Montgomery County Community College
CIS 177
Introduction to 3D Modeling
3-2-2

COURSE DESCRIPTION:
This course introduces the fundamental techniques, concepts, and vocabulary of 2D and 3D art development for electronic games and simulations. Students will use 2D and 3D development tools and apply appropriate design methodologies and principles to create graphic images. Students will be introduced to 3D game engine technology and the process of importing and manipulating art objects using popular game engines and graphics tools.

REQUISITES:
Previous Course Requirements
None

Concurrent Course Requirements
None

LEARNING OUTCOMES Upon successful completion of this course, the student will be able to:	LEARNING ACTIVITIES	EVALUATION METHODS
1. Demonstrate a working knowledge of 2D and 3D electronic design tools and theory by creating a variety of models and textures.	Assigned Reading Lecture Discussion Hands-On Lab Exercises Homework Assignments Projects	Final Portfolio
2. Demonstrate a working knowledge of 3D game engine technology by importing and manipulating graphics using a popular game engine.	Assigned Reading Lecture Discussion Hands-On Lab Exercises Homework Assignments Projects	Final Portfolio

LEARNING OUTCOMES	LEARNING ACTIVITIES	EVALUATION METHODS
3. Apply the basic vocabulary and fundamental concepts of 2D and 3D graphics concepts including: a. 3D modeling theory & techniques b. Creation and application of textures c. Lighting principles d. Special effects	Assigned Reading Lecture Discussion Hands-On Lab Exercises Homework Assignments Projects Quizzes Exams	Tests or Quizzes Final Portfolio

At the conclusion of each semester/session, assessment of the learning outcomes will be completed by course faculty using the listed evaluation method(s). Aggregated results will be submitted to the Associate Vice President of Academic Affairs. The benchmark for each learning outcome is that *70% of students will meet or exceed outcome criteria*.

SEQUENCE OF TOPICS:
1. Development of Gaming Art Assets
    a. Design Theory
    B. Development Process
    C. Avoiding Gender and Ethnic Stereotyping
2. 3D Modeling Theory
    a. Primitives
    b. Polygons & Memory
    c. Modeling Techniques
3. Introduction to 3D Modeling Tools
    a. 3D Modeling Tools History & Background
    b. Basic Interface Components
    c. File Formats & Saving
4. Introduction to Texturing & Photoshop
    a. 2D Image Editing Software History & Background
    b. Basic Interface Components
    c. File Formats & Saving
    d. Basic File Editing Techniques
    e. Color Depth
    f. Resolution
    g. Layers
    h. Channels
    i. Filters
5. Applying Textures
    a. UVs, Texture Space, and Mapping
    b. Tiling

6. Introduction to Video Game Engine Technology
    a. Game Engine History & Background
    b. Importing Art Work into the Engine
    c. Modifying and Manipulating Game Art in an Engine
7. Advanced Modeling
    a. Organic Modeling Methods
    b. Modeling with Triangles
8. Lighting Principles
    a. Lighting Theory
    b. Vertex Lighting
    c. Lightmaps
    d. Per-Pixel Lighting
    e. Normal Maps
9. Effects

LEARNING MATERIALS:

Ingrassia. *Maya for Games: Modeling and Texturing Techniques with Maya and Mudbox*. Taylor and Francis. ISBN: 9781466598645

Other learning materials may be required and made available directly to the student and/or via the College's Libraries and/or course management system.

COURSE APPROVAL:
Prepared by: Jason Wertz   Date: 8/2004
Revised by: Jason Wertz   Date: 3/2005
Revised by: Jason Wertz   Date: 4/2008
VPAA/Provost Compliance Verification: Dr. John C. Flynn, Jr.   Date: 9/11/2009

Revised by: Jason Werz   Date: 7/25/2013
VPAA/Provost or designee Compliance Verification:
        Victoria Bastecki-Perez, Ed.D.   Date: 7/29/2013

Revised by: Patricia Rahmlow   Date: 5/2017
VPAA/Provost or designee Compliance Verification: Date: 8/21/2017

This course is consistent with Montgomery County Community College's mission. It was developed, approved and will be delivered in full compliance with the policies and procedures established by the College.