PRECISION EXAMS

3D Animation

EXAM INFORMATION

Items
43
Points
45
Prerequisites
3D Graphics
Grade Level
11-12
Course Length
One Semester

Career Cluster
Arts, A/V Technology, and Communication
Information Technology
Manufacturing,
Science, Technology, Engineering, and Mathematics

Performance Standards
Included

Certificate Available
Yes

DESCRIPTION

Students must demonstrate knowledge and skills using 3D graphics software to produce 3D models and animations. Topics include an introduction to 2D and 3D animation software, animation planning, storyboard development, and the animation process.

EXAM BLUEPRINT

STANDARD	PERCENTAGE OF EXAM
1- Career Opportunities	8%
2- 3D Development Process (Optional)	
3- 3D Objects	6%
4- Surface Materials	4%
5- Lighting and Camera Techniques	27%
6- Animate 3D Models	36%
7- 3D Models	4%
8- Process of creating 3D Animation	15%

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:

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 Graphic Design and Illustration

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

1. Identify personal interests and abilities related to 3D graphics careers.
2. Identify personal creative talents.
3. Identify organizational and leadership skills.
4. Identify special interest areas.
5. Identify 3D graphics and animation job titles such as: Animator, Technical Director, Rigger, 3D Modeler, Lighter, Texture Artist, Special Effects.
6. Investigate career opportunities, trends, and requirements related to 3D graphics and animation careers.
7. Identify the members of a 3D graphics and animation team.
8. Investigate trends associated with 3D graphics and animation careers.
9. Develop a realistic Student Education Occupation Plan (SEOP) to help guide further educational pursuits.
10. Identify factors for employability and advancement in 3D careers.
11. Survey existing 3D graphics and animation businesses to determine what training is required.
12. Survey universities and colleges to determine programs, degrees, and training availability.
13. Develop employability competencies/characteristics: responsibility, dependability, ethics, respect, and cooperation.
14. 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).

1. Identify early 2D animations on film
2. List key mile markers in animation
3. Identify key figures and animators in animation history

Standard 1 Performance Evaluation included below (Optional)

STANDARD 2 *Covered in 3D Graphics* (Optional)

STUDENTS WILL CREATE A BASIC 3D MODEL AS AN INTRODUCTION TO THE 3D DEVELOPMENT PROCESS

STANDARD 3
STUDENTS WILL MODEL 3D OBJECTS

STANDARD 4

STUDENTS WILL APPLY SURFACE MATERIALS TO 3D MODELS

STANDARD 5
STUDENTS WILL APPLY LIGHTING AND CAMERA TECHNIQUES TO ACHIEVE INTENDED EFFECTS

Objective 1 Apply lighting effects.

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

Objective 2 Apply camera effects.

1. Adjust Aspect Ratio/Film Back
2. Change setting and modify camera views: Staging and Manipulating, Truck, Pan, Zoom, Dolly

Standard 5 Performance Evaluation included below (Optional)

STANDARD 6 *Covered in 3D Animation*
STUDENTS WILL ANIMATE 3D MODELS

Objective 1 Introduce pertinent terminology.

1. Know 3D animation terminology
2. Identify parts of the 3D application interface used in animation

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

1. Use & apply Frame Rate
2. Use & apply Key framing
3. Use & apply Path Animation
4. Use & apply Cycle Animation
5. Use & apply Pivot/Origin Points
6. Use & apply Forward Kinematics Inverse Kinematics (FKIK) Constraints
7. Use & apply Editing Timeline
8. Use & apply Rigging

Objective 3 Introduce various animation effects.

1. Introduce Particle Systems
2. Understand Environmental Simulation: Wind, Gravity, Time
3. Use other software specific effects.

Objective 4 Introduce and apply the principles of animation.

1. Understand & apply Concept drawing
2. Understand & apply Character Appeal
3. Understand & apply Anticipation: Action/Reaction
4. Understand & apply Exaggeration
5. Understand & apply Squash and Stretch
6. Understand & apply Timing/Spacing
7. Understand & apply "Straight Ahead" and "Pose to Pose": Keyframes, In between, Break downs
8. Understand & apply Staging: How to set up a scene, Camera placement, how to tell the story
9. Understand & apply Overlap, drag and follow through
10. Understand & apply Arcs
11. Understand & apply Slow in, Slow out
12. Understand & apply Secondary Actions: Things happening on peripherals

Standard 6 Performance Evaluation included below (Optional)

STANDARD 7

STUDENTS WILL RENDER 3D MODELS

Standard 7 Performance Evaluation included below (Optional)

STANDARD 8

STUDENTS WILL ANIMATE 3D MODELS

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

1. Creating a project brief
2. Writing a story which includes: a script, style, story conceptualization, characters, set and prop design: genre, color/value, mood (light), clothing, vehicles, architecture
3. Using storyboards
4. Recording the dialogue; creating an animatic/story reel
5. Blocking a scene
6. Model the objects
7. Rigging the objects
8. Mapping and texturing
9. Adding lighting
10. Animating the objects
11. Rendering the project
12. Adding effects
13. Compositing the project

Standard 8 Performance Evaluation included below (Optional)

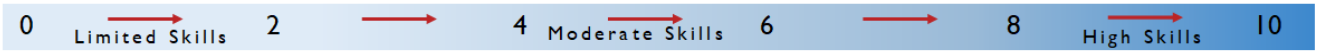
3D Animation Performance Standards (Optional)

Performance assessments may be completed and evaluated at any time during the course. The following performance skills are to be used in connection with the associated standards and exam. To pass the performance standard the student must attain a performance standard average of **8 or higher** on the rating scale. Students may be encouraged to repeat the objectives until they average **8 or higher**.

Students Name_____

Class_____

PERFORMANCE RATING SCALE



STANDARD 1 Career Opportunities — Score:

- ☐ Demonstrate employability skills such as
  - Responsibility
  - Ethics
  - Dependability
  - Respect
  - Cooperation
- ☐ Perform with a positive work ethic and attitude
- ☐ Develop a realistic Student Education Occupation Plan (SEOP) to guide further educational/occupational pursuits
- ☐ Discuss relevant history of 3D modeling and animation

STANDARD 5 Lighting and Camera Techniques — Score:

- ☐ Apply the three-point lighting system to 3D models
- ☐ Apply camera effects to 3D models

STANDARD 6 Animate 3D Models — Score:

- ☐ Use principles of animation
- ☐ Use various animation effects
- ☐ Render a high-quality animation project

STANDARD 7 Render 3D Models — Score:

- ☐ Render high-quality 3D models

STANDARD 8 Process of Creating 3D Animation — Score:

- ☐ Demonstrate the 3D animation development process

PERFORMANCE STANDARD AVERAGE SCORE: