Miami Dade College

Course Description
DIG2712 | Level Building & Design | 4.00 credits

This is a core course for students majoring in game development and design. Gaining a good foundation in math is suggested prior to enrolling in this course, a basic understanding of vector math and advanced concepts in algebra is preferred. Students will learn how to develop game environments in industry standard engines, how to create documentation to plan out effective game play experiences, and the requirements to create virtual worlds. Prerequisite: CAP2047, COP2335, and DIG1430.

Course Competencies

Competency 1: The student will demonstrate a comprehension of 3D computer coordinate systems by:

1. Reproducing simple objects in a 3D engine environment.
2. Scripting game object translations in a scene.

Competency 2: The student will analyze game experiences and how to design levels by:

1. Discussing the relationship between level design and story in games across multiple genres.
2. Discussing different types of control that can be exerted on a player through design.
3. Discussing how difficulty impacts storytelling and gameplay.
4. Creating a scene for a game and applying the aforementioned knowledge in design and execution.

Competency 3: The student will demonstrate an application of 2D & 3D asset creation tools by:

1. Creating game prop geometry in Maya (or an equivalent industry standard package) for use in a game engine scene.
2. Unwrapping and texturing assets for use in game.
3. Creating textures for use in game.
4. Exporting files in standard formats and importing them into an in-engine scene.

Competency 4: The student will demonstrate an application of game terrain by:

1. Discussing the relationship between systems of player control and terrain.
2. Creating and editing terrain in engine.
3. Set dressing a terrain in engine.
4. Setting up a Navigation Mesh and Navigation Mesh Agents which properly make use of the terrain.

Competency 5: The student will demonstrate an application of prefabs by:

1. Defining a prefab and distinguishing between using prefabs and using single game objects.
2. Editing prefabs and populating changes across all prefab instances.
3. Using prefabs to streamline the workflow process and develop playable scenes in engine.
4. Creating new prefabs and populating them in the scene.

Competency 6: The student will analyze the different uses of materials and textures in creating game levels by:

1. Identifying the different types of textures that can be applied to materials and how to create them
2. Creating texture maps and setting up materials for object in games.
3. Modifying existing texture maps to work with new designs.
4. Applying new textures for changing the look and feel of existing game levels.

Updated: Fall 2024

Competency 7: The student will evaluate level design documents by:

1. Writing a design document for creating new levels for a game design concept.
2. Interpreting design document for creating levels for games.
3. Comparing design documents for different genres of games Writing a design document for creating new levels for a game design concept.

Competency 8: The student will analyze level creation by:

1. Creating a new level for an existing or original game which tells a story.
2. Studying what makes for a game's failure or successes in the market.
3. Modifying existing levels to change difficulty, look and fun factor.

Competency 9: The student will demonstrate mastery of in engine scenes in the creation of levels by:

1. Scripting in transitions between scenes to create a continuous game level experience.
2. Setting up scene transition triggers.
3. Creating resolution conditions (win/lose the experience) which inform final transitions.

Competency 10: The student will demonstrate a comprehension of in-engine particle systems by:

1. Identifying the different types of particle systems that can be set up in-engine.
2. Creating custom particle emitters as prefabs (including custom materials).
3. Scripting particle emitter behavior.
4. Using particle systems to enrich a game scene.

Competency 11: The student will demonstrate a comprehension of level design and in-engine tools by:

1. Distinguishing the different level building tools and using them to create a custom level which effectively tells a story.
2. Examining draw calls on a scene and optimizing scene rendering through manipulation of draw distance.
3. Setting up different types of lights in engine to set mood and better tell the story of the level.
4. Scripting camera movement and setting up a camera to track with a player character.
5. Using the camera to help tell the story of the level.
6. Setting up user interface and HUD animations to give feedback to a player as they progress through the level.

Learning Outcomes

1. Aesthetic / Creative Activities
2. Communication
3. Information Literacy
4. Computer / Technology Usage
5. Critical Thinking