SCULPTING DATA INTO EVERYDAY OBJECTS
Instructor Esther Sze-Wing Cheung

COURSE DESCRIPTION

This course challenges students to combine three technologies – object-oriented programming, 3D modeling and digital fabrication – toward making an everyday data object. Some examples of everyday data objects include an ashtray whose shape is derived from the number of lung-cancer related deaths per year, a drinking glass whose profile is based upon the rate of the world’s clean water depletion, a blush compact sculpted to show the growing number of women in parliament.

The software used in this course will include:
- Processing / RhinoPython / Grasshopper / Paneling Tools: 3D data visualization
- Rhino: 3D modeling
- Vray: Photo Realistic Rendering

Digital Fabrication Tools used in this course will include:
- MakerBot
- Objet Connex500 3D Polymer Printer (AMS)
- Z Corporation ZPrinter 650 3D Powder Printer (AMS)

The ultimate goals of this course is for each student to experience: a) thinking critically about their tools (analog and digital) through developing an experimental non-linear design process; b) finishing well; and c) creating a meaningful object.

SYLLABUS

Week 1
Introduction – Overview of the course outline, midterm and final project
Workshop – Introduction to the Rhino interface. Introduction to data set formats and P3D in Processing.

Week 2
Rhino: Creating 2D geometry and 3D surfaces
Processing: Inputting Data from Excel and XML
3D Printing: Makerbot Demonstration
(AMS tour outside class time)

Week 3
Concept Presentation
Week 4
Example Project – Women in Parliament Blush
Individual Reviews – each group/individual will be assigned a time slot to discuss their midterm presentation and to seek specific technical guidance for their final projects. Students are encouraged to work on their projects during this class time.

Week 5
Example Project (from data to printed object) – Wifi Data Cell Phone Case
Individual Reviews – each group/individual will be assigned a time slot to discuss their midterm presentation and to seek specific technical guidance for their final projects. Students are encouraged to work on their projects during this class time.

Week 6 – MIDTERM REVIEW
Each group/individual will be required to present the following to a panel of guest critics:
1) One data set visualization using Processing P3D.
2) One or more everyday object(s) modeled and rendered in Rhino.
3) An argument or social/philosophical critique being addressed through the pairing of this data set and this everyday object.
4) Documentation of a non-linear design process.
4) One 3D printed draft prototype of their everyday object.

Week 7
Rhino Paneling Tools: Strategies for creating data surfaces

Week 8
Rhinopython: Strategies for creating linking geometry through data points

Week 9
Grasshopper: Linking and managing multiple data sets

Week 10
Individual Reviews – each group/individual will be assigned a time slot to discuss their midterm presentation and to seek specific technical guidance for their final projects. Students are encouraged to work on their projects during this class time.

Week 11
VRay Photorealistic Rendering and Animation : Lights, Materials and Cameras

Week 12 – FINAL PRESENTATION
Each group/individual will be required to present the following to a panel of guest critics:
1) One every day data object fabricated on the 3D printer.
2) An argument or social/philosophical critique being addressed through the everyday data object.
3) The final data set visualization using Processing P3D.
4) The final everyday data object modeled rendered in Rhino.
5) Documentation on the non-linear design process.