

3D Graphics 2

Exam Information	Description
Exam number 8182 Items 24 National Career Cluster Science, Technology, Engineering & Mathematics Certification available No, In Pilot Status	This course is a continuation of 3D Graphics 1, where candidates will learn how to design and animate 3D models using specialized software. They will deepen their understanding of 3D graphics concepts, such as rigging, skinning, morphing, motion capture, and particle effects. They will also learn how to integrate sound, music, and voice into their 3D animations. They will showcase their creativity and talent by creating original 3D projects that demonstrate their mastery of 3D graphics.

Exam Blueprint and Performance Skills

Standard	Percentage of exam score
1. 3D Modeling	21%
2. Texturing and Materials	17%
3. 3D Lighting	24%
4. Asset Creation	17%
5. 3D Rendering	21%

*Includes performance skill evaluation

Standard 1 - 3D Modeling

Candidates will be able to identify proper modeling techniques for hard surface and organic models.

Objective 1 Candidates will demonstrate hard surface modeling techniques

1. Boolean operations
2. Subdivision surfaces
3. Box modeling
4. Patch Modeling

Objective 2 Candidates will demonstrate organic modeling techniques

1. Proper topology and edge flow techniques
2. Include sculpting
3. Retopology of sculpted objects

Performance Skills

Demonstrate hard surface and organic modeling techniques

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

Standard 2 - Texturing and Materials

Candidates will understand & use 3D Texturing Materials

Objective 1 Candidates will demonstrate a strong understanding of the principles of texturing and materials creation, including color theory, texture mapping, and material properties.

1. Apply principles of color theory to create cohesive and effective 3D textures and materials.
2. Use UV mapping techniques to apply textures to 3D models
3. Utilize different material properties to create realistic and stylized shaders

Objective 2 Candidates will be able to use advanced texturing and material creation tools to create high-quality 3D textures and materials with a variety of properties and effects.

1. Use advanced texturing and material creation tools to create high-quality PBR 3D textures and materials
2. Create different material properties to create realistic and stylized materials

Performance Skills

1. Candidates will create and manipulate textures in a 3D graphic project.

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

Standard 3 - 3D Lighting

Candidates will understand 3D Lighting

Objective 1 Candidates will demonstrate proficiency in using advanced lighting techniques and tools to create realistic or stylized lighting setups for 3D environments and models.

1. Lighting techniques to create realistic lighting setups
2. Global illumination
3. Physically based rendering,
4. Create and optimize lighting pipelines

Objective 2 Candidates will be able to use lighting to enhance the mood, atmosphere, and storytelling of 3D projects.

1. Use lighting to create specific moods and atmospheres
2. Use lighting to enhance the storytelling of 3D projects

Performance Skills

Candidates will use advanced lighting techniques in a project.

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

Standard 4 - Asset Creation

3D Asset Creation

Objective 1 Candidates will demonstrate proficiency in creating 3D assets for a specific purpose, including game assets, animation assets, industrial design, etc.

1. Identify polycount limitation
2. Edge flow
3. High Poly
4. Low Poly

Objective 2 Candidates will be able to optimize and organize 3D assets for efficient use in their intended workflow.

Performance Skills

1. Candidates will understand asset creation and management.

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

Standard 5 - 3D Rendering

3D Asset Creation

Objective 1 Candidates will demonstrate proficiency in setting up and optimizing rendering pipelines for different types of projects, including photorealistic, stylized, and real-time rendering.

1. Test renders
2. Instancing

Objective 2 Candidates will be able to use advanced rendering techniques and post-processing effects to create high-quality 3D renders with photorealistic materials and lighting.

1. Compositing
2. Color Correction

Performance Skills

1. Candidates will be able to apply advanced rendering techniques.

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

Performance Skills Evaluation

Exam name: 3D Graphics 2

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 – 3D Modeling Demonstrate hard surface and organic modeling techniques	Pass:
Standard 2 – Texturing and Materials Candidates will create and manipulate textures in a 3D graphic project.	Pass:
Standard 3 – 3D Lighting Candidates will use advanced lighting techniques in a project.	Pass:
Standard 4 – Asset Creation Candidates will understand asset creation and management.	Pass:
Standard 5 – 3D Rendering Candidates will be able to apply advanced rendering techniques.	Pass:

Evaluator Name:

Date:
