



MERCER
COUNTY COMMUNITY COLLEGE

COURSE OUTLINE

Course Number GAM 260	Course Title Game Development	Credits 3.0
Hours: Lecture/Lab/Other 1/4/0	Pre-requisite: GAM 140 & GAM 240	Implementation Semester & Year: SP 2022

Catalog description:

In this capstone course, students work in interdisciplinary production teams to develop computer games and modules utilizing industry-standard game engines. Coursework centers on producing scripted real-time modules, play-testing, and documentation to specify game design concepts.

General Education Category: Not GenEd | **Course coordinator:** (Ric Giantisco, x3458, giantisr@mccc.edu)

Required texts & Other materials: (None)

Course Student Learning Outcomes (SLO):

Upon successful completion of this course the student will be able to:

1. Collaborate with other students to create and develop a fully functional video game. [ILG 1-11; PLO 1-10]
2. Produce and contribute specific, professional-level game assets as either a designer, artist, programmer, lead, producer, or director. [ILG 1-11; PLO 1-10]
3. Demonstrate proficiency in game engine asset development. [ILG 1-11; PLO 1-10]
4. Design, model, and texture assets that export into a game engine. [ILG 1, 2, 4, 6, 10,11; PLO 2-6, 9, 10]
5. Apply game design theory and concepts to generate a game design document. [ILG 1,2,4, 6,10,11; PLO 2, 3, 5, 6, 9,10]
6. Create and deliver fully interactive, playable game "builds", or modules. [ILG 1-11; PLO 1-10]
7. Develop game concepts into effective and scalable prototypes for testing and analysis. [ILG 1-11; PLO 1-10]
8. Analyze and process play test feedback from peer and focus groups. [ILG 1, 2, 4, 10, 11; PLO 2, 3, 5, 9, 10]

Course-specific Institutional Learning Goals (ILG):

Institutional Learning Goal 1. Written and Oral Communication in English. Students will communicate effectively in both speech and writing.

Institutional Learning Goal 2. Mathematics. Students will use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems.

Institutional Learning Goal 3. Science. Students will use the scientific method of inquiry, through the acquisition of scientific knowledge.

Institutional Learning Goal 4. Technology. Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.

Institutional Learning Goal 5. Social Science. Students will use social science theories and concepts to analyze human behavior and social and political institutions and to act as responsible citizens.

Institutional Learning Goal 6. Humanities. Students will analyze works in the fields of art, music, or theater; literature; philosophy and/or religious studies; and/or will gain competence in the use of a foreign language.

Institutional Learning Goal 7. History. Students will understand historical events and movements in World, Western, non-Western or American societies and assess their subsequent significance.

Institutional Learning Goal 8. Diversity and Global Perspective: Students will understand the importance of a global perspective and culturally diverse peoples

Institutional Learning Goal 9. Ethical Reasoning and Action. Students will understand ethical frameworks, issues, and situations.

Institutional Learning Goal 10. Information Literacy: Students will recognize when information is needed and have the knowledge and skills to locate, evaluate, and effectively use information for college level work.

Institutional Learning Goal 11. Critical Thinking: Students will use critical thinking skills understand, analyze, or apply information or solve problems.

Program Learning Outcomes for Game Design & Game Programming (PLO)

1. Understand the historical development of gameplay.
2. Apply the design process to the research and development of professional video game concepts.
3. Apply narrative structures in the design of video games and levels.
4. Describe and reference industry trends and technologies in video gaming.
5. Design meaningful video game experiences and game mechanics appropriate to context.
6. Create diagrams, storyboards, and prototypes to specify game design concepts.
7. Develop games with level editing and scripting tools within industry standard game engines.
8. Understand basic programming concepts and apply scripting languages to create interaction in game environments.
9. Create 2D and 3D game art assets from game concepts, utilizing professional 2D digital imaging and 3D modeling and animation software.
10. Work effectively on interdisciplinary teams producing functioning games and levels.
11. Create a professional sales pitch for a game concept.
12. Program game engine components such as resource management, entity-based systems, physics simulation, and user interfaces.
13. Create a custom 2-D game engine.
14. Develop skills to be a self-learner and problem solver.

Units of study in detail – Unit Student Learning Outcomes:

Unit I [Design & Plan] [SLO 1-5]

This unit of study focuses on the design and conceptualization of a video game in a team environment. Students will create a game design document that defines and explains the necessary elements for the game. A team structure will be developed with each student assigned the specific duties and tasks of an appropriate professional. Students will gain experience with game industry software and develop skills in design, layout, and efficiency.

Learning Objectives

The student will be able to:

- Apply research to the development of visual concepts.
- Produce 2D maps and navigation flowcharts for game levels
- Describe and represent NPC and obstacle dynamics.
- Assemble team and assign tasks according to merit.
- Explain and address potential problems and limitations.

Unit II [Prototype] [SLOs 1-8]

Students will focus on constructing a select group of game level designs through creative iterations of several prototypes. Further development of skills in critical analysis, testing, reviewing, time management, and design efficiency will be learned.

Learning Objectives

The student will be able to:

- Create maps and paper prototypes of players, obstacles, and enemies.
- Develop core mechanics and dynamics to simulate gameplay.
- Describe and represent NPC and obstacle dynamics.
- Critique work from self and others meaningfully.
- Explain and address potential problems and limitations.

Unit III [Game Production] [SLOs 1-8]

This unit will focus on producing a full game within a game engine. Students will continue to develop mastery of their skills in digital art and game engine software. Emphasis will be placed on creating efficient, robust game builds and meeting milestone dates. Students will develop skills in drawing, modeling, texturing, lighting, animation, programming, UV mapping and level design specific for gaming.

Learning Objectives

The student will be able to:

- Model low poly and high poly assets or create sprites for a game engine.
- Create simple animation sequences for a game engine.
- Import assets into a game engine.
- Critique work from self and others meaningfully.
- Create textures and normal maps or sprite sheets for a game engine.
- Build game levels in a game engine.
- Construct and refine several playable builds of the game.
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Evaluation of student learning:

ASSIGNMENTS & MILESTONES

In this class there are five milestones. At the beginning of each milestone you will be provided with a description that explains the goals, requirements, and timeline of that milestone. Please note the due dates.

For each milestone, each student will be required to complete a series of assignments. Many of these assignments will be subjected to in-class critiques from both the professor and your fellow students. This means that in addition to the quality of their final product, each student will also be graded on their delivery of required previsualization, conceptual work or product iterations, their participation during critiques, and how they collect and process feedback from their professor and peers.

Assignments that are only submitted on the final deadline date without inclusion of the required previsualization, conceptual work, and/or product iterations will receive a maximum grade of "C". Previsualization, conceptualization, and product iteration are important. Please develop your assignments accordingly. Late assignments will only be accepted for one week after they are due. Work that is turned in after class on the day that it is due will be considered late. The highest grade that late projects can receive is a "C".

GAME MILESTONES

Milestone 1: 1st Playable Build

Milestone 2: Alpha Build

Milestone 3: Beta Build

Milestone 4: Gold Build

Each milestone will be evaluated on the following criteria:

- Completed Deliverables
- Provided Player Experience & Visual Appeal
- Technical Execution

GRADING

Concept Development (10% overall)

Game Build Contributions - Avg. (55% overall)

1st Playable 25%

Alpha 25%

Beta 25%

Gold 25%

Milestone Builds - Avg. (15% overall)

1st Playable 25%

Alpha 25%

Beta 25%

Gold 25%

Peer Evaluations – Avg. (10% overall)

Mid Term 50%

Final 50%

Attendance – (10% overall)

Total 100%