CS 485 Game Programming, Fall 2020

Course Syllabus

Course Information

Instructor: Xin Ye
Days & Times: **MWF 11:30 AM - 12:20 PM**
Location: **https://csusm.zoom.us/j/93996985597**
Office hours: MW 10:00 AM - 11:30 AM or by appointment
Office: https://csusm.zoom.us/j/95372859015
E-mail: xye@csusm.edu
Class webpage: Cougar Courses (http://cc.csusm.edu)

Course Description

This course gives students the hands-on introduction for the concepts and practices of game development and programming through developing playable 3D games using a modern game engine. It includes the framework and roles in a team for game development, programming skills of using a game engine and modeling skills of creating 3D models with animation tools.

Student Learning Objectives (SLOs)

After taking this course, students should be able to

1. Explain the basic structure of modern game engine and principles of game design
2. Describe basic concepts and algorithms in Computer Graphics and AI related to game development
3. Learn to work in a group to develop sophisticated software
4. Develop a complete 3D game with multiple levels using a modern game engine.
5. Improve skills to independently acquire new computer-related knowledge and skills.

Prerequisites

CS 311 Data Structures

Textbooks (recommended)

- **Unity 5.x Game Development Blueprints** - John P. Doran; Packt Publishing; May 2016, ISBN-13: 9781785883118
- **Unity 5.x Game AI Programming Cookbook** - Jorge Palacios; Packt Publishing; March 2016, ISBN-13: 9781783553570
- **The Art of Game Design: A Deck of Lenses Cards** – Jesse Schell; Schell Games, (August 1, 2008), ISBN-10: 0615218288 (available as free IOS/Android app)
- **Additional book titles and online materials available on course website**

Grading

Your final score will be compiled from following parts:

Individual Assignments:	40%	
Midterm Exam:	20%	
Group Game Project:	40%	
	Proposal	10%
	Final Report, Demo and Presentation	30%

Your letter grade will be based on the following scale:

Total %	Letter Grade
93 - 100	A
90 - 92	A-
88 - 89	B+
83 - 87	B
80 - 82	B-
78 - 79	C+
70 - 77	C
65 - 69	C-
63 - 64	D+
60 - 62	D
56 - 59	D-
0 - 55	F

Special Dates

August 31 (Mon)	First day of classes
August 31 - September 14	Add/Drop Period
September 14 (Mon)	Last day to drop without a 'W'
September 7 (Mon)	Labor Day holiday – campus closed
November 11 (Wed)	Veterans Day – campus closed
November 26-27 (Thur-Fri)	Thanksgiving holiday – campus closed
December 11 (Fri)	Last day of classes
December 14-19 (Mon-Sat)	Final Exam Week
December 18 (Fri)	**Final Presentation (9:15AM - 11:15AM)**

Course Policies

1. This is a project-oriented course. You should expect significant programming and always start working on the project early. You will work in a group of 3 to 4 students to design and develop a complete 3D game, as a semester-long project.
2. Assignments and projects are always due at the beginning of class on the due date. Each submission must be made on time. Late individual assignment will lose 5% for the first day and 10% each subsequent late day, but no credit if more than 1 week late. The final group project must be ready for demo and presentation during the last week of the semester, and CANNOT BE LATE.
3. Students are expected to attend classes and participate in class discussions. Absence without notice to the instructor may result in loss of the class participation score.
4. Each student needs a computer and a copy of Unity 3D game engine for the class. A free version of the Unity 3D engine (http://unity3d.com/unity/download) can be downloaded to your personal computer.
5. Unity 3D engine uses C#/JavaScript scripting for programming the games.
   You are expected to learn through tutorials and examples by yourself.

6. Students should not use computers (even their own laptops) during the lecture for course unrelated purposes. If violated, you may be logged out the computer or asked to leave the classroom.
7. Any discrepancy on grades should be submitted to the instructor within one week from the day that the grades are handed out in class (not the day you receive it).
8. If you have a dispute in your group, try to resolve it amongst yourselves. You are your own game company so as "employees". You have to deal with these kinds of issues on your own. A useful "management" tip - if there is a problem, bring it up early rather than later.
9. At the end of the semester you will fill out a form to evaluate your other team members. I will use this to help assigning grades to each person in the team.
10. **Academic honesty**: Students are expected to finish the assignments independently. Discussions among students are allowed and encouraged. However, copying other's code or solutions is strictly prohibited. If you make use of code from outside resources, you must make clear reference to the reuse and your program must contain substantial amount of your own code. Read carefully the "Academic Honesty" section of the catalog. Any violation on an exam/assignment will result in an F for the exam/assignment and possibly a failing grade for the course and will be reported to student affairs.
11. Students with disabilities who require reasonable accommodations must be approved through the Office of Disabled Student Services (DSS). The office is located in Craven 5205 and can be contacted by phone at 760.750.4906 or 760.750.4909 (TTY).

Topics

The following topics are planned to be discussed in the course (subject to change)

- Introduction to Computer Games
- Intro to Unity 3D
- Intro to Game Design
- Introduction to Computer Graphics
- Infrastructure: Game Engine
- Intro to Game AI, Execution Management
- Finite State Machines
- Randomness and Probability
- Movements
- Collision Detection
- Path Finding
- Decision Making
- Learning in Games
- Strategies
- Game Physics