San José State University
School/Department of Computer Science
CS 134 Section 1, Computer Game Design and Programming, Spring 2018

Course and Contact Information

Instructor: Jared Finder

Office Location: Duncan Hall 282

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Office Hours: 6:30pm – 7:30 Monday (right before class)

Class Days/Time: 7:30pm – 8:45 Monday, Wednesday

Classroom: MacQuarrie Hall 225

Course Format

This class teaches how to create video game engines and occasionally has in-class labs. Access to a laptop that can compile modern C, C++, or Java code is required. This means you must have a laptop that runs Windows, macOS, or Linux. It is recommended that your laptop run Windows 7 or above or macOS Mountain Lion or above.

Faculty Web Page and MYSJSU Messaging

Course materials such as syllabus, notes, assignment instructions, etc. can by found on my personal web page at http://hpalace.com/sjsu-2018spring or on Canvas Leaning Management System course login website at http://sjsu.instructure.com. You are responsible for regularly checking with the messaging system through MySJSU at http://my.sjsu.edu (or other communication system as indicated by the instructor) to learn of any updates.

Course Description

Architectures and object-oriented patterns for computer game design. Animation, simulation, user interfaces, graphics, and intelligent behaviors. Team projects using an existing game engine framework. Prerequisite: CS 146 and either CS 151 or CMPE 135 (with a grade of "C-" or better in each); or instructor consent.

Learning Outcomes

Upon successful completion of this course, students will be able to:

1. Be able to identify what code in a game is performance crticial.
2. Know common patterns in video game engines.
3. Create a game engine and implement a game in it.

Required Texts/Readings

Textbook

There are no required books or reading. I will provide handouts at class or links to web pages when referencing material.

Other Readings

While not necessary, I can recommend two relevant books that cover game engines: Game Engine Architecture by Jason Gregory and Foundations of Game Engine Development by Eric Lengyel. If you would like to save money, consider buying the 1st Edition of Game Engine Architecture for $25 at Amazon instead of the 2nd Edition.

These websites are always interesting and cover interesting game development news:

http://gamasutra.com

http://gamedev.net

Course Requirements and Assignments

I expect to assign a small assignment about once every other week. Assignments will be given out on Wednesday and due the next Wednesday, with the first part of each Monday to cover any questions regarding the assignment. The details for each assignment will be put on the Canvas website. In addition, there will be presentations given to the whole class. There will be no tests. Instead of tests, there will be projects.

This structure is designed to be similar to the experience you would have while employed. I have never had a test at any of my jobs!

Note that the assignment schedule is subject to change with fair notice.

Final Examination or Evaluation

At finals you will be showing off your final project. This project will use all the knowledge you learned during the semester. Your final project will be graded in three categories, all equally weighted.

1. Completeness – Is the project a complete (though small) game? game
2. Stability – Is the project free of bugs?
3. Fun – Is the project actually a fun experience?

Grading Information

Determination of Grades

Your final grade is a weighted average of homework (60%) and a final project (40%). Your final grade is then determined based on the calculated percentage. Grades will be based on the percentage of total points earned:

- A+ 98%-100%
- A 93% - 97%
- A− 90% - 92%
- B+ 88% - 89%
- B 83%-87%
- B− 80% - 82%
- C+ 78% - 79%
- C 73%-77%
- C− 70% - 72%
- D+ 68% - 69%
- D 60%-67%
- D− 50%-59%
- F 0% to 49%

Each homework will lose a small amount for every day it is late, not including holidays. Because of the nature of this class, it is important to turn in every homework assigned, even if it is late.

Classroom Protocol

I hope that this class is one you look forward to throughout the week and will never be late to. Please do not show up late, as I will be starting promptly. Classes will be a mix of lecture, presentation, and group activities. Please make sure your cell phones are off or silent during the class.

University Policies

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/

CS 134 Section 1, Computer Game Design and Programming, Spring 2017, Course Schedule

The following schedule is tentative and subject to change. The schedule will be kept up to date on the class website at http://hpalace.com/sjsu-2018spring.

Course Schedule

Week	Date	Topics, Readings, Assignments, Deadlines
1	Jan 24th	Class Introduction
2	Jan 29th Jan 31st	Fundamentals – The Game Loop, Parts of a Game Engine
3	Feb 5th Feb 7th	Fundamentals – Video game math, points and vectors, external libraries
4	Feb 12th Feb 14th\	Drawing – Level representation, 2D, top-down, isometric, 3D
5	Feb 19th Feb 21st	Drawing – Optimizations, animation, game cameras
6	Feb 26th Feb 28th	Physics – Collision detection, collision resolution
7	Mar 5th Mar 7th	Physics – Advanced physics, optimizations
8	Mar 12th Mar 14th	Physics – Genre specific physics
9	Mar 19th Mar 22nd	**Game Developers Conference – TBD**
10	~~Mar 26th~~ ~~Mar 28th~~	**SPRING BREAK**
11	Apr 2nd Apr 4th	AI – Decision making, FSMs, behavior trees
12	Apr 9th Apr 12th	AI – Pathfinding Text drawing, sound
13	Apr 16th Apr 18th	Review, data driven architecture **Start of final project**
14	Apr 23rd Apr 25th	Multi-threaded architectures
15	Apr 30th May 2nd	Flexible subject 1
16	May 7th May 9th	Flexible subject 2
17	May 14th	Flexible subject 3
Final	May 21st	Final is at 7:45pm