

STRANDS AND STANDARDS

3D ANIMATION 1



Course Description

3D Animation 1 will use 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.

Intended Grade Level	9-12
Units of Credit	0.5
Core Code	35.02.00.00.075
Concurrent Enrollment Core Code	35.02.00.13.075
Prerequisite	3D Graphics or Teacher Approval
Skill Certification Test Number	819 9492 - Autodesk Maya
Test Weight	0.5
License Area of Concentration	CTE and/or Secondary Education 6-12
Required Endorsement(s)	
Endorsement 1	Multimedia
Endorsement 2	N/A
Endorsement 3	N/A

STRAND 1

Students will identify the career opportunities available within 3D Animation.

Standard 1

Identify career opportunities in the following areas:

- Identify uses of 3D in Entertainment
- Identify uses of 3D in Health Sciences
- Identify uses of 3D in Architecture and Engineering
- Identify uses of 3D in Aerospace
- Identify uses of 3D in Advertising
- Identify uses of 3D in Motion Graphics
- Identify uses of 3D Printing in Animation

Standard 2

Develop career awareness in the 3D Animation industry:

- Identify the following job titles and responsibilities: Character Modeler, Texture Artist, Renderer, Technical Director/Artist, Environmental Artist, Character Animator, Lighting Technician
- Identify Post-Secondary Education programs and degrees related to the field
- Develop the following professional behaviors including punctuality, responsibility, teamwork, ethics, etc.
- Briefly discuss the history of Animation

Performance Skills

- Identify various applications of 3D Animation.
- Identify career opportunities in the animation industry.
- Developed a realistic Student Plan for College and Career Readiness to guide further educational/occupational pursuits.

STRAND 2

Students will understand the animation production pipeline.

Standard 1

Understand the 3D Animation Pipeline such as:

- Pre-Production
 - Create the concept
 - Story / Script
 - Character design / Concept art
 - Storyboard
 - Recording initial dialogue
 - Animatic
- Production
 - Modeling
 - Rigging
 - Mapping and textures
 - Animating objects
 - Lighting
 - Audio (i.e.: music, sound effects, foley, etc.)
- Post-Production

- Rendering
- Visual effects/compositing
- Video Editing
- Color correction

Performance Skills

Understand and implement the animation pipeline.

STRAND 3

Students will understand animation terms, tools, and interface

Standard 1

Identify the following fundamental animation terms, tools, and interface elements:

- Keyframe and Inbetweens
- Timeline
- Scrub and playhead
- Framerate (animation standard 24 fps)
- Playback controls (i.e.: forward, play, rewind, pause, etc.)
- Graph/animation editor

Performance Skills

Identify the fundamental animation tools within the 3D software interface.

STRAND 4

Students will be able to understand the 12 principles of animation.

Standard 1

Understand and apply the Principles of Animation:

Reference: [The Illusion of Life](#) - By Frank Thomas and Ollie Johnston

- Squash and Stretch
- Anticipation
- Staging
- Straight Ahead and Pose to Pose
- Follow Through and Overlapping Action
- Slow In and Slow Out
- Arcs
- Secondary Action
- Timing
- Exaggeration
- Appeal
- Solid Drawing

Performance Skills

Students will apply the principles of animation in their projects.

STRAND 5

Students will animate a 3D model in a scene.

Standard 1

Create a 3D scene.

- Import or create 3D assets
- Create or modify surface materials, if needed
- Add appropriate lighting

Standard 2

Demonstrate the following animation skills:

- Set and edit keyframes
- Animate translate/move, rotate, and scale attributes
- Edit pivot points

Standard 3

Identify various animation effects, including:

- Particle effects - such as water, fire, wind, etc.
- Rigid body simulations
- Cloth dynamics

Performance Skills

Animate a 3D model.

STRAND 6

Students will animate a rigged 3D character.

Resources for a rigged character can be found at places like: animationbuffett.com, sketchfab.com, 11secondclub.com, etc.

Standard 1

Pose a rigged character.

- Manipulate rigged character
- Create strong poses for blocking/keyframing
- Keyframe initial pose for animation

Standard 2

Animate a rigged character.

- Use pose to pose animation
- Adjust in-betweening
- Edit slow in and slow out
- Refine animation
- Define & Animate a cycle
- Use Forward Kinematics and/or Inverse Kinematics (FK/IK)

Performance Skills

Pose and animate a rigged character.

STRAND 7

Students will animate a camera.

Standard 1

Understand and use staging/framing and camera movement.

- Camera shots (i.e.: Close Up, Medium, Wide)
- Camera movements (i.e.: Pan, Tilt, Zoom, Dolly, Side to Side)

Standard 2

Keyframe a camera to animate it.

Standard 3

Understand aspect ratios

- Industry aspect ratios (i.e.: Cinematic, IMAX, Full Frame)

Performance Skills

Use staging/ framing and camera movement when creating a 3D animation.

STRAND 8

Students will render an animated scene.

Standard 1

Understand rendering techniques.

- Ray Tracing
- Image Sequence & Compositing
- Motion Blur

Performance Skills

Render an animated scene.

Workplace Skills

Workplace Skills taught:

- Communication
- Problem Solving
- Teamwork
- Critical Thinking
- Dependability
- Accountability
- Legal requirements / expectations

Skill Certification Test Points by Strand

Test Name	Est #	Number of Test Points by Strand										Total Points	Total Questions
		1	2	3	4	5	6	7	8	9	10		