ESSENTIAL CURRICULUM GUIDLINE
FOR
ANIMATION I

INTRODUCTION

Essential experiences are ones the learner strives to attain upon completion of the various 3D Modeling and Animation Course components. The learner will reinforce the essential experiences while in the 3D Modeling and Animation Course. New experiences will be added onto previous ones making the program a cumulative process. The essential experiences will stress the cognitive as well as the technical. Teambuilding, collaboration, time management and social issues will also be introduced. The essential experiences are designed to build skills that are applicable to any future endeavor.

OVERVIEW

Students will have the ability to:

- Demonstrate practical experience in each of the 3D Modeling and Animation competencies: user interface, objects and shapes, basic animation and controller types, low poly modeling, materials, lighting and cameras, and rendering
- Select and develop an effective portfolio of work done in 3D Modeling and animation and related experiences
- Use terminology and processes common to all modeling and animation strands.
- Solve a variety of 3D Modeling and Animation problems using technical verbal, visual, and written skills
- Work effectively collaborating with team members, instructor, and peers.
- Develop organizational, leadership, and problem solving skills
- Identify social concerns and apply ethical behavior
- Recognize the role of 3D Modeling and Animation in a global marketplace
- Use effective compositional skills in making 3D Models and Animations
- Design solutions to problems that effectively fulfill the purpose.

DEVELOPMENTALLY APPROPRIATE ENTRY LEVEL SKILLS

Students will have the ability to:

- Recognize language of animation - modeling elements, principles of design, movement, lighting, etc., and apply them to 3D Modeling and Animation problems.
- Discriminate differences among various types of animation and modeling techniques
- Use various conceptual and interdisciplinary approaches for the development of subject matter including imagination, observation, memory, verbal to visual, and experimental approaches
- Understand and operate basic computer hardware and software
- Collect and analyze data, and interpret results of research to solve problems
- Work constructively as a part of a team to achieve a common goal
- Manage time to achieve long range goals
- Work individually
- Work and stay within the set parameters.

CULMINATING/EXIT COMPETENCIES

Students will have the ability to:

- Push limits of a concept while satisfying given parameters
- Revise ideas/solutions based upon critical analysis
- Identify and use the most effective methods to solve a 3D Modeling and Animation problem
- Prepare a portfolio to choose an area of concentration
- Apply multiple verbal, visual and written solutions to describe and solve a variety of visual problems
- Utilize a variety of creative strategies to solve 3D Modeling and Animation problems
- Engage in a collaboration and ongoing critical dialogue with instructor and peers
- Participate in the monitoring of work through various in-process assessments (conferences, checklists, self evaluation)
- Create and maintain a digital and/or traditional sketchbook/journal or client file.

UNITS

UNIT I	Introduction to Computer Graphics, 3D Animation, and 3D Max
UNIT II	User Interface
UNIT III	Working with Files and Objects
UNIT IV	Transforming Objects
UNIT V	Overview Lab
UNIT VI	Basic Animation Techniques and Track View
UNIT VII	Creating an Animation and Changing Controller Types
UNIT VIII	Animation Lab
UNIT IX	Shapes
UNIT X	More Objects and Modifiers
UNIT XI	Low Poly Modeling
UNIT XII	Environmental and Low Poly Creation Lab
UNIT XIII	Introduction to the Materials Editor
UNIT XIV	Creating Mapped Materials
UNIT XV	Materials Lab
UNIT XVI	Basic Lighting
UNIT XV	Basics of Advanced Lighting
UNIT XVI	Rendering with Advanced Lighting
UNIT XVII	Cameras and Rendering
UNIT XVIII	Scene Creation Lab
UNIT XIX	Independent Project

OVERARCHING GOALS AND OBJECTIVES

Goal 1. Basic Creation

The student will have learned the basic concepts of 3D Max. He/she will have learned the basic concepts of how to model simple geometry, and apply materials to objects by dragging them from the Material/Map Browser. Students will also have experimented with animation and key framing concepts to bring an animation scene "to life."

Objectives–Students will be able to:

- Use modeling tools to create parts of a Jack-in-the-Box.
- Apply modifiers to reshape objects.
- Create lights and a camera.
- Use animation tools to bring the design "to life."

Goal 2. Animation

The student will have learned the basics of animation in 3D Max. He/she will have learned the concepts of key frames and how to create them. They will have learned to control animations using both the track bar and the Track View, and to constrain the motion of an object based on the behavior of another.

Objectives–Students will be able to:

- Move an object over a period of time.
- Navigate within different modes of Track View.
- Edit key frames.
- Use the Path Constraint.
- Animate using dummy objects.
- Fine-tune an objects movement.

Goal 3. Materials

The student will have learned how to apply several different types of materials to objects in a scene. He/she will have aligned, scaled and controlled the appearance of materials in addition to using materials to control the look of objects, from color to refraction and opacity.

Objectives–Students will be able to:

- Apply UVW Map modifiers to objects.
- Adjust the UVW Map gizmo.
- Create Standard Materials.
- Apply various map types such as Bitmap, Noise and Ray-trace.
- Use various Map channels such as Diffuse, Opacity, Bump, and Reflection.
- Merge objects from one scene to another.

- Project a Bitmap in a Spotlight.
- Use mental ray specific maps.

Goal 4. Scene Creation

The student will have learned how to populate a scene with simple geometry. He/she will have designed and applied interesting materials to embellish the scene. Lights will have been created and adjusted to add realism to the scene. Students will also have used Radiosity, Light Tracer, and mental ray as ways to render a scene.

Objectives–Students will be able to:

- Create simple geometry to simulate the inside of a cave.
- Create and apply materials to embellish the scene.
- Create effective lighting to bring the scene "to life."
- Render the scene using Advanced Lighting Radiosity.

Animation I
Essential Curriculum

Goal 1. Students will demonstrate the ability to use technology to solve 3D Modeling and Animation problems effectively.

Objectives–The student will be able to:

- Demonstrate competency in the use of technology for each of the 3D Modeling and Animation units.
- Explain how current and ongoing technology in 3D Modeling and Animation affects hardware and software.
- Apply current technology to solve 3D Modeling and Animation problems.

Goal 2. Students will demonstrate the ability to become creative problem-solvers and risk takers who develop imaginative solutions verbally, visually, and in writing.

Objectives–The student will be able to:

- Experiment with a variety of creative problem solving techniques to solve a problem.
- Collect and analyze data and interpret results of research to solve problems.
- Select the most appropriate method or methods to solve a problem.
- Utilize various conceptual and interdisciplinary approaches for the solution of problems using imagination, observation, memory, verbal to visual, and experimental approaches.

Goal 3. Students will demonstrate the ability to present an informed aesthetic viewpoint.

Objectives–The student will be able to:

- Utilize modeling and animation elements and design principles and apply them to visual communication problems.
- Discriminate among various aesthetic, theoretical and ethical viewpoints.
- Contrast design solutions from various cultures and times.

Goal 4. Students will demonstrate the ability to collaborate with a team in all aspects of the development of an animation product, and exercise leadership skills.

Objectives–The student will be able to:

- Participate with instructor and peers to engage in ongoing critical dialogue.
- Work constructively with a team to develop an animation product.

Goal 5. Students will demonstrate the ability to evaluate their progress using a variety of assessment tools and revise solutions accordingly.

Objectives–The student will be able to:

- Participate in monitoring their work through various in-process assessments (conferences, checklists, self-evaluation, etc.) in collaboration with instructor and peers.
- Maintain a collective portfolio from class and related experiences to document the development of ideas and skills.

Goal 6. Students will demonstrate the ability to develop sensitivity for social, ethical and global concerns.

Objectives–The student will be able to:

- Recognize the relationships between technical achievement and their impact on various societies.
- Identify various ways cultures and periods of time have used symbols, icons, and images.
- Identify and respond to ethical issues related to 3D Modeling and Animation.
- Identify issues related to the global market for visual communications.

Animation I
Core and Sample Lessons

The following core and sample lessons address the complex issue of 3D Modeling and Animation problem solving. Each lesson is carefully structured to create an environment conducive to exploring the language of 3D Modeling and Animation. These lessons encourage the learner to explore 3D Modeling and Animation concepts, design principles and technical skills. The specific technical skills needed to execute practicum assignments are taught or developed through involvement with the problem.

3D Modeling and Animation Core Lessons
Introduction to Computer Graphics, 3D Animation, and 3D Max

Purpose: In the 3D Modeling and Animation course, students will be able to:

- Recognize the industries that complement 3D animation.
- Understand how 3D animation works.
- Understand the applications for 3ds max.
- Understand the industry standard terminology used in the software and in the manuals.

Specifications– Students will:

- Identify major animation principles and explain their functions.
- Create a glossary and scrapbook that incorporates the glossary along with relevant technical articles, news articles and examples.
- Explain the relevance of the examples used in the scrapbook.
- Create a self-portrait that is an illustration based on a digital self-portrait photograph, which includes all facial detail except the background.

Layout

- All documents will be scanned and originals maintained in a storage folder
- Documents will be assembled and presented in Acrobat PDF format.

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