



CS-526 Advanced Mobile Devices & Games

Units: 4-1

Term—Day—Time: Fall & Spring – Wednesdays 10am to 1pm, lab 1pm to 2pm

Location: SCI-106

Instructor: Michael Zyda

Office: EGG-209

Office Hours: Wednesdays 1pm

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Teaching Assistant:

Office: EGG-205

Office Hours:

Contact Info:

Course Description

This course covers the design and implementation of mobile games, using the multiple current platforms including the Apple iOS SDK, Google's Android, Unity & Unreal. Emphasis is placed on building entertainment and serious games as well as novel applications of mobile embedded technology.

Learning Objectives

Topics include the introduction to Mobile game development basics, mobile phone architecture, mobile networking and protocols, introduction to mobile gaming API's and their usage for building games, multimodality and location awareness in mobile phones, multi-modal enablers. At the end of the semester, students are expected to demonstrate a multiplayer, mobile game based on what they have learned in the class lectures.

Prerequisite(s): CSCI-420 or CSCI-580 or equivalent course/experience in computer graphics.

Required Readings and Supplementary Materials

Papers, slides and chapters handed out by the instructor

Description and Assessment of Assignments

Week 1 – Introduction to Mobile Game Development

- How Games are implemented on Mobile Phones
- Apple iOS
- Google Android
- Unity 5
- Unreal 4
- How Mobile Game Development Differs from Conventional Game Development
- Team Size
- Budget
- Development Cycle
- Networked Devices
- Open Standards
- Deployment
- Strengths of the Medium
- Huge Audience
- Portability
- Networked
- Limitations of the Medium
- Small Screen Size
- Limited Application Size
- High Latency
- Interruptibility is crucial
- Limited Hardware
- Evolving Technologies
- Design to the Strengths and Avoid the Weaknesses

Reading Assignment: Class Notes

Week 2 – Game Design – Using a design document

- Design Document Overview
- Premise
- Pitch
- Story

Overview
Look and Feel
Gameplay Breakdown
Critical Functions of Play
Playable Characters
Procedures/Actions
Conflicts
Ramping Challenge Progression
Game Rules
Resources
Level Walkthrough
Level Gamespace
Entertainment Value
Educational Value
Asset List

Week 3 – Game Design Pitches

Student teams pitch their game design proposals for the semester long project.
Team meetings.

Week 4 – Google’s Android & Apple iOS & Unity & Unreal

A discussion on the different platforms available for developing mobile games.
Online Resources

Week 5 & 6 – Team Structure & Organization

We detail how a mobile game production team works & operates.
We provide tracking tools & procedures for the class teams.
SVN accounts created & discussed.

Week 7 – Studio Sessions

In studio sessions, student game development teams will meet, develop and implement their game designs.

Week 8 – Studio Sessions

Studio sessions – we review student team organization & progress on their semester long project.

Week 9 – Studio Sessions

Studio sessions – we review student team organization & progress on their semester long project.

Week 10 – Studio Sessions

Studio sessions – we review student team organization & progress on their semester long project.

Week 11 – Studio Sessions

Studio sessions – we review student team organization & progress on their semester long project.

Week 12 – Advanced Topics

- Highlights from recent papers on mobile networked games.

Week 13 – Advanced Topics

- Highlights from recent papers on mobile networked games.

Week 14 – Advanced Topics

- Highlights from recent papers on mobile networked games.

Week 15 – Advanced Topics

- Highlights from recent papers on mobile networked games.

Week 16 – Demo Day Presentations

Students will present their games live to an industry panel on Demo Day.

Grading Breakdown

Each student is expected to develop a mobile game. That project runs continuously all semester, the code testing the student's knowledge of the in-class lectures and reading material. The student's mobile game will be presented during the GamePipe Showcase event held during Finals week for the semester.

Each weekly project (projects 1 – 14) is worth 5% of the class grade. The grading of each project will be on whether the project fulfills the requirements for that project. The grading will be either "fulfills the goals" or "does not fulfill the goals". The student will turn in a one pager describing their work completing each project accompanied by a live in-class demo. The Final Project Demo & Writeup is 30% of the class grade. The student will demonstrate their final mobile game and provide a short write-up on it. The final source code and write-up will be provided to the instructor.

Statement on Academic Conduct and Support Systems

Academic Conduct

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Section 11, *Behavior Violating University Standards* <https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct>.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity* <http://equity.usc.edu> or to the *Department of Public Safety* <http://adminopsnet.usc.edu/department/department-public-safety>. This is important for the safety of the whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. *The Center for Women and Men* <http://www.usc.edu/student-affairs/cwm/> provides 24/7 confidential support, and the sexual assault resource center webpage <http://sarc.usc.edu> describes reporting options and other resources.

Support Systems

A number of USC’s schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* <http://dornsife.usc.edu/ali>, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs* http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information* <http://emergency.usc.edu> will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.