STRANDS AND STANDARDS

3D GRAPHICS 2

Learning that works for Utah
CTE®

Course Description

This course is a continuation of 3D Graphics 1, where students 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.

Intended Grade Level	9-12
Units of Credit	0.5
Core Code	35.02.00.00.071
Concurrent Enrollment Core Code	35.02.00.13.071
Prerequisite	3D Graphics 1 or equivalent experience
Skill Certification Test Number	Coming
Skill Certification Cut Score	**PILOT**
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

3D Modeling:
Students will be able to identify proper modeling techniques for hard surface and organic models.

Standard 1

Students will demonstrate hard surface modeling techniques

- Boolean operations
- Subdivision surfaces
- Box modeling
- Patch Modeling

Standard 2

Students will demonstrate organic modeling techniques

- Proper topology and edge flow techniques
- Include sculpting
- Retopology of sculpted objects

Performance Skills

Demonstrate hard surface and organic modeling techniques

STRAND 2

Students will understand & use 3D Texturing and Materials

Standard 1

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

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

Standard 2

Students 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.

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

Performance Skills

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

STRAND 3

Students will understand 3D Lighting

Standard 1

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

- Lighting techniques to create realistic lighting setups.
  - global illumination
  - physically based rendering,
- Create and optimize lighting pipelines

Standard 2

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

- Use lighting to create specific moods and atmospheres
- Use lighting to enhance the storytelling of 3D projects

Performance Skills

Students will use advanced lighting techniques in a project.

STRAND 4

3D Asset Creation

Standard 1

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

- Identify polycount limitation
- Edge flow
- High Poly
- Low Poly

Standard 2

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

Performance Skills

Students will understand asset creation and management.

STRAND 5

3D Rendering

Standard 1

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

- Test renders
- Instancing

Standard 2

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

- Compositing
- Color Correction

Performance Skills

Students will be able to apply advanced rendering techniques.

Workplace Skills

Workplace Skills taught:

- Communication
- Problem Solving
- Teamwork
- Critical Thinking
- Dependability
- Accountability

Skill Certification Test Points by Strand

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