CAD 262: 3D Printing - Working Syllabus

# Module 1

| Week 1 | Introduction & History Chuck Hall, SLA. Local Company 3D Systems |  |  |
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| Week 2 | PowerPoint on Uses of 3D Printing  Industrial Uses of 3D Printing:   * car prototyping * medical * jewelry * custom machinery | **Quiz**  (10 points) | Create 6 sided nut with dimensions. Should be no more than a 10 min brain exercise. |
| Week 3 | Personal Uses of 3D Printing:   * fixing misc items * prosumer level * printed self miniatures * custom brackets * cheap prosthetics |  |  |

# Module 2

| Week 1 | PowerPoint on Types of Printers  View links and videos in PowerPoint Types of Printer Technology   * EBM * SLS * FDM | **Hands On**  (20 points) | Take apart $10 electronic and describe the different manufacturing components involved including materials used and processes. |
| --- | --- | --- | --- |
| Week 2 | Materials   * Plastics * Metals * Photopolymers * Wax * Food | **Presentation**  (45 points) | Present to class their deconstructed electronic part. Grading based on content, presentation, difficulty etc. |
| Week 3 | When to use Additive MFG Set up printer and calibrate. | **Essay**  (15 points) | Write up Pros & Cons of Additive MFG |

# Module 3

| Week 1 | File Types   * Obj * stl * dwg * iges * sldprt * step |  |  |
| --- | --- | --- | --- |
| Week 2 | Loading, exporting   * thingiverse * grabcad * pinshape * youmagine | **Hands On**  (20 points) | Download file from site, fix, orient for build. |
| Week 3 | Printing Day! | **Printing** | Load Print and awway wee g0! |

# Module 4

| Week 1 | Types of post processing   * powder based * FDM * removal of supports * vapor bath | **Essay**  (15 points) | Design an experiment to test tolerancing. |
| --- | --- | --- | --- |
| Week 2 | Part analysis for printing   * support files * minimum thickness and radii * scale * GD&T | **Printing** | Print test pieces. |
| Week 3 | Assembly Tolerancing |  | Refine prints if necessary |

# Module 5

| Week 1 & 2 | Final Project:   * Find component to customize * Design * Print | **Printing**  (50 points) | Final Project |
| --- | --- | --- | --- |
| Week 3 | Class presentation order is decided by a quiz. A revised version of the original 6 sided nut now to include a matching bolt that works together within the printers tolerances. 10 min or so to design | **Quiz & Presentation**  (25 points) | Class presentations on final project. Grading based on difficulty of project, presentation, 3D print, etc. |