

**APTECH 43 Course Outline as of Fall 2021****CATALOG INFORMATION**

Dept and Nbr: APTECH 43 Title: COMPUTER ANIMATION  
 Full Title: Computer Modeling and Animation with 3ds Max  
 Last Reviewed: 1/25/2021

Units	Course Hours per Week		Nbr of Weeks		Course Hours Total	
Maximum	3.00	Lecture Scheduled	2.00	17.5	Lecture Scheduled	35.00
Minimum	3.00	Lab Scheduled	3.00	8	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	5.00		Contact Total	87.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 70.00

Total Student Learning Hours: 157.50

Title 5 Category: AA Degree Applicable

Grading: Grade Only

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly: APTECH 53

**Catalog Description:**

This course covers the fundamentals of three-dimensional (3D) modeling and animation using Windows-based Autodesk 3ds Max software. Topics include: polygon and spline modeling, materials and texturing, keyframe and constraint-based animating, lighting, and rendering. Basic introductions to dynamic simulations, particle systems, character rigging and character animation are also included.

**Prerequisites/Corequisites:****Recommended Preparation:****Limits on Enrollment:****Schedule of Classes Information:**

Description: This course covers the fundamentals of three-dimensional (3D) modeling and animation using Windows-based Autodesk 3ds Max software. Topics include: polygon and spline modeling, materials and texturing, keyframe and constraint-based animating, lighting, and rendering. Basic introductions to dynamic simulations, particle systems, character rigging and

character animation are also included. (Grade Only)

Prerequisites/Corequisites:

Recommended:

Limits on Enrollment:

Transfer Credit: CSU;UC.

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>	Transferable	Effective: Fall 1998	Inactive:
<b>UC Transfer:</b>	Transferable	Effective: Fall 2013	Inactive:

### **CID:**

### **Certificate/Major Applicable:**

Both Certificate and Major Applicable

## **COURSE CONTENT**

### **Student Learning Outcomes:**

Upon completion of the course, students will be able to:

1. Use 3ds Max software to produce three-dimensional (3D) models, scenes, and animations.
2. Create still-image and video renderings of 3D scenes within 3ds Max.

### **Objectives:**

Student will be able to:

1. Comprehend 3D modeling and animation's role and usage in today's society
2. Effectively interface with the 3ds Max software program
3. Analyze models and scenes
4. Create and edit 3D models and scenes
5. Assign bitmap and procedural materials to 3D objects
6. Set and adjust lighting and shadows
7. Establish and control environmental factors within 3D scenes
8. Animate movement and characteristics of objects, lights, and cameras
9. Create basic dynamic simulations, particle systems, and effects
10. Apply 3D rendering principles and procedures

### **Topics and Scope:**

- I. Overview of the 3D Modeling and Animation Industry
  - A. Gaming
  - B. Motion pictures
  - C. Architecture/construction/engineering
  - D. Advertising
  - E. Virtual Reality

- II. The 3ds Max Software Interface
  - A. Viewport navigation
  - B. Command panels
  - C. Time controls
  - D. Menus and toolbars
- III. Analysis of 3D Models and Scenes
  - A. Component identification
  - B. Analysis of procedures
  - C. Evaluation of effectiveness
- IV. Create and Edit 3D Models and Scenes
  - A. Polygonal modeling
  - B. Spline modeling
  - C. Model deformation
- V. Material Creation and Assignment
  - A. The material editors: Compact and Slate
  - B. Mapping coordinates and parameters
  - C. Material and map types
  - D. Substance plug-ins
- VI. Lighting and Shadow Creation and Adjustment
  - A. Omni, spot, and direct lighting
  - B. Free and target lighting
  - C. Ray-traced and shadow maps
  - D. Photometric lighting
- VII. Environmental Factors within 3D Scenes
  - A. Environment maps
  - B. Environmental effects
  - C. Exposure control
- VIII. Animating Objects, Lights, Cameras, and Controls
  - A. Keyframe animation
  - B. Constraint-based animation
  - C. Character animation basics
- IX. Dynamic Simulations and Effects
  - A. MassFX fundamentals
  - B. Basic particle systems
- X. Rendering of 3D Objects and Animations
  - A. Scanline renderer
  - B. ART renderer
  - C. Still image and video settings

The above Topics and Scope apply to both lecture and lab course components in an integrated format.

**Assignment:**

1. Project guide readings (20 - 26)
2. 3D modeling and animation projects (20 - 26)
3. Quizzes (2 - 4)
4. Final exam

**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.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments are more appropriate for this course.

Writing  
0 - 0%

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

3D modeling and animation projects

Problem solving  
65 - 80%

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

None

Skill Demonstrations  
0 - 0%

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

Quizzes and final exam

Exams  
20 - 30%

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

Participation

Other Category  
0 - 5%

**Representative Textbooks and Materials:**

Autodesk 3ds Max 2021: A Comprehensive Guide. 21st ed. Tickoo, Sham. CADCIM Technologies. 2020  
Instructor-prepared materials