

SCHOOL OF COMPUTING, INFORMATICS AND DECISION SYSTEM ENGINEERING (CIDSE)

ARIZONA STATE UNIVERSITY

TEMPE, AZ

CPI 211- Game Development II

Instructor: Dr. Brian Nelson
Office Room: BYENG M1-04
Office Hours: Tuesdays 2-4pm and by appointment
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Lecture/Lab
Room: BYENG M1 -11
Meeting Days: Tuesdays 4:30-7:15
Semester & Year: Fall 2015



I. Catalog Description:

Introduces the basics of 3D game development by using a game engine. Focuses on the pipeline of 3D game development including 3D environment and content creation, implementation to control 3D components by scripting, and graphical user interfaces development. Develops several 3D games for multi platforms.

II. Prerequisite:

Computer Gaming Certificate student or BIS student with Computer Gaming emphasis; CPI 111 with C or better

III. General Description

This course is intended to serve as an introduction into the 3D game development. The course breaks down the complex process of game creation into a simple step by step program. CPI 111 (C or better grades) is prerequisite, and the knowledge of skills on 2D game development including, GGD (Game Design Document), scripting/computer programming to control object behaviors, 2D image editing, and level design are desirable. The course will go into detail the design and production methodologies used for creating games in various genres. Students will apply the skills taught during class in the various assignments. The assignments will lead into each other and the final project will be a simple game created by the student as a result of successfully completing the various assignments. The class will teach the students how to use Unity, which is one of the 3d game engines for multi platforms such as PC, MAC, iPhone& iPad, Android, PlayStations, and Xbox.

IV. Learning Objectives

The main learning objective is to learn how to design and develop 3D games using a game engine and scripting. The followings are the list of items to study.

- Concept of 3D World Coordinate and camera/view control
- Concept of 3D Object (mesh, texture mapping, animation) for game environment
- Concept of AI engine and scoring.
- Modeling of 3D environment and asset files in 3D modeling tools and Unity's Terrain Generator
- Scripting/Programming of GUI development, 3D object control, AI engine, scoring, etc in JavaScript
- Deployment for PC, Mac, iPhone & iPad, Android, Playstaions, Xbox.

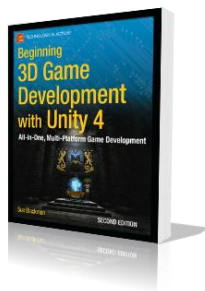
V. Instructional Method

This is a hands-on class. Each student has one PC in class. In class the instructor explains the basic concepts and theory using PowerPoint slides, and demonstrates the functions of commands in Unity (and 3DS Max, and Photoshop). The students follow the instructions using their PCs. If they have any question or problem during the instructions, the instructor shows the solutions. For each topic, the students first look at the instructor's demonstration, and repeat the same thing on their PCs. A final project is announced early in the semester, and the solutions and problems on final projects are discussed throughout the semester. Students can request to meet individually for help with the topics outside of class, during office hours. All of the materials used in class are available online on the myASU course site. In addition, students can learn from each other using the Blackboard discussion board outside class time.

VI. Textbooks

"Beginning 3D Game Development with Unity 4: All-in-one, multi-platform game development", by Sue Blackman. **Second Edition**

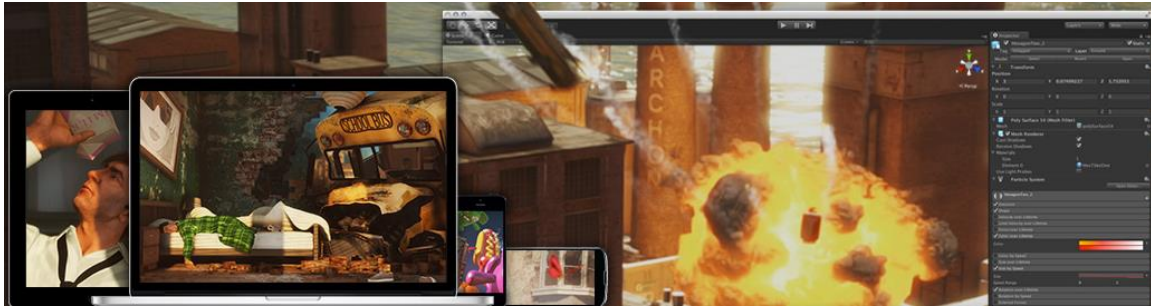
NOTE: We will be using Unity 5.x in class. It MOSTLY works the same as Unity 4, except for the GUI system. We will cover the newer Unity 5.x GUI system in class.



VII. References

A lot of web sites showing example works are introduced. Start with the main Unity website.

<http://unity3d.com/>



VIII. Schedule: Subject to change based on in-class discussions and progress.

	Topics	Textbook	Assignment
1	<ul style="list-style-type: none"> Topics ■ Introduction to the course ■ Introduction to Unity ■ GameArt: 3DS Max GUI Basics 	Unity3d.com Chapter 1, 2	Assignment 1 (3ds Max)
2	<ul style="list-style-type: none"> Topics ■ JavaScript in Unity ■ 3D Transformation ■ 3D Contents Control 	Chapter 3	Assignment 2 (JavaScript)
3	<ul style="list-style-type: none"> Topics ■ Terrain Generation in Unity ■ Shadow and Fog Controls ■ 3D Environment Settings 	Chapter 4	Assignment 3 (Terrain Model)
4	<ul style="list-style-type: none"> Topics ■ Navigation Control ■ Cursor Control ■ Game Development: 3D Platform Basics 	Chapter 5, 6	Assignment 4 (Platform Game)
5	<ul style="list-style-type: none"> Topics ■ Game Art: Polygon Modeling in 3ds Max ■ Game Art: Photoshop basics 		Assignment 5 (Mesh Modeling)
6	<ul style="list-style-type: none"> Topics ■ Unity: GUI textures and Cursors ■ Game Art: Line Tool in PS 	Chapter 7	Assignment 6 (Asset Development)
7	<ul style="list-style-type: none"> Topics ■ Material Setting in Unity ■ Animation Setting in Unity ■ Game Development: Stage/Scene Design 	(Chapter 8, 9: Self-study)	Assignment 7 (Animation Assets)
8	<ul style="list-style-type: none"> Topics ■ Game Design Document 		Assignment 8 (GDD)
9	<ul style="list-style-type: none"> Topics ■ Game Design Presentations ■ GUI (Timer & Score) ■ Scene changes 	(Chapter 10: self-study)	Assignment 9 (GUI Development)
10	<ul style="list-style-type: none"> Topics ■ Particle Systems ■ Game Development: Space Shooting Game ■ Instantiate & destroy functions 	(Chapter 11-12: self-study)	Assignment 10 (FPS Game)
11	<ul style="list-style-type: none"> Topics ■ Game Development: FPS ■ Game Art: Character Animation 	(Chapter 13: self-study)	Assignment 11 (AI Engine 1)

12	Topics	(Chapter 14, 15: self-study)	
	■ Game Development: 3 rd Person Action Game		
	■ Game Art: Character Animation Basics		
13	Topics	(Chapter 16-17: self-study)	Assignment 12 (AI Engine 2)
	■ Game Development: Swarm Game		
	■ Game Art: Car Paintings (3ds Max + PS)		
	■ Capturing the game play (Camtasia)		
	■ Movie Editing		
14	Topics		
	■ Demo of Prototype Scene + Workshop		
15	Final Project Demos		
	-- Submission 1: All files used in the project		
	-- Submission 2: Executable file (+ required data files)		

IX. Assignments

Students are asked to complete ten weekly assignments and a final project.

- Weekly Assignments

Each week has a small assignment which is announced at the second half in class. The best 10 assignment scores among the 13 weekly assignments will be used to calculate the final grade. Assignments are scored based on the completeness and adherence to assignment requirements. (Not to the appearance of the objects, materials, or games).

- Quizzes

We will have occasional quizzes to make sure you are keeping up with the course readings, and to check on understanding of key game development skills and concepts.

- Final Project

The culmination of the efforts put by the student in the class assignments in developing a game art portfolio. The Final project will have different deliverables over the time frame of the class. At the 8th week each student is asked to make a 5 minute presentation to show his/her idea for the final project. At the 15th week, the developed game is demonstrated in class.

X. Field Trips N/A

XI. Evaluation

The grade for this course will be based on 10 assignments and final project. The breakdown is as follows:

Weekly Assignments (best 9 scores among 12 assignments)	60%
Quizzes (3-5)	10%
Final Project and Presentation	30%
TOTAL	100%

XII. Grading Policy

98+	A+
92 – 98	A
90 – 92	A-
88 - 90	B+
82 – 88	B
80 – 82	B-
70 – 80	C
60 – 70	D
< 60	E

*) “I” (Incomplete) grade is not offered in this course

**) There is a formal claim period (2 weeks) just before the final week. The students have the responsibility to check their weekly assignment scores and let TA know by e-mail when unexpected/unacceptable scores are posted on Blackboard. After the claim period, we cannot accept any claim on the scores.

XIII. Disability resource center

Please check the website for ASU’s Disability Resource Center (<http://www.asu.edu/drc/>) for assistance. Students with special needs should contact the center a priori in order to secure assistance.

XIV. Honor policy:

The highest standards of academic integrity are expected of all students. The failure of any student to meet these standards may result in suspension or expulsion from the University or other sanctions as specified in the University Student Academic Integrity Policy. Violations of academic integrity include, but are not limited to, cheating, fabrication, tampering, plagiarism, or facilitating such activities.

XV. Expected Workload:

The course is designed to distribute workload pretty evenly over the semester. Students would typically spend **3-5 hours per week** working on homework assignments and projects. Plan your schedule accordingly.