# COURSE OUTLINE

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<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
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<td>GAM260</td>
<td>Game Development</td>
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<tr>
<th>Lecture/Lab/Hours</th>
<th>Co- or Pre-requisite</th>
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<tr>
<td>1/4</td>
<td>Pre-requisite: GAM240</td>
<td>Spring / 2012</td>
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<td>Load Equivalent: 5</td>
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**Catalog Description**

GAM 260  Development
3 credits
Pre-requisite: GAM 240

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.

1 lecture/4 laboratory hours

**Is this course New, Revised, or Modified?**

This course is the final capstone in a series of four courses to support the Game Design program.

**Required texts/ other materials:**

- International Game Developers Association: http://www.igda.com
- Gamasutra.com
- GameDev.net

**Revision Date:** 10/2011  
**Course Coordinator:** Ric Giantisco, x3458  
**Other Learning Resources:**

- International Game Developers Association: http://www.igda.com
- Gamasutra.com
- GameDev.net
Information Resources:
- Unreal Development Kit
- Standard Graphics software (Adobe Creative Suite and Autodesk products)
- 3D World Magazine
- Microsoft Office Suite
- Game Lab ES 129/130

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

Course-specific General Education Knowledge Goals and Core Skills.

General Education Knowledge Goals
Goal 1. Communication. Students will communicate effectively in both speech and writing.
Goal 2. Mathematics. Students will use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems. Specifically Linear Algebra and Advanced Trigonometry.
Goal 3. Science. Students will use the scientific method of inquiry, through the acquisition of scientific knowledge. Students will learn how to implement physics simulations.
Goal 4. Technology. Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.
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.

MCCC Core Skills
Goal A. Written and Oral Communication in English. Students will communicate effectively in speech and writing, and demonstrate proficiency in reading.
Goal B. Critical Thinking and Problem-solving. Students will use critical thinking and problem solving skills in analyzing information.
Goal D. 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.

Goal E. Computer Literacy. Students will use computers to access, analyze or present information, solve problems, and communicate with others.

Goal F. Collaboration and Cooperation. Students will develop the interpersonal skills required for effective performance in group situations.

Units of Study

Unit 1 - Design & Plan
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....

i. Apply research to the development of visual concepts (CG 2,3,4,7,8, GE 1,6, CS A,B, D,E)
ii. Produce 2D maps and navigation flowcharts for game levels (CG 3, 4, 8, GE 1, 4, CS A, B, D, E)
iii. Describe and represent NPC and obstacle dynamics (CG 1, 3, 4, 8, GE 1, 4, CS A, B)
iv. Assemble team and assign tasks according to merit (CG 1, 2, 6, GE 1, 6, CS A, B, F)
v. Explain and address potential problems and limitations (CG 6, 7, 8, GE 1, 4, CS A, B)

Unit 2 - Prototype
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....

i. Create 2D maps and paper prototypes of players, obstacles, and enemies. (CG 1, 3, 4, 6, 8, GE 1, 4, CS B, D, E)
ii. Develop prototypical mechanics and dynamics to simulate gameplay. (CG 1, 3, 4, 6, GE 1, CS B, D, E)

iii. Describe and represent NPC and obstacle dynamics. (CG 3, 6, 8, GE 1, 4, CS A, B, D, E)

iv. Critique work from self and others meaningfully. (CG 6, GE 1, 6, CS A, B, F)

v. Explain and address potential problems and limitations. (CG 6, GE 1, 6, CS A, B, D)

Unit III - Production

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 modeling, texturing, lighting, animation, programming and UV mapping specific for gaming.

Learning objectives:
The student will be able to....

i. Model low poly and high poly assets for a game engine. (CG 2, 5, GE 4, CS B, E)

ii. Create simple 3D animation sequences for a game engine. (CG 5, GE 4, CS B, E)

iii. Import assets into a game engine. (CG 2, 5, GE 4, CS B, D, E)

iv. Critique work from self and others meaningfully. (CG 6, GE 1, 6, CS B, F)

v. Create textures and normal maps for a game engine. (CG 2, 3, GE 4, CS A, B, E)

vi. Build 3D terrain in a game engine. (CG 2, 5, GE 4, CS B, E)

vii. Construct and refine several playable builds of the game. (CG 6, 7, 8, GE 4, 6, CS B, D, E, F)

Learning Activities:
Lectures - each 50 minutes:
Level Design
Interface Design/ Flowcharting
Prototyping- paper/interactive
Gameplay Mechanics
Historical Game Research
Mechanics, Dynamics and Aesthetics
Game Mods
HCI/ Serious Games
Concept Development
Interactive Narrative
Storyboard Creation
Visual Design
Unity 3D
Game Development/ Audio Design

Reading Assignments – see required books and daily class schedule for reading assignments

Lab Activities

Tutorials/ Software Demos: Autodesk Maya, Unity 3D, Photoshop, Google SketchUp

3 Studio Projects: see below

**Evaluation of student learning:**

**Grading Calculations:**

80% **Projects:** 3 projects are averaged together for total project grade. Students will be evaluated on their collaborative and leadership skills, quality of completed, job-specific tasks and ability to meet milestone deadlines. Each student will be graded individually.

20% **Attendance and participation** in discussion, lab activities and critique. More than 5 days absent will result in no credit for attendance and participation unless special arrangements for makeup work have been established with the instructor.

**Project 1: Game Design Document** - Design, create and organize the necessary concepts and components to form a complete game design document.

**Criteria for assessment:** Clear evidence of creative thinking applied to develop concept for the game; Design principles and elements are effectively used to create a solid game mechanics and core experience. Player navigation and encounters are clearly defined.

**Project 2: Develop a working prototype** - Construct a highly functional and relevant prototype of the final game.

**Criteria for assessment:** Clear evidence of creative thinking applied to develop concept for the game; Design principles and elements are effectively used to create a solid game mechanics and core experience. Game is playable. Player navigation and encounters are clearly defined.

**Project 3: Produce a fully functional video game** - Develop and publish a complete working build of a video game.

**Criteria for assessment:** Clear evidence of creative thinking applied to develop concept for the game; Effective use of
playtesting to refine the game concept in an iterative process; Design principles and elements are effectively used to create a solid game aesthetic; Character development and the interactive narrative arc is clearly defined; Effective use of 3D elements and level design; Final build is playable and fun.

**Academic Integrity Statement:**

Students are expected to comply with the college-wide requirements for academic integrity. Mercer County Community College is committed to Academic Integrity—the honest, fair, and continuing pursuit of knowledge, free from fraud or deception. This implies that students are expected to be responsible for their own work. Presenting another individual’s work as one’s own and receiving excessive help from another individual will qualify as a violation of Academic Integrity. The entire policy on Academic Integrity is located in the Student handbook and is found on the college website: [www.mccc.edu/admissions_policies_integrity.shtml](http://www.mccc.edu/admissions_policies_integrity.shtml)

**Special Needs Accommodations**

Any student in this class who has special needs because of a disability is entitled to receive accommodations. Eligible students at Mercer County Community College are assured services under the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973. If you believe you are eligible for services, please contact Arlene Stinson, Director of Academic Support Services. She can be reached at 609-570-3525.