

3D Animation

Levels:	11-12
Units of Credit:	0.50
CIP Code:	11.0216
Core Code:	35020000075
Prerequisites:	3D Graphics
Skill Test:	#819 3D Animation

COURSE DESCRIPTION

3D Animation is a one semester using 3D graphics software to produce 3D models and animations. This course will introduce students to 2D and 3D, animation planning, storyboard development, and the animation process.

CORE STANDARDS, OBJECTIVES AND INDICATORS

STANDARD 1

Students will identify the applications of 3D graphics and animation through exploring the career opportunities and the relevant history of the industry.

Objective 1: Identify various applications of 3D graphics and animation, such as:

- a. Identify uses of 3D in Entertainment
- b. Identify uses of 3D in Health Sciences
- c. Identify uses of 3D in Architecture and Engineering
- d. Identify uses of 3D in Aerospace
- e. Identify uses of 3D in Advertising
- f. Identify uses of 3D in Graphic Design and Illustration

Objective 2: Develop career awareness related to working in the 3D graphics and animation industry.

- a. Identify personal interests and abilities related to 3D Graphics careers
- b. Identify personal creative talents
- c. Identify organizational and leadership skills
- d. Identify special interest areas
- e. Identify 3D graphics and animation job titles, such as: Animator, Technical Director, Rigger, 3D Modeler, Lighter, Texture Artist, Special Effects
- f. Investigate career opportunities, trends, and requirements related to 3D graphics and animation careers
- g. Identify the members of a 3D graphics and animation team:
- h. Investigate trends associated with 3D graphics and animation careers
- i. Develop a realistic Student Education Occupation Plan (SEOP) to help guide further educational pursuits
- j. Identify factors for employability and advancement in 3D careers
- k. Survey existing 3D graphics and animation businesses to determine what training is required
- l. Survey universities and colleges to determine programs, degrees and training availability
- m. Develop employability competencies/characteristics: responsibility, dependability, ethics, respect, and cooperation
- n. Achieve high standards of personal performance with a positive work ethic and attitude

Objective 3: Discuss the relevant history of the 3D graphics & animation industry. (See PowerPoint)

- a. Identify Early 2D animations on film
- b. List Key mile markers in animation
- c. Identify Key figures and animators in animation history

STANDARD 2

Students will create a basic 3D model as an introduction to the 3D development process. (Covered in 3D Graphics Modeling)

STANDARD 3

Students will model 3D objects. (Covered in 3D Graphics Modeling)

STANDARD 4

Students will apply surface materials to 3D models. (Covered in 3D Graphics Modeling)

STANDARD 5

Students will apply lighting and camera techniques to achieve intended effects.

Objective 1: Apply lighting effects.

- a. Use basic three point lighting for artistic effect: key, fill, rim
- b. Use other realistic lighting: indoor, outdoor, mood, artistic, etc.
- c. Understand & use 3D specific lighting sources: Global/Image Based, Directional, Spot Lights, Shadows/Shading, Point Light

Objective 2: Apply camera effects.

- a. Adjust Aspect Ratio/Film Back
- b. Change setting and modifying camera views: Staging and Manipulating, Truck, Pan, Zoom, Dolly

STANDARD 6

Students will animate 3D models.

Objective 1: Introduce pertinent terminology.

- a. Know 3D animation terminology
- b. Identify parts of the 3D application interface used in animation

Objective 2: Introduce and/or apply the mechanics of animation.

- a. Use & apply Frame Rate
- b. Use & apply Keyframing
- c. Use & apply Path Animation
- d. Use & apply Cycle Animation
- e. Use & apply Pivot/Origin Points
- f. Use & apply Forward Kinematics Inverse Kinematics (FKIK) Constraints
- g. Use & apply Editing Timeline
- h. Use & apply Rigging

Objective 3: Introduce various animation effects.

- a. Introduce Particle Systems
- b. Understand Environmental Simulation: Wind, Gravity, Time
- c. Use other software specific effects.

Objective 4: Introduce and apply the principles of animation.

- a. Understand & apply Concept drawing
- b. Understand & apply Character Appeal
- c. Understand & apply Anticipation: Action/Reaction
- d. Understand & apply Exaggeration
- e. Understand & apply Squash and Stretch
- f. Understand & apply Timing/Spacing
- g. "Understand & apply Straight Ahead" and "Pose to Pose": Keyframes, In between, Break downs

- h. Understand & apply Staging: How to set up a scene, Camera placement, How to tell the story
- i. Understand & apply Overlap, drag and follow through
- j. Understand & apply Arcs
- k. Understand & apply Slow in, Slow out
- l. Understand & apply Secondary Actions: Things happening on peripherals

STANDARD 7

Students will render 3D models. (Covered in 3D Modeling)

STANDARD 8

Students will demonstrate the process of creating 3D animation.

Objective 1: Demonstrate the animation process to plan and develop a 3D animation.

- a. Creating a Project Brief
- b. Writing a Story which includes: a Script, Style, Story Conceptualization, Characters, Set and Prop Design: Genre, Color/Value, Mood (light), Clothing, Vehicles, Architecture
- c. Using Storyboards
- d. Recording the Dialog
- e. Creating an Animatic/Story Reel
- f. Blocking a scene
- g. Model the objects
- h. Rigging the objects
- i. Mapping and Texturing
- j. Adding Lighting
- k. Animating the objects
- l. Rendering the project
- m. Adding Effects
- n. Compositing the project