

DesInv198-4: Video Game Design and Development

Course Info

Time: Tue/Thurs 6:30PM-8PM, Dwinelle 182

Facilitators: Jennifer Kim, Weylan Wang, Sabrina Wong

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Course Description

This course is a deep dive into the creation of games, from beginning to end. Over the course of the semester, students will pitch a game, form small teams, and build a project from start to finish with help from the instructors. Students are not required to have any prior game development experience but it is required that a student taking the course either has basic art, music or programming abilities. They will also learn about the different roles that exist within the industry, how to apply their skills to them, and form an understanding about how to best prepare themselves to find their way into these roles. This will be a rigorous class, one that will require a lot of time and dedication. Students will be selected via application prior to the first week of classes, to ensure that the class' composition reflects a diverse range of skills, backgrounds, and proficiency levels.

Prerequisites

This class is open to both programmers and artists. You are not required to have any prior game development experience.

Programmers

- Have completed CS61A
- Have completed or concurrently taking CS61B

Artists

- Some artistic background, familiarity with some digital art tools

Course Structure

- The class meets **twice a week**, for an hour and a half each meeting and **attendance is required**.
- For the first four weeks, meetings will be tutorial lectures, designed to provide students with knowledge of how the Unity engine works and best practices for implementing game mechanics

- The majority of the classes for the first half of the course will be in the form of hands-on lab assignments.

Project teams are formed around Week 6 and the course will assume the following structure:

- The first meeting of the week will be a project work meeting, and the second a lecture.
- During the project work meetings:
 - Teams will meet, check in with a facilitator about their progress, and plan their work schedule for the next week.
 - Teams will work on their projects and get help from facilitators.
- The lectures from Week 6 onward will be determined during the semester based on what the students need. The lectures will come from a variety of sources: instructors, industry contacts, alumni, and possibly the students themselves.

The Projects

Project 1: The students will follow along a series of tutorial videos to create a game from scratch. After completing the game, each student will be required to design and implement their own mechanics, artwork, or SFX and music. This project will reinforce key concepts introduced in the lectures given in the first four weeks of the class.

Programmers will learn the fundamentals of creating a project in Unity by following the tutorial. Artists will learn to create and incorporate their own assets by designing and importing their own assets into a mechanically completed game.

Team size: 1 person

Project 2: A one week “game jam”; the goal is to try and build a game in a week. The main purpose of this project is to teach students about scope by giving them the opportunity to see what can be done in a week. It will also serve as a way for each student to see what kind of group dynamic works best for them.

Team size: 2-3 people

Project 3: The flagship project for the course is a game designed and built by the students themselves over the course of approximately two months. Students will begin preparing pitches in Week 5 with guidance from the instructors, and will give their pitches to the entire class in Week 6. Students will then select which projects they are interested in, and the instructors will match people to teams based on their interests and skills. From there on out, the teams will work with the instructors and their team leads to create a schedule. The instructors will also assign labs to each team based on the project that team is working on; the labs will provide the team with resources that will be useful to know when working on the project. While working on the project, the teams will

work with and receive feedback from the facilitators and other students. All projects will be graded based on how well they achieve five milestones.

Team size: 3-5 people

At each milestone (except for the zeroth milestone), all projects are shared with the rest of the class. These milestones are as follows:

- Milestone 0: Each team is expected to have a game design document completed. The design document needs to include an explanation for the vision of the game as well as the specifics for the core aspects of the game. The teams are also expected to create a week by week breakdown of tasks.
- Milestone 1: Minimum Viable Product (MVP): Playable prototype of the original pitch. The core mechanics and the first iteration of the core art assets of the game should be implemented. Effectively this milestone exists to ensure that the games are fun, and to provide teams with feedback regarding how their game can be improved.
- Milestone 2: Alpha Build: All of the main mechanics should be in place. The general art style should be decided on and the main assets (character, environment) should be in place. A first pass should be done on the rest of the art assets. There should be a basic but complete level as intended to appear in the final game. This build can have bugs.
- Milestone 3: Beta Build: The main mechanics should no longer have any bugs. Most of the art assets should be completed and in the game. The game and its levels should be mostly complete. This build needs to have a certain level of polish; having a few small bugs and incomplete minor assets is fine at this build.
- Milestone 4(showcase): Release Build: Finished Project. The game should be complete, and in line with the original pitch. It should be polished, playable from start to finish, and mostly bug free.

At each milestone, team members will fill out team evaluations that will be factored into each member's grade.

Labs

In the first few weeks, students will work through instructor made, CS-style labs that are focused on teaching a particular aspect of Unity that will aid students in making their projects throughout the semester. Labs will be assigned in class and due the following week. They are completed upon answering check-off questions with a facilitator. Each lab is graded by completion.

Written Responses

Students will be responsible for several written assignments. One is a game design document for project 2 to journal their progress within the week that they develop their game. The second is a game design document for the final project that details the design of your game as well as a week by week breakdown of tasks. Lastly students will be required to submit a short writeup detailing their thoughts on the project and the course as a whole.

Required Materials

Every student will need a laptop capable of running Photoshop, Illustrator, Unity3D, or another game engine. No textbooks are required. Two recommended resources are articles from www.gamasutra.com and videos from www.gdcvault.com. Required readings are listed below.

Grading

Overall:

- Labs: 10%
- Project 1: 10%
- Project 2: 10%
- Project 3: 60%
- Written Responses: 10%

Project 1 and 2:

- Graded on completion of project specifications
- Grading will consist of a P/NP and some feedback

Project 3 (Per milestone):

- Mentor evaluation: 40%
- Peer evaluations: 40%
- Project score: 20%
 - Project score is based off of progress made not percentage of pitch completed

A minimum of 70% is required to pass the course.

General Policy

Attendance matters! If you cannot be at class, you **must** let an instructor and your team lead know. Only two unexcused absences will be allowed, and any further absences will result in your grade dropping **10% per absence**. If you are in danger of

not passing by the middle of the semester, the instructors will let people know what can be done to remedy that.

The instructors recommend you use Unity3D for your projects, as that will be the only “supported” engine by the instructors. You are welcome to use other engines, but the instructors will likely be unable to help you as well as a result.

Schedule

Guest lecture dates are subject to change based on availability of the guests, and the lecture schedule itself may end up in a very different order than written here, but the topics will remain largely the same.

1/24: Course Overview and Info Session, Past semester game showcase

1/29: Lecture/Lab: Intro to Unity- Basics, **Assign project 1**

1/31: Lecture/Lab: Intro to Unity- Programming

2/5: Lecture/Lab: Intro to Unity- The art pipeline (**Project 1 Part 1 due**)

2/7: Lab: Intro to Unity - Advanced Topics

2/12: Lecture/Lab: Basics of Game Design; Lab: Colliders/Spriting

2/14: Lecture/Lab: Unity Collab, design docs; Lab: Rigidbodies/Animations;

Introduce/assign Project 2 (Project 1 Part 2 due)

2/19: Lecture/Lab: Group dynamics, pitch day explanation, tools and assets, Lab: Coroutines/Animator

2/21: Lecture: Showcase game jam projects, explanation of project 3, project work meetings, small group pitch discussions(**Game Jam due**)

2/26: Pitch day

2/28: Lecture: MVP, Teams are assembled + brainstorming session

3/5: Project work meeting

3/7: Lecture: TBA (based on class needs) (**Game Design Doc due (milestone 0)**)

3/12: Project work meeting

3/14: Milestone 1 Delivery: Demo and Feedback

3/19: Project work meeting

3/21: Lecture: Guest lecture (TBA)/(based on class needs)

3/26: Spring break

3/28: Spring break

4/2: Project work meeting

4/4: Milestone 2 Delivery: Demo and Feedback

4/9: Project work meeting

4/11: Lecture: Guest lecture (TBA)/(based on class needs)

4/16: Project work meeting

4/18: Milestone 3 Delivery: Demo and Feedback

4/23: Project work meeting
4/25: Lecture: Guest lecture (TBA)/(based on class needs)
4/30: Project work meeting
5/2: (Game/course postmortem writeup due)
5/7: Tentative Showcase Date

Weekly Reading List-

Week 1 - January 29th/31st:

<https://www.gamedesigning.org/learn/game-design-principles/>

Week 2 - February 5th/7th:

<https://gamedevlibrary.com/the-difference-between-good-graphics-and-good-aesthetics-in-video-games-eb012c2e3cbe>

Week 3 - February 12th/14th:

https://www.gamasutra.com/view/feature/132341/the_13_basic_principles_of_.php?page=2

Week 4 - February 19th/21st:

http://www.gamasutra.com/view/feature/134571/how_to_pitch_your_project_to_.php

Week 5 - February 26th/28th:

<https://gamedevelopment.tutsplus.com/articles/how-and-why-to-write-a-great-game-design-document--cms-23545>

Week 6 - March 5th/7th:

https://www.gamasutra.com/view/feature/185258/best_practices_five_tips_for_.php?print=1

Week 7 - March 12th/14th:

https://www.gamasutra.com/view/feature/130989/team_corporate_structure_is_the_.php

Week 8 - March 19th/21st:

http://www.gamasutra.com/blogs/WesleyRockholz/20140418/215819/10_Insightful_Playtest_Questions.php

Week 9 - March 26th/28th: Spring Break

Week 10 - April 2nd/4th:

http://www.gamasutra.com/blogs/ThomasGrip/20140429/216467/4Layers_A_Narrative_Design_Approach.php

Week 11 - April 9th/11th:

<https://www.cnet.com/news/microsofts-new-xbox-adaptive-controller-puts-disabled-players-back-in-the-game/>

Week 12: April 16th/18th:

<http://www.gamestudies.org/0101/juul-gts/>

Week 13: April 23rd/25th:

<https://gamedevelopment.tutsplus.com/tutorials/the-many-ways-to-show-the-player-how-its-done-with-in-game-tutorials--gamedev-400>

Week 14: April 30th/May 2nd:

https://www.gamasutra.com/blogs/CalebCompton/20180618/320219/Game_Design_in_Real_Life_Gamification.php