

## Course Information

**Number and title:** Arch 433 - Intro to Digital Fabrication

**Professor info:** Alphonso Peluso  
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**Prerequisite(s):** DC2 or permission to take the course

**Text and Materials:** **Project Materials Fee (\$50 - TBD)**  
All course resources will be provided on the portal link below:

**Resource Location:** <https://www.digitallarchfab.com/arch-433-intro-to-digital-fabrication-fall-2025/>

### Course description:

Course focuses on translating digital models into physical artifacts through CNC milling. Students develop a deep understanding of material constraints, fabrication strategies, and precision detailing, gaining the ability to prototype complex forms. This course establishes the crucial link between virtual design and real-world construction, preparing students to work on a full-scale fabrication project.

### Course format:

Students will work individually on CNC skill building assignments. For the midterm students will work in groups of (2 OR 3) on a Furniture project. For the Final students will work as one large group to design and build a small pavilion.

### Separate Tasks (examples):

Materials Estimate/Budget, Documentation Video, Documentation Book, etc..

### Learning Outcomes:

**Operate CNC milling equipment proficiently** and apply digital-to-physical translation workflows to produce precise, complex forms.

**Analyze and respond to material properties and constraints** to inform fabrication strategies and design decisions.

**Apply iterative prototyping methods** from small-scale tests to full-scale applications—to refine design and construction outcomes.

**Integrate precedent research** into the design process, translating lessons from case studies into innovative fabrication solutions.

**Collaborate effectively in team-based projects** of varying scales, including group furniture fabrication and full-class pavilion construction.

**Plan and manage fabrication logistics** through materials estimation, budgeting, and detailed process documentation.

**Produce comprehensive project documentation** including visual, written, and video formats that clearly communicates design intent, process, and final outcomes.

### Processes / Machines:

Subtractive Fabrication / CNC Router

**Reading List:**(the Internet is the place to start, the publication is the place to end)

Filson, Rohrbacher, France, *'Make: Design for CNC'*, Maker Media Inc. 2018  
Dunn, *'Digital Fabrication in Architecture'*, Laurence King, 2012 (general dig. fab reference)  
Iwamoto, *'Digital Fabrications'*, Princeton Architectural Press, 2009 (general dig. fab reference)

**Grading:** Students will be graded on 5 individual assignments and 6 group assignments. Final grade is based on the percentages below:

**10% for attendance**

(attendance is mandatory, signing in for someone and/or 3 unexcused absences will result in a failing grade)

**20% for the individual assignments**

**30% for the group assignments 1-4**

**40% for the group assignments 5-6**

Please note: attendance, completion and submission of all course work on time is the minimum requirement and does not mean that you will receive an A grade. All grades are subject to the grade judging criteria below:

### Grades are determined by judging 4 different categories:

**Craft** - This course requires a high level of craft and precision. It's required that all fabrications are made to look like works of art.

**Legibility** - Make sure that your assignment documentation is clear and easy to read. Use spell check (all software apps have it). Your shared folder should be neat and organized with assignment #'s labeled **Firstname\_Lastname\_A0#**.

**Composition** - In addition to being legible you should apply all the concepts of composition that you have previously learned. Specifically in this course composition refers to process documentation i.e. writing, photography & fabrication.

**Innovation** - Expand upon the skill sets taught in the course and apply them to the assignments. Research additional learning resources found on the internet and in libraries. Create your own way to apply the fabrication concepts discussed in the course. Share your innovation in your presentations and project documentation.

### Americans with Disabilities Act (ADA) Policy Statement:

Reasonable accommodations will be made for students with documented disabilities. In order to receive accommodations, students must go through the Center for Disability Resources office. The Center for Disability Resources (CDR) is located in Life Sciences Room 218, telephone 312.567.5744 or <https://www.iit.edu/cdr>

**Academic Resource Center (ARC):** Hermann Hall for help with study or language skills.

<http://iit.edu/arc/>

**IIT Writing Center:** One-to-one help with writing assignments.

<https://www.iit.edu/cac/writing-guides/help-writing-assignments>

**Student Health and Wellness Center:** provides health care, advocacy, wellness resources

<https://www.iit.edu/shwc>

**Therapy/Psychiatric Counseling:** <https://www.iit.edu/shwc/appointments/counseling-appointments>

**Center for Disability Resources:** <https://www.iit.edu/cdr>

**Code of Academic Honesty:** <https://web.iit.edu/student-affairs/handbook/fine-print/code-academic-honesty>

**Student Code of Conduct:**

[https://webmaster.iit.edu/files/general-counsel/faculty-handbook/code\\_of\\_conduct.pdf](https://webmaster.iit.edu/files/general-counsel/faculty-handbook/code_of_conduct.pdf)

**Studio Culture:** <https://arch.iit.edu/about/studio-culture>

## Class Schedule

**Week One:** RhinoCam #01 \_ CNC #01 \_ Engraving \_ Profiling  
August 21 Form Groups

**Week Two:** RhinoCam #02 \_ CNC #02 \_ Engraving \_ Profiling  
August 28 Pocketing

**Week Three:** RhinoCam #03 \_ CNC #03 \_ Drill  
September 04

**Week Four:** RhinoCam #04 \_ CNC #04 \_ Surface Milling  
September 11

**Week Five:** RhinoCam #05 \_ CNC #05 \_ Flip Milling  
September 18

**Week Six:** Form Groups \_ Select Midterm Project \_ Work In Class  
September 25

**Week Seven:** Midterm Assignment Fabrication \_ Work In Class  
October 02

**Week Eight:** Midterm Presentation  
October 09

**Week Nine:** Design Final Project Pavilions  
October 16 Assign group tasks  
Process video commencement

**Week Ten:** (3) 1/8 Full Scale (1'cube) prototype models due  
October 23 (can be laser cut)

**Week Eleven:** Select one of last weeks prototype models  
October 30 Build a 1/4 full scale (2' cube) prototype model

**Week Twelve:** Build a 1/4 full scale (2' cube) prototype model  
November 06

**Week Thirteen:** Build a 1/2 full scale (4' cube) prototype model  
November 13

**Week Fourteen:** **Work In Class on Full Scale Pavilion**  
November 20

**Week Fifteen:** **Work In Class on Full Scale Pavilion**  
November 27

**Week Sixteen:** **No Class**  
December 04

**Finals Week:** **Final Presentation**  
December 11

\*note: course syllabus & schedule are subject to change