**CS 78.1 Course Outline as of Fall 2017**

# CATALOG INFORMATION

Dept and Nbr: CS 78.1 Title: 3D PRINTING
Full Title: 3D Printing
Last Reviewed: 3/13/2017

| Units | | Course Hours per Week | | Nbr of Weeks | Course Hours Total | |
|---|---|---|---|---|---|---|
| Maximum | 3.00 | Lecture Scheduled | 3.00 | 17.5 | Lecture Scheduled | 52.50 |
| Minimum | 3.00 | Lab Scheduled | 0 | 8 | Lab Scheduled | 0 |
| | | Contact DHR | 0 | | Contact DHR | 0 |
| | | Contact Total | 3.00 | | Contact Total | 52.50 |
| | | Non-contact DHR | 0 | | Non-contact DHR | 0 |

Total Out of Class Hours: 105.00 Total Student Learning Hours: 157.50

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| Title 5 Category: | AA Degree Applicable |
| Grading: | Grade or P/NP |
| Repeatability: | 00 - Two Repeats if Grade was D, F, NC, or NP |
| Also Listed As: | |
| Formerly: | |

**Catalog Description:**
This course will introduce students to the basics of working in a 3D environment, including scanning, editing, and printing 3D objects. Through lectures, demonstrations, and hands-on lab exercises, students learn the fundamentals of 3D and apply the learned concepts to modify and create 3D models.

**Prerequisites/Corequisites:**

**Recommended Preparation:**
Eligibility for ENGL 100 or ESL 100 and Course Completion of CS 70.11A

**Limits on Enrollment:**

**Schedule of Classes Information:**
Description: This course will introduce students to the basics of working in a 3D environment, including scanning, editing, and printing 3D objects. Through lectures, demonstrations, and hands-on lab exercises, students learn the fundamentals of 3D and apply the learned concepts to modify and create 3D models. (Grade or P/NP)
Prerequisites/Corequisites:

Recommended: Eligibility for ENGL 100 or ESL 100 and Course Completion of CS 70.11A
Limits on Enrollment:
Transfer Credit: CSU;
Repeatability: Two Repeats if Grade was D, F, NC, or NP

## ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

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|---|---|---|---|---|---|
| **AS Degree:** | **Area** | | | Effective: | Inactive: |
| **CSU GE:** | **Transfer Area** | | | Effective: | Inactive: |
| **IGETC:** | **Transfer Area** | | | Effective: | Inactive: |
| **CSU Transfer:** | Transferable | Effective: | Fall 2016 | Inactive: | Fall 2022 |
| **UC Transfer:** | | Effective: | | Inactive: | |

**CID:**

**Certificate/Major Applicable:**
Not Certificate/Major Applicable

## COURSE CONTENT

**Student Learning Outcomes:**
At the conclusion of this course, the student should be able to:
1. Create and manipulate simple objects in a 3D environment
2. Scan and print 3D objects

**Objectives:**
Upon completion of the course, students will be able to:
1. Distinguish between the two basic 3D modeling components - faces and edges.
2. Create simple 3D models using at least three basic modeling shapes.
3. Modify 3D models using at least three basic editing tools.
4. Apply pre-defined styles to 3D models.
5. Manipulate camera controls in order to see models from different angles.
6. Create realistic textures in Photoshop and apply them to a 3D model.
7. Import existing 3D models and add to existing projects.
8. Scan physical objects to create basic 3D models.
9. Print 3D objects.

**Topics and Scope:**

I. Understanding 3D terminology
   A. Solid vs. Surface modeling
   B. Edges and faces
   C. Orbiting a model
   D. Contours
   E. Perspective and scale
   F.Textures
II. Basic 3D model creation
   A. Basic Modeling Shapes: Lines, rectangles, circles, and arcs

B. Pushing and pulling faces and edges
C. Selecting objects and object components

III. Importing and Editing 3D models
A. Adding textures, color, and shadows
B. Using guides
C. Scaling and rotating objects

IV. Using components and pre-designed styles and models
V. Scanning and printing 3D objects
VI. Camera Controls

**Assignment:**

1. Use at least three basic modeling shapes to create a series of 3D models, following guidelines given by the instructor
2. Modify a provided 3D model, using at least 3 basic editing tools
3. Create a simple 3-room house 3D model, and apply textures created in Photoshop to all exposed surfaces
4. Incorporate at least three models from an online source into a project in order to create a realistic scene
5. One midterm and one final exam
6. Written descriptions of steps to creating a 3D model

**Methods of Evaluation/Basis of Grade:**

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

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| Written descriptions to creating a 3D model | Writing<br>0 - 20% |

**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

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| None | Problem solving<br>0 - 0% |

**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

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| Class projects and skills demonstrations | Skill Demonstrations<br>40 - 60% |

**Exams:** All forms of formal testing, other than skill performance exams.

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| Midterm and final exams | Exams<br>25 - 40% |

**Other:** Includes any assessment tools that do not logically fit into the above categories.

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| Class participation | Other Category<br>0 - 10% |

**Representative Textbooks and Materials:**
SketchUp 2014 for Dummies. Chopra, Aidan. Wiley. 2014.