Syllabus

MECH 5354: Design Studio I
Wintermester 2018
Time: M-F 8:00-1:00 PM
Room: BUSN 326 / ENG 108

INSTRUCTOR: Philip Morton (Applications Manager, W.M. Keck Center for 3D Innovation
e-mail: pmorton@utep.edu; office: Engineering Room 108)
Mireya Perez (Research Administrator, W.M. Keck Center for 3D Innovation
e-mail: maperez4@utep.edu; office: Engineering Room 108)
Cesar Terrazas (Research Assistant Professor, W.M. Keck Center for 3D Innovation
e-mail: caterrazas2@utep.edu; office: Engineering Room 108)

OFFICE HRS: By appointment

COURSE DESCRIPTION AND GOALS:
The MECH 5354 course is the first design studio (Design Studio 1) towards the Graduate Certificate in 3D Engineering and Additive Manufacturing (AM). The course is targeted to students registered in the certificate program and who have already taken MECH 5351 in a previous semester, or to those who have demonstrated knowledge equivalent to MECH 5351. This project based course is designed to provide students with hands-on training and activities targeting the use of desktop material extrusion 3D printers while considering the limitations of this particular AM technology. Emphasis will also be put on teaching the assembly process and troubleshooting of the 3D printer system to be used. Other topics of interest to material extrusion 3D printing might also be covered in this class.

Upon completion of this course, each student should be able to:
• Operate and maintain a desktop material extrusion printer (Lulzbot Taz) and Stratasys FDM printer.
• Experience using Simplify3D and Insight (Stratasys) slicing software to prepare print files.
• Understand the impact of print parameters and effectively troubleshoot failed prints.
• Determine the best print orientation provided the loading conditions and application
• Prepare an object for 3D scanning and understand what feature types are challenging for laser scanning
• Reverse engineer an object using a NextEngine 3D scanner and associated reverse engineering software.

TEXTS:
No text requirements for this course.

ASSIGNMENT DEADLINES:
All assignments must be submitted on time at the beginning of class the day the assignment is due. No late assignments will be accepted and a grade of zero (0) will be assigned for any work not delivered on time.
METHOD OF EVALUATION
Your grade for this course will be assessed based on attendance to the class, and on your participation and performance in multiple hands-on projects. A minimum of three projects will be assigned through the semester. The specifics of each project will be discussed as the semester unfolds. No late work will be accepted for project’s work and deliverables. Each project will be given 30% weight towards the final grade. Also, given the length of the class (2 weeks), your attendance is mandatory and it will count 10% towards your final grade.

GRADING
Your final grade will be calculated based on the points you have accumulated as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Score Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>≥90</td>
</tr>
<tr>
<td>B</td>
<td>≥80 but &lt;90</td>
</tr>
<tr>
<td>C</td>
<td>≥70 but &lt;80</td>
</tr>
<tr>
<td>D</td>
<td>≥60 but &lt;70</td>
</tr>
<tr>
<td>F</td>
<td>&lt;60</td>
</tr>
</tbody>
</table>

The instructor reserves the right to revise this grading plan. However, students will be informed of any changes during the semester.

* For further class policies, please refer to the MECH 5354-Class Addendum