Course Description
This course operates at the intersection of design and production, introducing students to digital tools critical to contemporary architecture and design. For decades, CNC (computerized machine control), CAD (computer-aided design), and CAM (computer-aided manufacturing) systems have been instrumental in helping designers translate complex digital models into physical forms. This translation process requires an intimate understanding of computational thinking as well as much more fundamental, analog technologies of representation, assembly, and form-making.

Throughout the semester, students will develop a series of projects which fluidly transition between design, representation, and fabrication with an emphasis on understanding how conceptual design interfaces with material properties. Iterative design techniques and process-oriented thinking will be emphasized. The course will offer a platform for students to research, experiment, and ultimately leverage the potential of digital tools towards a wide array of fields and disciplines. At the end of the semester, students will be able to offer provocations and challenges to traditionally conceived methods of design and making.

Students will be expected to utilize the Digital Design Studio’s resources, including 3D Printers, Laser Cutter, and 3-Axis CNC Mill, as well a selection of fabrication equipment housed in the school’s metal and wood shops in order to represent, model, and realize a series of design projects. In addition to Wesleyan’s fabrication equipment, students will utilize Rhino 5.0, AutoCAD, and Adobe Creative Suite throughout the semester in order to model and represent their designs. Analog methods of representation, modeling, and fabrication will be emphasized as necessary.

Digital Architecture will meet on Monday and Wednesday evenings, from 7:00-9:30. Classes will be held in the Digital Design Studio on Wesleyan’s CFA Complex. The course will be structured as an interactive lab, punctuated by short lectures that will help to frame or introduce specific technologies and procedures critical to developing proficiency in digital design and fabrication.

Assignments and Grading
The coursework will be comprised as follows:
(3) Introductory, week-long assignments, intended to introduce specific processes (10% grade, each)
(1) Final project, developed in three parts over the course of 8 weeks (50% grade)
(1) Final presentation and documentation, held at the end of the semester (10% grade)

Due to the highly interactive nature of the course, your active participation throughout the semester will account for the remaining 10% of your grade. Attendance is mandatory.

Office hours will be held immediately after class on Monday and Wednesday evenings. If additional meetings are requested, they will need to be arranged one week in advance.
DIGITAL ARCHITECTURE
Studies in Computer-based Modelling and Digital Fabrication

ARST 433, Digital Design Studio
Wesleyan University, Fall 2015

Workshops and Orientations
Woodshop, Digital Media, and Laser Cutter Orientation
Digital and Physical Modeling Workshop
Photography Workshop
Final Portfolio & Upload

Evaluation Criteria
80% Design Projects (10, 10, 10, 50)
1. Ability to convey information in drawings and models in direct relationship to the stated intention for the project.
2. Growth, measured in terms of improvement through the course of the semester, and creative energy demonstrated in work.
3. Timely completion of work assigned throughout the semester.

10% Final Review
1. Thorough documentation of design, process, and fabrication.
2. Production of visual materials that elaborate and complement the fabricated design.
3. Concise verbal presentation and respectful engagement with visiting critics.

10% Class attendance and participation
1. You are expected to attend all class meetings prepared to contribute to class discussion.
2. More than two absences will affect your final grade. If absent, you are responsible to make up work and prepare for the next class.
3. All late work will be down graded by one full letter grade unless accompanied by a physician’s note or other evidence of an emergency.

A note concerning grading for the course: Individual letter grades are not handed out at the conclusion of each project. A cumulative letter grade is assigned at the conclusion of the course. Inquiries or concerns related to standing in the course are welcome during office hours at any point over the course of the semester. In addition, individual meetings will be offered at mid-term to review progress and grade status in the studio.

Studio Rules
1. Cell phones are to be turned off through the duration of class.
2. Do not leave any drawings, drawing instruments, models or materials of any kind on the working tables after using them. Anything left on tables or floor, will be discarded by the janitorial staff. Take responsibility for all equipment and material in the studio; it is all for your use.
3. Clean up your area at the end of each class period.
4. Power tools in the woodshop are to be used in accordance with woodshop rules and only when the woodshop supervisor or monitors are present in the shop.
5. Please be considerate of your fellow students.

Accommodations
It is the policy of Wesleyan University to provide reasonable accommodations to students with documented disabilities. Students, however, are responsible for registering with Disabilities Services, in addition to making requests known to me in a timely manner. If you require accommodations in this class, please make an appointment with me as soon as possible [before the second week of the semester], so that appropriate arrangements can be made.
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Tutorials
Lynda.com

Design Reform
http://designreform.net/learning

Rhino 3D
https://www.rhino3d.com/tutorials

Section Cut
http://www.sectioncut.com/studio-culture?filter=how-to

Advanced Fabrication Precedents
Gramazio Kohler Research, ETH Zurich
http://gramaziokohler.arch.ethz.ch/

Achim Menges, ICD Stuttgart
http://www.achimmenges.net/
http://icl.uni-stuttgart.de/

Andrew Kudless, MATSYS Design
http://matsysdesign.com/

Brandon Clifford and Wes McGee, Matter Design
http://www.matterdesignstudio.com/

MIT Media Lab
https://www.media.mit.edu/

Emergent Technologies, Architectural Association
http://emtech.aaschool.ac.uk/

David Benjamin, The Living
http://www.thelivingnewyork.com/

Nervous System
http://n-e-r-v-o-u-s.com/

Michael Hansmeyer
http://www.michael-hansmeyer.com/

Ball-Nogues Studio
http://www.ball-nogues.com/

Research Through Making, University of Michigan Taubman College of Architecture and Urban Planning
https://taubmancollege.umich.edu/research/research-through-making