

VCIM-1400: GAME DESIGN II: GAME ENGINES

Cuyahoga Community College

Viewing: VCIM-1400 : Game Design II: Game Engines

Board of Trustees:

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Academic Term:

Fall 2020

Subject Code

VCIM - VC-Interactive Media

Course Number:

1400

Title:

Game Design II: Game Engines

Catalog Description:

Applied technical and aesthetic fundamentals of 2D and 3D game design using industry standard engines. Includes survey of the game design industry. Emphasis on design and interaction of 2D and 3D assets to be used in entertainment games.

Credit Hour(s):

3

Lecture Hour(s):

2

Lab Hour(s):

3

Requisites

Prerequisite and Corequisite

VCIM-1200 Game Design I: Introduction to Game Design, or concurrent enrollment; and VCIL-1640 3D Design, or concurrent enrollment; or departmental approval.

Outcomes

Course Outcome(s):

Develop 2D and 3D graphics for game applications using industry-standard software.

Objective(s):

1. Describe various game engine tools and systems used by game design industry.
2. Identify roles and responsibilities of game design team.
3. Identify primary strategies for creating 2D and 3D graphics for use in game engines.
4. Explain benefits of low polygon and efficient geometry modeling.
5. Explore advantages of 3D real-time rendering vs. pre-rendered game assets.
6. Create 2D and 3D assets for game engines.
7. Combine sounds, graphics, animations, and effects for use in game play using a game engine.
8. Use existing and customer scripts to create interactive game conditions.

Course Outcome(s):

Produce a game using industry-standard game design tools.

Objective(s):

1. Publish a working build of game application to run on a computer.
 2. Explore using game engines to produce linear and non-linear interactive presentations for entertainment purposes.
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Methods of Evaluation:

1. Written assignments
2. Laboratory exercises
3. Case studies
4. Projects
5. Presentations
6. Portfolio

Course Content Outline:

1. Game design team members
 - a. Concept artist
 - b. Writer
 - c. Prop designer
 - d. User Interface designer
 - e. Environment and background designer
 - f. Level & world designer
 - g. 2D/3D Designer
 - h. Animator
 - i. Programmer
 - j. Sound designer
 - k. Engineer
 - l. Game play designer
- m. Tester
- n. Other
2. Game design assets
 - a. 2D graphics
 - b. 3D graphics
 - c. Materials
 - d. Sounds
 - e. Animations
 - f. Scripts
3. Game engine interface
 - a. Scene
 - b. Game
 - c. Assets
 - d. Files
 - e. Inspector
4. Game objects
 - a. Particles
 - b. Cameras
 - c. Lights
 - d. Geometry
 - e. Graphics
 - f. GUI graphics
5. Game components
 - a. Mesh
 - b. Effects
 - c. Physics
 - d. Navigation
 - e. Audio
 - f. Rendering
 - g. Scripts
 - h. Controls
6. Scripting
 - a. Functions
 - b. Variables
 - c. Comparisons

- d. Conditions
 - e. Instantiation
 - f. Object oriented concepts
7. Input controls
 - a. Keyboard
 - b. Mouse
 - c. Game controller
 - d. Alternative input
 8. Interactions and conditionals
 - a. Click
 - b. Key press
 - c. Touch screen
 - d. Gyroscope
 - e. Accelerometer
 - f. Collision
 9. Scenes
 - a. Menus
 - b. Levels
 - c. Cut scenes
 - d. End and credits
 10. Performance evaluation
 - a. Responsiveness
 - b. Frame rate
 - c. Playback quality
 11. Building application
 - a. Scene order
 - b. Platform
 - c. Devices

Resources

Rogers, Scott. *Level Up!: The Guide to Great Video Game Design*. 2nd ed. West Sussex, UK: John Wiley and Sons, Ltd., 2014.

Koster, Raph. *A Theory of Fun for Game Design*. 2nd ed. Paraglyph Press, 2013.

Gibson Bond, Jeremy. *Introduction to Game Design, Prototyping, and Development: From Concept to Playable Game with Unity and C#*. 2nd. Addison-Wesley Professional; 2 edition , 2017.

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