

Fall Term
Undergraduate & Graduate Levels
4.500

Design Computing: Art, Objects and Space

Prof. Larry Sass
lsass@mit.edu

Lecture: Mon 9:30 – 11:00 AM (n52-399)

Lab: Wed 7:00-8:30 PM (n52-399)
(2-2-8) Credits

Introduction

Product designers, engineers and architects use 3D modeling programs to model, render and fabricate ideas and products. A growing trend is 3D printing of geometric models by expert designers and novices alike to build ordinary items such as jewelry, toys and replacement parts (Making). Unfortunately for those new to modeling many questions arise when considering which modeling method works best for a given modeling task. Today there are at least four ways to generate geometric models from a wide array of commercial CAD programs. To add to the confusion there are many questions related to best modeling practices for each type of output, trending software systems and emerging techniques related to plugins.

In response to these and many other questions this course teaches the fundamentals of geometric modeling for a variety of output methods and devices. Each week we explore a specific modeling method geared towards design output. We will cover the fundamentals in the first four weeks to build skills. Next we focus on design processing and a specific product. Students are required to complete museum quality models that will be evaluated by experts at various times throughout the term.

Learning Objectives

- Production of design ideas and artifacts
- Mastery of the three principle modeling techniques (Surface, Solid & Mesh)
- Mastery of design prototyping and visualization

Grading

- Application of modeling, visualization and prototyping techniques
- Quality of output
- Response to questions related to process
- Time to complete assignments & attendance

Attendance

- We meet approximately 21 times within the semester
- More than 3 absences can lead to a failing grade, this includes lab times

Assignments

- Final grading is an average of the 10 Assignments & attendance
- Paper submissions only (no emailing) through Stellar Courseware
- Late Assignment – Minus 10pts one week, Minus 20 pts second week
- I do not accept assignments that are more than three weeks late

Course Fee

- All students will be charged \$35 for 3D Printing after the third week in the term

Class Format

The class meets twice a week and attendance is required for a passing grade. Students are expected to work with their own laptop in class. Lectures and labs happen together without distinction.

Schedule

	<i>Date</i>	<i>Lecture</i>	<i>Computation</i>	<i>Lab/Output</i>	<i>Exercise & Projects (Due Mondays)</i>
1	Sept 10	How to Design	Points & Lines	Lines & Lasers	1 - Symbols/Letters
2	Sept 17	Rule Based design	Surface Modeling	Curves & Lasers	2 - Fonts
3	Sept 24	Experience Design	Solid Modeling	3D & Lasers	3 - Vessels
4	Oct 1	Design Hierarchy	Planar Modeling	LuBan & Lasers	4- Objects
5	Oct 8	<i>No Lecture</i>		<i>Open Lab</i>	<i>No Exercise</i>
6	Oct 15	Presentations (4)		<i>No Lab</i>	
7	Oct 22	Prototyping	Surface Modeling	3D Printing	5 –Function
8	Oct 29	Story Telling	Loft Modeling	3D Printing	6 – Appearance
9	Nov 5	Architecture & Assemblies	Mesh Modeling	3D Printing	7 - Assemblies
10	Nov 12	<i>No Lecture</i>		<i>Open Lab</i>	<i>No Exercise</i>
11	Nov 19	Presentations (7)		Rendering	8- Basic Rendering
12	Nov 26	Interior Design	Intro to Visualization	Artificial Lighting	9- Building a Scene
13	Dec 3	Architectural Design	Realistic Rendering	Outdoor Lighting	10- Finishing a Scene
14	Dec 10	Presentations (10)			