester. Students must remove all projects and personal materials from the Creators Studio, lockers/locker room, and other classrooms by the end of each semester. **All projects and materials left in Irvine and Young Hall will be discarded the day after final exams end. No exceptions.**

Classroom Norms

Course Content Distribution and Synchronous Session Recordings Policies

USC has policies that prohibit recording and distribution of any synchronous and asynchronous course content outside of the learning environment.

Recording a university class without the express permission of the instructor and announcement to the class, or unless conducted pursuant to an Office of Student Accessibility Services (OSAS) accommodation.

Recording can inhibit free discussion in the future, and thus infringe on the academic freedom of other students as well as the instructor. ([Living our Unifying Values: The USC Student Handbook](#), page 13).

Distribution or use of notes, recordings, exams, or other intellectual property, based on university classes or lectures without the express permission of the instructor for purposes other than individual or group study. This includes but is not limited to providing materials for distribution by services publishing course materials. This restriction on unauthorized use also applies to all information, which had been distributed to students or in any way had been displayed for use in relationship to the class, whether obtained in class, via email, on the internet, or via any other media. ([Living our Unifying Values: The USC Student Handbook](#), page 13).

USC Learning Experience Evaluations

At the midpoint of this course, you will be asked to complete an evaluation. It will be a chance to reflect on what we have accomplished up to that point and to propose ways the course might be modified.

Course Schedule

Table 3 Course schedule

	Topics/Daily Activities	Readings/Preparation	Deliverables
Week 1	-Introductions -Cover syllabus -Creator Studio safety training	Complete safety training	
Week 2	Low Fidelity Prototyping	Radical Matter: Ch 1	
Week 3	Low Fidelity Object	Radical Matter: Ch 2	Low fidelity object due
Week 4	3D Printing	Radical Matter: Ch 3	
Week 5	3D Printed Object	Optional: Materials and Design: Ch 2 & 3	3D printed object due
Week 6	Laser Cutting	Radical Matter: Ch 4	
Week 7	Laser Cut Object	Optional: Materials and Design: Ch 4 & 5	Laser cut object due
Week 8	Textiles	Radical Matter: Ch 5	
Week 9	Textiles Object	Optional: Materials and Design: Ch 6 & 7	Textiles object due
Week 10	Wood Joinery	Radical Matter: Ch 6	
Week 11	Wood Object	Optional: Materials and Design: Ch 8 & 9	Wood object due
Week 12	Metal/Welding	Radical Matter: Ch 7	
Week 13	Finishing and Documentation	Optional: Materials and Design: Ch 10	Documentation portfolio due
Week 14	Check-ins and assignment work	Radical Matter: Ch 8	Check in 1
Week 15	Check-ins and assignment work		Check in 2
FINAL	Final Presentations		

Statement on Academic Conduct and Support Systems

Academic Integrity

The University of Southern California is foremost a learning community committed to fostering successful scholars and researchers dedicated to the pursuit of knowledge and the transmission of ideas. Academic misconduct is in contrast to the university's mission to educate students through a broad array of first-rank academic, professional, and extracurricular programs and includes any act of dishonesty in the submission of academic work (either in draft or final form).

This course will follow the expectations for academic integrity as stated in the [USC Student Handbook](#). All students are expected to submit assignments that are original work and prepared specifically for the course/section in this academic term. You may not submit work written by others or "recycle" work prepared for other courses without obtaining written permission from the instructor(s). Students suspected of engaging in academic misconduct will be reported to the Office of Academic Integrity.

Other violations of academic misconduct include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

The impact of academic dishonesty is far-reaching and is considered a serious offense against the university and could result in outcomes such as failure on the assignment, failure in the course, suspension, or even expulsion from the university.

For more information about academic integrity see the [student handbook](#) or the [Office of Academic Integrity's website](#), and university policies on [Research and Scholarship Misconduct](#).

Please ask your instructor if you are unsure what constitutes unauthorized assistance on an exam or assignment, or what information requires citation and/or attribution.

Policy for the use of AI Generators

I expect you to use AI (e.g., ChatGPT and image generation tools) in this class. Learning to use AI is an emerging skill, and I welcome the opportunity to meet with you to provide guidance with these tools during office hours or after class. Keep in mind the following:

AI tools are permitted to help you brainstorm topics or revise work you have already written.

If you provide minimum-effort prompts, you will get low-quality results. You will need to refine your prompts to get good outcomes. This will take work.

Proceed with caution when using AI tools and do not assume the information provided is accurate or trustworthy. If it gives you a number or fact, assume it is incorrect unless you either know the correct answer or can verify its accuracy with another source. You will be responsible for any errors or omissions provided by the tool. It works best for topics you understand.

AI is a tool, but one that you need to acknowledge using. Please include a paragraph at the end of any assignment that uses AI explaining how (and why) you used AI and indicate/specify the prompts you used to obtain the results what prompts you used to get the results. Failure to do so is a violation of academic integrity policies. Be thoughtful about when AI is useful. Consider its appropriateness for each assignment or circumstance. The use of AI tools requires attribution. You are expected to clearly attribute any material generated by the tool used.

Students and Disability Accommodations:

USC welcomes students with disabilities into all of the University's educational programs. [The Office of Student Accessibility Services](#) (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More

information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Support Systems:

[Counseling and Mental Health](#) - (213) 740-9355 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

[988 Suicide and Crisis Lifeline](#) - 988 for both calls and text messages – 24/7 on call

The 988 Suicide and Crisis Lifeline (formerly known as the National Suicide Prevention Lifeline) provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week, across the United States. The Lifeline is comprised of a national network of over 200 local crisis centers, combining custom local care and resources with national standards and best practices. The new, shorter phone number makes it easier for people to remember and access mental health crisis services (though the previous 1 (800) 273-8255 number will continue to function indefinitely) and represents a continued commitment to those in crisis.

[Relationship and Sexual Violence Prevention Services \(RSVP\)](#) - (213) 740-9355(WELL) – 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender- and power-based harm (including sexual assault, intimate partner violence, and stalking).

[Office for Equity, Equal Opportunity, and Title IX \(EEO-TIX\)](#) - (213) 740-5086

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

[Reporting Incidents of Bias or Harassment](#) - (213) 740-5086 or (213) 821-8298

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

[The Office of Student Accessibility Services \(OSAS\)](#) - (213) 740-0776

OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

[USC Campus Support and Intervention](#) - (213) 740-0411

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

[Diversity, Equity and Inclusion](#) - (213) 740-2101

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

[USC Emergency](#) - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

[USC Department of Public Safety](#) - UPC: (213) 740-6000, HSC: (323) 442-1200 – 24/7 on call

Non-emergency assistance or information.

[Office of the Ombuds](#) - (213) 821-9556 (UPC) / (323-442-0382 (HSC)

A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

[Occupational Therapy Faculty Practice](#) - (323) 442-2850 or otfp@med.usc.edu

Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.