Piecing It Together
ITPG-GT 2533

Eric Hagan
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Thursday from 3:30pm to 6:00pm
Office Hours: Thursday after class or by appointment

Class Description:
Designing and building physical objects can feel like putting together a puzzle without the box top. Even if you have all the pieces, an extra challenge lies in figuring out how they fit together. Digital fabrication tools make it possible to newly imagine and produce pieces that allow us to recreate or modify the "puzzle" as we see fit. Utilizing historic farm equipment (e.g. windmills, clocks, grain harvesters) as design inspiration, we will explore the possibilities of digital fabrication tools to solve issues of fastening, synchronicity, replaceable parts, repeatability, and modification of existing designs. A central goal of this class is to come to terms, and work productively, with the limitations of these otherwise revolutionary digital fabrication tools—particularly in regards to materials, scale, and aesthetics. By the end of the semester, students will be familiar with Adobe Illustrator, 2D and 3D CAD software, laser cutting, CNC routing, and 3D printing. No prior fabrication or design background is required for this course.

Schedule:
1) September 5th
   Introduction, What is Digital Fabrication? Inspirations
   Reading: How to Make Almost Anything – Neil Gershenfeld
   Assignment: Drawing Assignment

2) September 12th
   2d Vector Drawing / CAD drawing and Software options,
   Laser cutter demo
   Reading: Structural Packaging – Paul Jackson
   Epilog Mini Owner’s Manual
   Assignment: Non-rectangular Box

3) September 19th
   Assembly, Fasteners, Joints,
   Reading: CNC Panel Joinery,
   Assignments: Continue with Box, Brainstorm Midterm idea

4) September 26th
   Materials: Properties, Behaviors, and Limitations
   Share Non-rectangular Box
   Assignment: Midterm Progress drawings

5) October 3rd
   Mechanical Components, Assembly, Standard set of parts,
   Creating a Build of Materials, Ordering Resources
Assignment: Midterm Progress Prototypes

6) October 10th  Midterm Critique with Guests

7) October 17th  CNC 2.5d, Materials for Routing, GCode Demo: CNC routing Assignment: CNC “Puzzle”

8) October 24th  Rhino 3d, Alternative 3d Modeling Environments Assignment: First 3d model drawing

9) October 31st  3d CNC Machining Share CNC “puzzles” Assignment: Something Broken

10) November 7th  3d printing: Materials, Combination Assemblies, AMS visit Assignment: Final project idea brainstorming

11) November 14th  Alternative Digital Fabrication machines, Fabricating your own Share Something Broken Readings: Lasersaur Documentation Build Your CNC

12) November 21st  Limitations of Digital Fabrication in Mass Production, Getting Things Made

13) December 5th  Project workshop day, questions

14) December 12th  Final Critique with Guests