Parametric Realizations

CourseNo: ARCHA4747_001_2014_3
Meeting Time: M 07:00P-09:00P **Meeting Location:** AVERY HALL 115

Instructor Information:
Mark Bearak, Brigette Borders

Brief

Parametric modelers are commonly used in the development of digital architectural models, but they are rarely taken to the point of becoming physical realities. This course will look at the process of generating parametric algorithms then turning those models into physical realities. Students will work in groups to design a product that will be the physical realization of their scripted protocol.

Project
Students will work in groups to design and fabricate a product that will be the physical realization of their scripted protocol. Groups will develop mathematical algorithms using parametric modelers such as Rhino.script and Grasshopper. Concurrently students will be testing modeling techniques in order to create a prototype for their final physical system. Students will then take their digital models, rationalize them, and physically construct the system using a material process from their prototype.

Final Project
Students will prepare their product for a presentation mid way through the semester.

Week 1: INTRODUCTION

lecture:

Introduction, examples of previous work, class website
tutorial: Grasshopper 1
assignment:

Precedent study, inspiration images, design thesis

6-sided volume (Presentation + Blog)

- The volume should be around 6"x6"x6"
- We want you to think about a "box" in a creative manor
- Try to avoid using typical architectural modeling materials
- Do not use tape or glue, think about the connections.

- Don't over think the assignment, it should not take more than an hour.
- Have fun with the project, let it be distinct, there are no wrong answers
- One box per person.

Go to a fabrication tutorial!!! Schedule to be posted.
In class: Form groups of 4-5 for project

Week 2: MATERIALS / TECHNIQUES

*due:

Box + Design thesis + precedent study (Presentation + Blog),
lab visit:

Introduction to lab, machines, materials, etc.

lecture:
Materials/Techniques
assignment:

Begin initial product design, research materials,
pseudocode
desk crits:

Fabrication (To Be Scheduled)

Week 3: CONNECTION / CONTEXT

*due:

Design and physical material/technique example (Presentation + Blog)

tutorial:
Grasshopper 2
lecture:
Connection/Context
presentation:

Previous student work
assignment:

Fabrication method testing
desk crits:

Rhino.Script (To Be Scheduled)

Week 4: ASSEMBLY / AUTOMATION

*due:

Design progress and physical testing (Presentation + Blog)

tutorial:
Grasshopper 3

discussion:

Assembly/automation, practical scripting

desk crits:

Fabrication (To Be Scheduled)

Week 5: FINISHING / PRESENTATION

*due:

Complete design and resolve connection(Presentation + Blog)

tutorial:
Grasshopper 4
discussion:
Finishing
desk crits:

(Grasshopper) To Be Scheduled
assignment:

Full-scale partial prototype of final product

Week 6: Final Review

*due:

Full-scale final product & supporting materials

*Times and curriculum are subject to change

Design a simple Logo and title your project. Boards should be 11x17 printed in color and brought to the final, PDFs should be emailed to Brigette and Mark and posted on the blog.

1) 11x17 print of script or grasshopper module
2) 11x17 product sheet: description, image showing dynamic usage, rendering or photos
3) 11x17 image collage of fabrication process
4) Final Product at full-scale!
5) Relevant process models