[CSCI 426] Game Prototyping

Fall 2019

Lectures:	Wed 3:00pm-6:20pm
Classroom:	SCI L113
Instructor:	Andy Nealen
Office:	SCI 201R
Office Hours:	Wed. 1:00pm–2:30pm
E-mail:	nealen@usc.edu

SA: Wen (Wayne) Qian 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 a few very focused (video)game prototypes using a variety of engines and frameworks such as Unity, GameMaker, Javascipt/HTML5, Processing, and others. 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 play-testing. 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 fully developed within a one-semester course. Students will create a video game from start to finish. 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 are familiarity with existing game engines (Unity, Unreal, GameMaker, etc.)

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 throughout the semester.

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 lecture, followed by student presentations, critique, and class discussion. We will set up a slack workspace for all students and the instructor so we can communicate outside of class.

Projects: Each student will design and implement 3-6 videogame prototypes within the first 7 weeks (prototype phase), followed by team formation around the best prototypes (1 week) and a development cycle of 7 weeks, in which teams of 2-4 students will fully develop one of the

prototypes to finished, complete game (production phase). For the prototype phase, each student will design every aspect of the game (system, control, visuals, audio), while the production phase will see each team member focusing on a specific aspect of the game, while still contributing to the big picture.

Expected Work: Students will design, implement, play-test, and present at least 3 prototypes individually, and one large game project as a team. In which way these are implemented (i.e. using different game engines) is up to the student(s), and it is possible to try different means of implementation for different prototypes. Each of the prototypes as well as the large project will be presented by the student or team in class. It is expected that each class participant set aside 1-2 full days 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 prior to the final presentation.

Grades: Each student will present and submit 3-6 prototypes, out of which we will grade the best three, participate in a large project, and comment on other games. The weights are as follows: **Prototypes: 45%, Large Project: 45%, 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, 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.

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 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	8/28	*Introductory lecture*; **Prototype 0 assigned** (IDE first steps/exploration)
2	9/4	*Lecture*; **Prototype 0 presentation, prototype 1 assigned**
3	9/11	*Lecture*; **Prototype 1 presentation, prototype 2 assigned**
4	9/18	*Lecture*; **Prototype 2 presentation, prototype 3 assigned**
5	9/25	*Lecture*; **Prototype 3 presentation, prototype 4 assigned**
6	10/2	*Lecture*; **Prototype 4 presentation, Prototype 5 assigned**
7	10/9	*Lecture*; **Prototype 5 presentation, Prototype 6 assigned**
8	10/16	**Prototype 6 presentation, voting, team presentation 1 assigned**
9	10/23	*Lecture*; **Team presentation 1, team presentation 2 assigned**
10	10/30	*Lecture*; **Team presentation 2, team presentation 3 assigned**
11	11/6	*Lecture*; **Team presentation 3, team presentation 4 assigned**
12	11/13	*Lecture*; **Team presentation 4, team presentation 5 assigned**
13	11/20	*Lecture*; **Team presentation 5, final presentation assigned**
14	11/27	Thanksgiving break
15	12/4	**Final presentation**