



ARCH 433 | Introduction to Digital Fabrication | Fall 2016 | Brett Balogh | bbalogh@iit.edu
Wednesdays/Fridays | 835am | Tech Park North 110

DESCRIPTION

The term 'Digital Fabrication' encompasses a number of different processes aimed at making physical form from digital models or representations. This course is designed to explore the digital fabrication resources available in the College of Architecture in order to endow students with a basic, yet thorough understanding of the processes involved in the translation of model to object. The concept and practice of making will extend from fabrication to encompass electronics, programming and embedded computing. The course will lead students through these concepts and skills in a series of classroom and shop tutorials and will focus on the integration of these various digital processes into a coherent system that will function as an interactive home/interior device. Assignments will be given to reinforce course topics and to contribute to the development of craft in the digital medium. Class readings, discussions and activities will also explore the areas of personal fabrication, the internet of things (IoT), and the burgeoning Open Source/DIY/Maker movement in an effort to connect the architect/designer to current and future trends in the culture of making.

GOALS

- Continue to develop competency in CAD using Rhinoceros 3D, Grasshopper
- Effectively design with intent to fabricate
- Develop skills in the proper use of digital fabrication tools
- Gain an understanding of electronics, programming and embedded computing
- Integrate various digital processes into a coherent, functioning system

SOFTWARE TOOLS

- Rhino + Grasshopper
- RhinoCAM
- Arduino
- Fritzing

OPTIONAL TEXTS

- ['Sentient City', Shepard, ed., MIT Press, 2011](#)
- ['Digital Ground', McCullough, MIT Press, 2005](#)
- ['Making Things Talk', Igoe, Maker Media, 2007](#)
- ['Making Things Move', Roberts, McGraw-Hill/TAB, 2010](#)

POLICIES

-Assignments will be given weekly unless otherwise stated. The format of the assignments will vary and may consist of readings, software projects and/or physical objects. It is the student's responsibility to complete assignments outside of class time and to present them on the day they are due.

-Students are expected to attend every class. Those missing class are responsible for making up work in a timely manner. In the case of illness or other extenuating circumstances, the student should contact the instructor as soon as possible and provide a written excuse if available. Excessive unexcused absences will not be tolerated. More than two absences will result in the reduction of the final grade by one letter. The final grade will be reduced by one letter for each unexcused absence thereafter.

-Late assignment grades are reduced one letter grade per week late. For instance, if you are a week late with your midterm assignment and you received a B, your recorded midterm grade will be a C.

-Students must document their work by maintaining a github repository and blog. Details will be provided in class. An assignment is not complete without proper documentation.

-Students are required to purchase a kit of electronics not to exceed \$100. The kit is available at adafruit: <http://www.adafruit.com/wishlists/411535>. Students should also expect to purchase their own construction materials and tools.

-Students are expected to bring both their laptops and kits/materials to each class session.

-The criteria for grading are promptness, accuracy, creativity, craftsmanship and completeness. Late assignments without a reasonable explanation are automatically reduced by one letter grade for each week it is overdue. All course work must be documented in the student's repository in order to receive full credit. The final grade will be determined by the following percentages:

20% Attendance | 40% Midterm | 40% Final

-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 disabilities@iit.edu.

*Syllabus subject to change

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+---	Week 01	08/24	Introduction to the Course and tools. Purchase Kits Now!!!
+---	Week 02	08/31	Rhino + Laser 1: Box
+---	Week 03	09/07	Photon 1: Digital IO
+---	Week 04	09/14	Photon 2: Analog IO
+---	Week 05	09/21	Photon 3: Advanced IO
+---	Week 06	09/28	Rhino + Grasshopper + Laser 2: Apertures
+---	Week 07	10/05	Rhino + Grasshopper + Laser 3: Material Behavior
+---	Week 08	10/12	3D Printing
+---	Week 09	10/19	Midterm Proposal Due
+---	Week 10	10/26	CNC
+---	Week 11	11/02	Electronics Fabrication
+---	Week 12	11/09	Project Work
+---	Week 13	11/16	Project Work
+---	Week 14	11/23	No Class Thanksgiving Break
+---	Week 15	11/30	Project Work
+---	Week 16	12/??	Final Projects Due