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

Maximum of 15 students (Course 4 Majors have preference)

**Introduction**

This class introduces undergraduate, course four majors to design and computation through application. We explore an array of foundational technologies weekly, this includes 3D Modeling, Computer Generated Rendering and Computer-Generated Animation. Students also learn establish design principles as part of each exercise. Although the medium for course is centered on computer modeling, application is guided by weekly design exercises, student presentations and instructor feedback. We will work on one project throughout the term starting with a deep product analysis, ending with a useful, well designed physical artifact.

**Learning Objectives**

1. Design of a Tiny Home
2. Three principle modeling techniques (Surface, Solid & Mesh)
3. Fundamentals of design prototyping through visualization
4. Fundamentals of daylight and artificial lighting computer rendering
5. Analytical animation

**Grading**

1. Application of modeling, visualization and animation
2. Quality of output
3. Response to questions related to process
4. Time to complete assignments
5. Missing classes will count against your final grade

**Attendance**

1. We meet approximately 24 times within the semester online only
2. A maximum of 3 absences allowed, this includes lab times
3. You are expected to be present on Zoom (no screen savers)

**Course Fee**

No Course Fee
## Schedule

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<thead>
<tr>
<th>Date</th>
<th>Lecture</th>
<th>Lab</th>
<th>Exercise &amp; Projects</th>
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<tr>
<td><strong>Design Analysis</strong></td>
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<tr>
<td>1</td>
<td>Sept 2 (Wed)</td>
<td>1 – How to Draw</td>
<td>Floor Plans Analysis</td>
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<tr>
<td>2</td>
<td>Sept 9 (Wed)</td>
<td>2 – Advanced Drawing</td>
<td>Elevations Analysis</td>
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<tr>
<td>3</td>
<td>Sept 14 &amp; 16</td>
<td>3 – How to Model</td>
<td>Forming Analysis</td>
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<td>4</td>
<td>Sept 21 &amp; 23</td>
<td>4 – Advanced Modeling</td>
<td>Detailing</td>
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<tr>
<td>5</td>
<td>Sept 28 &amp; 30</td>
<td>5 – How to Render</td>
<td>Imaging</td>
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<td>6</td>
<td>Oct 5 &amp; 7</td>
<td>6 – Advanced Rendering</td>
<td>Animation</td>
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<td>7</td>
<td>Oct 12 &amp; 14</td>
<td><em>Institute Holiday No Class</em></td>
<td><em>Show &amp; Tell</em></td>
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| **Design Modeling**                             |               |                 |                     |
| 8            | Oct 19 & 21   | 7 – Tiny Home Design | Floor Plan Design | 7 – Design Drawing |
| 9            | Oct 28 & 30   | 8 – Detailing | Section Design | 8 – Design Drawing |
| 10           | Nov 2 & 4     | 9 – Design Modeling | Mesh Modeling | 9 – Design Modeling |
| 11           | Nov 9 & 11    | 10 – Lighting | *Institute Holiday No Class* | 10 – Anim – Camera in Motion |
| 12           | Nov 16 & 18   | 11 – Color & Texture |                      | 10 – Anim – Object Motion |
| 13           | Nov 21-29     | Thanksgiving |                     |                     |
| 14           | Nov 30 - 2    | Open |                     |                     |
| 15 **Dec 7 & 9** | Open | *Show & Tell* |                     |                     |

1. Lecture Mondays 9:30AM - Labs Wednesday 7:00PM on Zoom
2. Professor - Larry Sass lsass@mit.edu
3. Teaching Assisances: TBA
4. Canvas Site: TBA
5. **Grading**
   There are two parts to grading in this course. The first half of grading addresses the 10 exercises and participation. Student who turn in all (a) 10 exercises on time, (b) attended every class on time (participation), (c) responded to exercise questions and participate in the iterative process of design you are within the grade range of “B+ to A”
   a. Completion of all 10 exercises
   b. Timely completion of exercises & attendance
   c. Response to questions related to process
   d. Quality of output based on participation in the iterative aspects of design
   e. Risk Taking!

6. **Time**
   - Time is not a measure of excellence
   - The course is 12 Units
     - 2 Hours Lecture
     - 2 Hours Lab
     - 8 Hour Assignment
   - Email kass@mit.edu if the assignment is taking more than 5 hours

7. **Laptop Setup (Your computer)**
   - *You will need to use your own laptops for this course*
   - Best if your computer is less than 4 years old and you will need at least a gig of space for software and images.
   - PROCESSOR: core i7 - 4 cores
   - HARD DISK: SSD (no old mechanical spinning drive)
   - 60GB free space
   - RAM: 16GB
   - Take 2 Hours to Setup your computer (Download Software)
   - Laptop support – cron@mit.edu

8. **Software**
   - AutoCAD [http://Autodesk.com](http://Autodesk.com)
   - 3D Studio Max (Autodesk.com)
   - Dropbox and Crashplan
   - Optional: Adobe Suite/Creative Cloud
     - InDesign
     - Photoshop

9. **Design Software (3D Modeling & Visualization)**
   a. **AutoCAD**
   b. **Rhinoceros**
   c. Blender