

3D Animation 1

Exam Information	Description
Exam number 819 Items 30 National Career Cluster Arts, A/V Technology, & Communications Information Technology Science, Technology, Engineering, & Mathematics Certification available Yes	3D Animation 1 is a course that will teach candidates how to create and manipulate 3D digital objects and environments using specialized software. Candidates will learn the fundamentals of 2D and 3D animation principles and techniques, and the steps involved in planning and producing an animation project. Candidates will also develop their artistic skills and creativity through designing and animating their own 3D characters and scenes.

Exam Blueprint and Performance Skills

Standard	Percentage of exam score
1. Career Opportunities	5%
2. Animation Production Pipeline	13%
3. Animation Terms, Tools, & Interface	13%
4. 12 Principles of Animation	32%
5. Animating 3D Models	11%
6. Animating Rigged 3D Characters	11%
7. Animating Cameras	13%

8. Render Animated Scenes	3%
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*Includes performance skill evaluation

Standard 1-Career Opportunities

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

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

1. Identify uses of 3D in Entertainment
2. Identify uses of 3D in Health Sciences
3. Identify uses of 3D in Architecture and Engineering
4. Identify uses of 3D in Aerospace
5. Identify uses of 3D in Advertising
6. Identify uses of 3D in Motion Graphics
7. Identify uses of 3D Printing in Animation
8. Identify uses of 3D in Motion Capture

Objective 2 Develop career awareness in the 3D Animation industry.

1. Identify the following job titles and responsibilities:
2. Character Modeler
3. Texture Artist, Renderer
4. Technical Director/Artist
5. Environmental Artist
6. Character Animator
7. Lighting Technician
8. Identify Post-Secondary Education programs and degrees related to the field.
9. Briefly discuss and understand the history of Animation

Performance Skills

Identify various applications of 3D Animation.

Identify career opportunities in the animation industry.

Identify post high school educational opportunities.

Optional: Standard performance evaluations on the final page of this document

Standard 2- Animation Production Pipeline

Candidates will understand the animation production pipeline.

Objective 1 Understand the pre-production process

1. High Concept
2. Story / Script
3. Character design / Concept art

4. Storyboard
5. Recording initial dialogue/scratch audio
6. Animatic

Objective 2 Understand the production process

1. Modeling
2. Rigging
3. Mapping and textures
4. Animation
5. Lighting
6. Audio (i.e.: music, sound effects, foley, etc.)

Objective 3 Understand the post-production process

1. Rendering
2. Visual effects/compositing
3. Video Editing
4. Color correction

Performance Skills

Candidates will apply elements of the animation pipeline throughout candidate projects

Optional: Standard performance evaluations on the final page of this document

Standard 3- Animation Terms, Tools, and Interface

Candidates will understand animation terms, tools, and interface

Objective 1 Identify the following fundamental animation terms, tools, and interface elements:

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

Performance Skills

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

Optional: Standard performance evaluations on the final page of this document

Standard 4- 12 Principles of Animation

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

Reference: The Illusion of Life - By Frank Thomas and Ollie Johnston

Objective 1 Understand and apply the Principles of Animation:

1. Squash and Stretch
2. Anticipation
3. Staging
4. Straight Ahead and Pose to Pose
5. Follow Through and Overlapping Action
6. Slow In and Slow Out
7. Arcs
8. Secondary Action
9. Timing
10. Exaggeration
11. Appeal
12. Solid Drawing

Performance Skills

Candidates will apply the principles of animation in their projects.

Optional: Standard performance evaluations on the final page of this document

Standard 5- Animating 3D Models

Candidates will animate a 3D model in a scene.

Objective 1 Create a 3D scene.

1. Import or create 3D assets
2. Import or create surface materials
3. Import or create lighting

Objective 2 Demonstrate the following animation skills:

1. Set and edit keyframes
2. Animate translate/move, rotate, and scale attributes
3. Edit pivot points

Objective 3 Identify various animation effects including:

1. Particle effects – such as water, fire, wind, etc.
2. Rigid body simulations
3. Cloth dynamics

Performance Skills

Candidates will demonstrate the ability to animate a 3D model.

Optional: Standard performance evaluations on the final page of this document

Standard 6- Animating Rigged 3D Characters

Candidates will animate a rigged 3D character.

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

Objective 1 Pose a rigged character.

1. Manipulate a rigged character
2. Create strong poses for blocking/keyframing
3. Keyframe initial pose for animation

Objective 2 Animate a rigged character.

1. Use pose to pose animation
 - a. Blocking
 - b. Inbetweens
 - c. Refining
2. • Identify animation cycles
3. • Identify Forward Kinematics and Inverse Kinematics (FK/IK)

Performance Skills

Candidates will demonstrate the ability to pose and animate a rigged character.

Optional: Standard performance evaluations on the final page of this document

Standard 7-Animating Cameras

Candidates will identify and understand the following:

Objective 1 Understand and use staging and framing.

1. Camera Shots (Close Up, Medium, Wide)

Objective 2 Understand camera movement terms

1. Camera Movements (Pan, Tilt, Zoom, Dolly, Side to Side)

Objective 3 Understand aspect ratios

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

Performance Skills

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

Optional: Standard performance evaluations on the final page of this document

Standard 8- Render Animated Scenes

Candidates will render an animated scene.

Objective 12 Understand rendering techniques

1. Ray Tracing
2. Image Sequence and Compositing
3. Motion Blur

Performance Skills Evaluation

Exam name: 3D Animation 1

Candidate Name: _____

Performance assessments may be completed and evaluated any time before the certification is issued. The following performance skills can be used in connection with the associated standards and exam. The evaluator will function as the subject matter expert to determine if the candidate meets the skills requirements with a Yes/No for passing.

Standard 1 – Career Opportunities - Identify various applications of 3D Animation - Identify career opportunities in the 3D animation industry - Develop a realistic Candidate Plan for College and Career Readiness to guide further educational/occupational pursuits	Pass:
Standard 2 – 3D Animation Production Pipeline Understand and implement the animation pipeline	Pass:
Standard 3 – 3D Software Terms, Tools, and Interface Identify the fundamental animation tools within the 3D software interface	Pass:
Standard 4 – 12 Principles of Animation Apply the principles of animation in their projects	Pass:
Standard 5 – Animating 3D Models Animate a 3D model	Pass:
Standard 6 – Animating Rigged 3D Characters Pose and animate a rigged character	
Standard 7 – Animating Cameras Use staging/framing and camera movement when creating a 3D animation	
Standard 8 – Render Animated Scenes Render an animated scene	

Evaluator Name: _____

Date: _____