[CSCI 426] Game Prototyping

Spring 2020

Lectures:	Wed 3:00pm-6:20pm
Classroom:	SCI 206
Instructor:	Andy Nealen
Office:	SCI 201R
Office Hours:	Tue 2:00pm-3:30pm
E-mail:	nealen@usc.edu

SA: Wen Qian (Wayne) Yip (yipw@usc.edu). **Office hours**: TBA.

Syllabus: Game Prototyping is about designing, programming, and testing game ideas fast, and with as little effort as possible, while gaining knowledge about what does and does not work.
This course is about experimental game design. This experimental mindset pertains to every aspect of the game, and these can be broadly characterized as the game system, control, visuals, audio, and resulting theme. We will explore these aspects through the creation of numerous very focused (video)game prototypes using Unity as our game engine/tool of choice. This will allow us to obtain a better understanding of what makes games appealing, and how game mechanics, systems, audiovisuals, and a variety of player experiences can be designed and iteratively improved by means of rapid prototyping and playtesting. The course is a combination of the technology, design, and philosophy underlying contemporary game creation, as well as the real-world implementation and design challenges faced by practicing game designers.

Target Audience: The course is intended for students who want to learn design practices and principles by which games can be conceived, prototyped, and developed within a one-semester course. Students will create weekly prototypes in teams of two, as well as complete one final large team project. The course is a lot of (team)work, but it's also a lot of fun.

Prerequisites: There are no formal prerequisites, but basic programming skills are required. Artistic skills, or a willingness to learn them are a plus, as is familiarity with the Unity game engine.

Readings: We will discuss articles on experimental game design, game feel, game theory, and systems theory, as well as analyze a variety of successful videogames such as Getting Over It, Desert Golfing, Spelltower, Super Hexagon, Spelunky, Osmos, Canabalt, Flappy Bird, Tetris, etc. A playing and reading list will be provided and expanded throughout the semester, and we will discuss some of the readings in class.

Lectures: Topics include but are not limited to: an introduction to experimental game design, abstraction, prototyping, systems and feedback loops, input and control, space-time discretization, minimal graphic design, game feel, design patterns, human perception, game programming, etc. Each class meeting will consist of a short lecture, followed by student presentations, critique, and class discussion. Each class meeting will end on the design prompt for the following week.

Projects: Students will design and implement 9 videogame prototypes in the first 10 weeks in weekly rotating teams of two (prototype phase). We will announce the teams and design prompt for the following week at the end of each class. Thereafter we will form teams of 6 students around the best prototypes (1 week), followed by a final project cycle of 3 weeks, in which these teams will iterate on one of the prototypes in order to polish and balance the game (production phase).

Expected Work: Students will design, implement, play-test, and present 9 prototypes in teams of two, and one final game project as a team of 6. We have chosen to use Unity for the prototypes, and we will provide demos and demo code for the weekly design prompts. Each of the prototypes as well as the large project will be presented by the students or team in class. It is expected that each class participant set aside 10 hours per week (outside of class) to work on their games.

Exams: There will be a final presentation by each team (including each team member) on the design and development of the large project. Aside of the final game, each team is expected to hand in a 2-page post-mortem document in the week after final presentation.

Grades: Each student will present and submit 9 prototypes, out of which we will grade the best 7, participate in a final project, and comment on games designed by their peers. The weighting is as follows: **Prototypes: 65%, Final Project: 25%, Class Participation: 10%**.

I reserve the right to adjust the grading scale. To receive a good grade, you will need to perform well in the prototypes, final project, and in class participation. Please check the correctness of the grading and the posted scores immediately after we announce the availability of the scores. You will need to let me know about any grading issue within 7 days of me posting the score.

General Policy: To ensure a quality course for all participants, **presence at the weekly class meetings is mandatory**, unless otherwise stated. To promote professional behavior, please be in class on time. **Every unexcused absence or late arrival will result in a third of a grade loss** (e.g. A to A-) in your final grade.

Academic Integrity: USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. *We will strictly enforce the student conduct code and refer students to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty, and suggest that they follow the recommended sanctions in case they should find that there was academic dishonesty*. We typically suggest an F as overall class grade as penalty, if asked. Scampus, the Student Guidebook, contains the student conduct code and the academic review process: `https://policy.usc.edu/scampus-part-b/`.

Problems and Concerns: At some point, you will have questions. For example, you might not be able to get code to run, there might be something in the lectures that you do not understand, and so on. In this case, we encourage you to post the question on the slack workspace and see whether someone can help you. If this approach does not generate the desired result, then I will be happy to help you in person during my office hours. I do answer email but, unfortunately, often I will not manage to answer it on the same day. (Sometimes, I will be out of town and it will take me a bit.)

It is very important that you voice your concerns about any aspect of the class as soon as they arise. Please send me an e-mail, or come talk to me in person.

Tentative Schedule: Weekly lectures and design prompts for the prototypes will be adjusted according to the current design topic most relevant to the student projects. Topics include prototyping,

visual abstraction, game feel, systems design, feedback loops, strategy and dexterity, uncertainty and luck, physics-based control and animation, game complexity, design patterns, accessibility and human perception, semiology of graphics, game difficulty and balance, sources of creativity, AI methods and procedural content generation (PCG), characteristics of games, and interaction design (lecture in italics, homework and presentation in boldface, subject to change)

#	Date	Topic(s)
1	1/15	*Introductory lecture*; **Prototype 0 assigned** (Unity first steps + exploration)
2	1/22	*Lecture*; **Prototype 0 presentation, prototype 1 assigned**
3	1/29	*Lecture*; **Prototype 1 presentation, prototype 2 assigned**
4	2/5	*Lecture*; **Prototype 2 presentation, prototype 3 assigned**
5	2/12	*Lecture*; **Prototype 3 presentation, prototype 4 assigned**
6	2/19	*Lecture*; **Prototype 4 presentation, Prototype 5 assigned**
7	2/26	*Lecture*; **Prototype 5 presentation, Prototype 6 assigned**
8	3/4	*Lecture*; **Prototype 6 presentation, prototype 7 assigned**
9	3/11	*Lecture*; **Prototype 7 presentation, prototype 8 assigned**
10	3/18	**Spring Recess**
11	3/25	*Lecture*; **Prototype 8 presentation, prototype 9 assigned**
12	4/1	*Lecture*; **Prototype 9 presentation, prototype pitch assigned**
13	4/8	**Prototype pitches, voting, and team assignment**
14	4/15	**Team presentation 1, team presentation 2 assigned**
15	4/22	**Team presentation 2, final presentation assigned**
16	4/29	**Final presentation**