

**CS 78.1 Course Outline as of Fall 2022****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

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:

Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>	Effective:	Inactive:
<b>CSU GE:</b>	<b>Transfer Area</b>	Effective:	Inactive:
<b>IGETC:</b>	<b>Transfer Area</b>	Effective:	Inactive:
<b>CSU Transfer:</b>		Effective:	Inactive:
<b>UC Transfer:</b>		Effective:	Inactive:

**CID:**

**Certificate/Major Applicable:**

Major Applicable Course

## **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.

Written descriptions to creating a 3D model

Writing  
0 - 20%

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

None

Problem solving  
0 - 0%

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

Class projects and skills demonstrations

Skill Demonstrations  
40 - 60%

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

Midterm and final exams

Exams  
25 - 40%

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

Class participation

Other Category  
0 - 10%

**Representative Textbooks and Materials:**

SketchUp 2014 for Dummies. Chopra, Aidan. Wiley. 2014.