



## CSCI 526 - Mobile Games

Units: 4

Semester 2023 — Tuesday 1:00-4:20pm

*Last updated: 04/11/2023*

**Location:** SCI 108

**Discord:** <https://discord.gg/vFd96RfRhH>

**Instructor:** Scott Easley

**Office:** Online

**Contact Info:** [seasley@usc.edu](mailto:seasley@usc.edu)

**Office Hours:** By Request

### Course Staff:

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**Office Hours:** By Request

## Course Description

Students in this course will work in small teams to build games on mobile devices. The initial half of the course will focus on learning mobile game development tools and how those can be utilized with game development. During the course, students will collaborate with each other through the use of programming, art, design, and production skills. The second half is game polish and expansion.

Working in a professional studio-like atmosphere, students in CSCI 526 will learn the fundamentals of team dynamic as it relates to game design and development, and develop a playable prototype for a mobile game. In teams, students will take on the roles of Designers, Engineers, Producers, etc to learn both the basics of the roles as well as how they work together in a professional development studio setting. By taking CSCI 526 students learn how to create game pitches, build a design document and present it live in front of an audience. The course culminates with a polished, portfolio-quality vertical slice and professional quality supporting documentation.

Our game veteran instructor will provide key lectures and materials, giving students a chance to learn directly from game studio techniques and make networking connections.

## Learning Objectives

Students learn fundamentals of core loops and design in games; basic technologies for mobile platforms, including working with various, commonly-used APIs; how to perform market research and analysis; how to present a polished pitch; how to create effective design and engineering documentation; how to work on a team with defined roles to collaborate on a project

## Course Notes

This course will assign a letter grade.

Students will submit work via Google Drive, Blackboard, and by showing builds to instructors and peers in class.

Students will work with other development and production tools, as discussed in class.

## Required Readings and Supplementary Materials

Handouts, templates, games, and sample documents will be supplied by the instructors when assigned.

## Description and Assessment of Assignments

Students will create both interactive experiences and documentation. The interactive experiences will be either simple prototypes of core game mechanics or a more polished vertical slice. Assignments will be graded on effort, collaboration, execution as compared to the goal, and overall quality.

Documentation may consist of: pitch presentations, design documents, technical specifications, playtesting logs, design journals, and other forms of documentation as assigned. Students will learn professional documentation and presentation techniques. Assignments will be graded on effort, collaboration, execution, and, where applicable, iterative improvement.

## Grading Breakdown

Assignment	% of Grade	Due
Graybox Prototype deliverables	20	Week 6
Midterm deliverables	25	Week 9
Final Deliverables	25	Week 15
Final Presentation	25	Ongoing
Participation	5	Ongoing
TOTAL	100	

## Grading Scale

Final grades will be determined using the following scale:

A	93-100
A-	90-92
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-66
D-	60-62
F	59 and below

## Course Policies

### Assignment Submission

Written assignments and prototypes are due at the beginning of class.

### Missing an Assignment Deadline, Incompletes:

The only acceptable excuses for missing an assignment deadline or taking an Incomplete (IN) in the course are personal illness or a family emergency. Students must inform the instructor **before the assignment due date** and present verifiable evidence for a deadline extension to be granted. Students who wish to take incompletes must also present documentation of the problem to the instructor or student assistant before final grades are due.

For assignments turned in after the assignment deadline without prior permission from the instructor, a penalty will be imposed equal to 10% of the total available points for the assignment, for each day or part of a day that the assignment is late, up to a maximum of seven days.

## Discord

The class makes use of the instant messaging social platform Discord. Discord provides a way for the teaching staff to communicate in an asynchronous manner similar to email, but also real-time communication when needed such as in class. It is the preferred method of communication when possible.

Lastly, students that contribute greatly to discussion, share useful links, and assist other students in the help channels may earn extra credit at the teaching staff's discretion.

Specific rules for channels will be updated as necessary on the server setup for this section.

## Emails

We ask you to follow these rules to help the class go smoothly.

To ensure a speedy response, ask questions in the class Discord server when possible. This will help other students with similar questions to also see the response.

For general questions about the class, please ask on the class Discord server in the appropriate channels (under the category help-desk).

For questions about your team and game, please ask in the class Discord server in your own team's channel once it's set up. Please send emails only for personal questions/issues.

**Please email with the subject as "CSCI526-T(keyword)", and send it to all of the teaching staff (listed at the beginning of this document).**

Use keywords such as Attendance, Grade,

"CSCI526-T-Attendance" for emails relating to attendance (see below).

"CSCI526-T-Grade" for emails relating to grades.

## Attendance

Punctual attendance at all classes is mandatory. **This class is in-person only. Please note that there is NO remote component.** You are expected to stay and work with your team for the duration of the entire class. If the teaching staff does not find you when we check attendance, you may be marked as absent.

Excused absences are:

- Illness (with a doctor's verification)
- Family or personal emergency (with verification)

Please email ahead of the class with the email subject as "CSCI526-T-Attendance (and anything else relevant)" to the course instructor and all course staff. The staff will confirm that your verification is acceptable, please make sure it clearly indicates which classes/activities you will not be able to participate in and for how long.

Outside of the excused absence, each student may have (1) freebie. The student must still follow the attendance policy above, but can simply say they would like to use their freebie. Freebies may not be used during midterms or finals.

In addition, you must email your team and let them know. If the team doesn't know where you are or why you are gone, you will still be marked down as absent.

Lastly, being excused from class means you do not need to attend class. It does not mean you are excused from the content of the lecture or doing work for the week.

**Special Note on Covid19 Pandemic:**

If you experience covid symptoms or suspect yourself of being exposed to a positive case, please email the teaching staff (as mentioned in the email policy earlier), and connect with your teammates remotely to plan on catching up with coursework.

Please refer to the following resources as needed

<https://coronavirus.usc.edu/instructions-exposure-to-a-positive-case/>

<https://coronavirus.usc.edu/instructions-tested-positive/>

**Software:**

All the course work can be done on freely available software.

We do not encourage nor condone the use of any paid software. Use it at your own discretion.

In addition, you may find packages, libraries, toolkits, starter kits, and other enhancements that you may want to use for your project. Any inclusion must be explicitly stated in the team's Game Design Document and made aware to the teaching staff. Otherwise, it may be considered plagiarism and be treated accordingly.

**Diversity**

In making games and interactive media in a professional and ethical way, it is important that you consider diversity. When looking at your projects, you should consider who is depicted and how this work will impact others. What kinds of individuals and communities are represented in your work? What point of view does your work express? This class may assist you in learning how to make work that includes diverse viewpoints, and may discuss racial, religious, gender and sexual orientation issues in the context of games and interactive media.

**Creating an Inclusive Space**

In this class, we make a commitment to foster a welcoming and supportive environment where students of all identities and backgrounds can flourish. This means that you will be expected to offer content warnings when appropriate, use students' stated pronouns, and respect self-identifications. While debate and discussion are welcome, please remain aware of the implications of your words and the images that you include in your work. If the instructor or another student points out something problematic, avoid being defensive; this is a valuable opportunity for us to grow and learn together. If you have a concern about any aspect of the class, you are welcome to speak with the instructor or the advisor for the division.

**Additional Policies**

This course emphasizes teamwork, and one of the desired learning outcomes is for students to develop communication and leadership skills. Students are expected to treat each other with respect, listen to each other, and work together towards a shared, collaborative, healthy work culture. Any student found to be disruptive or engaging in behavior that doesn't meet the standards of respectful teamwork may be asked to leave by the instructor.

If you experience any problems with a fellow student regarding their work, please bring up your concerns with the instructor.

**PLEASE NOTE**

**FOOD AND DRINKS (OTHER THAN WATER) ARE NOT PERMITTED IN ANY INSTRUCTIONAL SPACES IN THE CINEMATIC ARTS COMPLEX**

## Course Schedule

**\*\*Weekly breakdown, subject to change\*\***

Dates	Topics/Lectures	In-Class	Homework (due next week, unless specified)
Week 1 Jan 10	<p><b><u>Class Lecture:</u></b>  <b><u>What to Expect</u></b>            Original mobile game            Teams self-selected based on project interest</p> <p><b><u>Tech Lecture:</u></b>  <b><u>Project Planning</u></b>            Resources and process</p>	<p><b>Research:</b> play games in different genres, pay attention to core loops, game features, possible monetization strategies.</p> <p>Think about a game genre you're interested in exploring.</p> <p>What makes them effective? What's the emotional investment?</p>	<ol style="list-style-type: none"> <li>Individual Homework:               <ol style="list-style-type: none"> <li>Join Discord server</li> <li>Complete the Unity Essentials Tutorial on Unity learn</li> <li>Install Unity Hub and Unity (incl. WebGL) and setup version control</li> <li>Look at content from prev. classes</li> </ol> </li> <li>Form a team:               <ol style="list-style-type: none"> <li>Form Teams (5-7, all students from the same section)</li> <li>Start forming initial ideas about the game you like to play Reach out to others with your ideas for collaboration</li> </ol> </li> </ol>
Week 2 Jan 17	<p><b><u>Tech Lecture:</u></b>  <b><u>Tools and Resources</u></b>            Process to begin development</p>	<p><b>Form teams:</b>            In class, split into teams if already formed, or join other teams looking for members.</p> <p>As a team:</p> <ul style="list-style-type: none"> <li>Begin working on a tentative game idea, and prepare a one paragraph description of it (to be added into the GDD later on).</li> <li>Come up with different games and tutorials you can refer to, and make a list of them. Assign members to work on these.</li> <li>Set up the development tools based on the technical lectures from past weeks.</li> </ul> <p><b>Graders will check Week 1 homework</b></p>	<ol style="list-style-type: none"> <li>Finalize teams!</li> <li>Team chooses a game idea, and makes a one-paragraph GDD post link on the main page with rough sketch/drawing.</li> <li>Finish environment setup.</li> <li>Everyone individually starts to work on the Junior Programmer (JP) pathway on Unity Learn. This is due by Week 7.</li> <li>Team members work on games/tutorials relevant for their game. This should be genre specific, and different from the Pathways assigned in class. Each member should take up at least 2 tutorials. This is due week 4.</li> </ol>

<p>Week 3 Jan 24</p>	<p><b><u>Analytics Lecture: Data Collection &amp; Visualization</u></b> Why Analytics matters so much to the maturation and improvement of a game.</p> <p><b><u>Design Lecture: Prototyping Basics</u></b> Focus only on mechanic for fast development</p>	<p>In the class schedule spreadsheet:</p> <ul style="list-style-type: none"> <li>• Name your Team,</li> <li>• Choose Captain, and roles (Esp. Analytics),</li> <li>• Fill in team roster</li> </ul> <p>Start coding to complete the prototypes, do tests of publishing to WebGL</p> <p><b>The Analytics team (<i>Team PMs</i>) begin coding tests for data collection and graphing.</b></p> <p><b>Graders will check game ideas in GDD.</b></p>	<ol style="list-style-type: none"> <li>1. Individually, continue working on the JP Pathway.</li> <li>2. Teams begin to set up a generic analytics pipeline to capture data.</li> <li>3. The team makes multiple exploratory prototypes, which should reflect their different ideas for the game. This is due week 4.</li> </ol>
<p>Week 4 Jan 31</p>	<p><b><u>Design Lecture: Game Loop vs. Core Loop</u></b> Making a self-contained video game ecosystem</p> <p><b><u>Design Lecture: Game Structure Basics</u></b> Design Document Overview (Base Mechanic)</p>	<p>Team document genres and primary features of the game.</p> <p>Choose base mechanics from the exploratory prototypes and start working on a single “Graybox” Prototype (WebGL build). This will be presented in class on Week 6.</p> <p>Analytics Team to make sure that the analytics pipeline works, and can capture at least two metrics.</p> <p><b>Graders will check exploratory prototypes and team tutorials.</b></p>	<ol style="list-style-type: none"> <li>1. Add a summary in the GDD of how your team is collecting and graphing analytics data from the WebGL build. Include screenshots of data collection dashboards and examples of graphs.</li> <li>2. Continue development for playable Graybox prototype. Teams should have a working copy with a basic end-to-end gameplay ready for mock playtest.</li> <li>3. Continue building on analytics pipeline</li> <li>4. Draw two mock-graph templates in GDD showing analytics.</li> <li>5. Continue working on the JP pathway</li> </ol>
<p>Week 5 Feb 7</p>	<p><b><u>Tech Lecture: Game Development</u></b> Organizing forward development, optimizing through hierarchy of importance for creation</p> <p><b><u>Admin Lecture: Intro to pods</u></b> Introduce pod structure to the class.</p> <p><b><u>Admin Lecture: How to Playtest</u></b></p>	<p><b><i>Teams split into pods and we have a mock playtest session with their current graybox/exploratory prototypes</i></b></p> <p><b><i>Team PMs will match the two graphs drawn in the GDD with their analytics tests. Put screen captures of those graphs next to drawn graph templates in the GDD.</i></b></p>	<ol style="list-style-type: none"> <li>1. Existing Graybox Prototype published on WebGL, link on the schedule page. Two analytics work for WebGL build.</li> <li>2. Record gameplay of your Graybox prototype, showcasing unique mechanics implemented in your game.</li> <li>3. Make a list of basic mechanics in GDD and a tentative schedule to complete it on time.</li> <li>4. Finish at least the Create with Code 1 module of the JP Pathway</li> </ol>

<p>Week 6 Feb 14</p>	<p><b><u>Design Lecture:</u></b> <b><u>Risk and Reward</u></b> Giving player strategic choices within ecosystem of the game</p> <p><b><u>Reading Assignment:</u></b> <b><u>Case Study Lecture:</u></b> <b><u>Spurpunk Development</u></b> A case study of a mobile game and its considerations in development.</p>	<p><b>PROTOTYPE</b> Showcase your prototype in class. Prototype should have at least two <i>working analytics</i> at this point.</p> <p><i>Team PMs come up with two more data points to be tracked, for a total of 4 data points.</i></p> <p><b>JP Pathway checkpoint: Graders will check the progress on the Pathway.</b></p>	<ol style="list-style-type: none"> <li>1. Have first 2 graphs match drawn templates in GDD along with a short commentary as to what it can determine.</li> <li>2. Include two more analytics to track in the Graybox WebGL Prototype. It now should have four working data analytics being graphed.</li> </ol>
<p>Week 7 Feb 21</p>	<p><b><u>Analytics Lecture:</u></b> <b><u>Data-Driven Game Design</u></b> What to track to inform the team how people are playing their game and why</p>	<p><b>Discussions on the analytics and game progress</b></p>	<ol style="list-style-type: none"> <li>1. Teams come up with two more analytics data points to be tracked at midterms for a total of 6 points implemented in their game.</li> <li>2. Teams plan for all 6 graphs and analytics being successfully graphed in their midterm game.</li> <li>3. Record gameplay of the current status of your game, showcasing new unique mechanics implemented in your game, rotating team members who haven't recorded their gameplay.</li> </ol>
<p>Week 8 Feb 28</p>	<p><b><u>Case Study Lecture:</u></b> <b><u>Game UI and UX</u></b> Showing how to guide the player through the whole experience of your game.</p> <p><b><u>Analytics Lecture:</u></b> <b><u>Graph Interpretation</u></b> Example from Spurpunk of analytics graphs being informative to the authors.</p>	<p><i>Team PMs review prototypes and discuss the reason for tracking existing four points of data.</i></p> <p><b><i>Implement six total data points to track in game, and graphs drawn in GDD, in preparation for the midterm.</i></b></p>	<ol style="list-style-type: none"> <li>1. All six analytics and graphs work with web GL build. Entire team's midterm grade will depend on it.</li> <li>2. Make sure screenshots of graphs are placed next to mockups of graphs in GDD.</li> <li>3. Teams come up with questionnaire for their game to distribute during midterm</li> <li>4. Record a short 5-min video showcasing your game (like a teaser trailer) for the class. This will be your midterm presentation.</li> </ol>
<p>Week 9 Mar 7</p>	<p><b>No lecture - MIDTERM</b></p>	<p><b>MIDTERM</b> 526 students present (in teams) their games with analytics graphs, showing the collected data. Everyone plays everyone else's games in their team breakout rooms, alongside their corresponding PM team.</p>	<p>(due on Week 10)</p> <ol style="list-style-type: none"> <li>1. Everyone plays each team's game</li> <li>2. Fill out online survey for that game</li> <li>3. Record yourself playtesting each game</li> </ol>

**Spring Recess**

Mar 12-19

Week 10 Mar 21	<b><u>Design Lecture: Guiding Your Player Invisibly</u></b>	Teams begin preparing/aggregating analytics data from midterm for in-class presentation next week.  Choose and list in GDD the analytics-informed improvements the team has time to do as well as other than the team does not have time to do.	<ol style="list-style-type: none"><li>1. Prepare for your analytics and graphs to be presented in the next class.</li><li>2. List all issues inferred by midterm analytics results in tandem (with questionnaire feedback) to create your team's hypothesis on what to fix/improve in the game. Place it in GDD.</li><li>3. Finish JP Pathway.</li></ol>
Week 11 Mar 28	<b><u>Design Lecture: Mobile Game Controls</u></b> How to make sure you have eased player interaction throughout your game.	<b><i>Teams Review &amp; Present data from midterms. Discuss with PMs how design may be impacted by the data and what things can be implied by the data?</i></b>  <b>JP Pathway: Graders will check completed work.</b>	<ol style="list-style-type: none"><li>1. Record gameplay of the current status of your game, showcasing improvements implemented in your game, rotating team members who haven't recorded their gameplay.</li><li>2. Final conversations with team on evolution of game with analytics – suggestions for future</li></ol>
Week 12 Apr 4	<b><u>Design Lecture: Prototyping Physics</u></b> Optimizing game mechanics to have minimal CPU load	Choose the top 3 or 4 most surprising or difficult analytics to discern their meaning and determine the fix to include in the final presentation.  Schedule Improvements to the player's experience in game according to feedback from forms and analytics.	<ol style="list-style-type: none"><li>1. Scheduled plan for changes/fixes/updates for final presentation clearly represented in the GDD.</li><li>2. Record gameplay of the current status of your game, showcasing improvements implemented in your game, rotating team members who haven't recorded their gameplay.</li></ol>
Week 13 Apr 11		Continue improving your games, prepare for final presentations	Prepare analytics feedback from graphs as part of the final presentation.
Week 14 Apr 18	<b><u>Supplemental Lecture: Getting a Job in Game Industry</u></b>	Sort out the midterm's presentation for what will be showcased, the progression of thought, the inclusion of feedback and what the team determined from it, the analytics and meaning, and the results.	<ol style="list-style-type: none"><li>1. Prepare for Final presentation, include the various links on the team schedule page.</li><li>2. Record a short 5-min video showcasing your game for the class. This will be your final presentation.</li></ol>



Week 15 Apr 25	<b>Final Project Presentations</b>	<b>FINAL</b> <b>CS 526 teams will present final work</b>  Students will show the game live <ul style="list-style-type: none"> <li>- One or more team emcees</li> <li>- Recap the game idea</li> <li>- Show it at midterm</li> <li>- Show chosen analytics data</li> <li>- Show team decisions on it</li> <li>- Showcase current game</li> <li>- Current &amp; later Improvements</li> <li>- 3-5 minutes max.</li> <li>- Playable link</li> <li>- Up to date GDD</li> </ul>	<b>DUE:</b> <ul style="list-style-type: none"> <li>• Final Presentation (5-min video recording)</li> <li>• Final Publication (WebGL Build)</li> <li>• Final Documentation (GDD w/ all details filled)</li> </ul>
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## Syllabus Updates

This syllabus is liable to change up to the beginning of class and possibly over the semester. Please check the posted syllabus regularly, and note all changes that are shared by the instructor in class.

## 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 Part B, Section 11, “Behavior Violating University Standards and Appropriate Outcomes”

<https://policy.usc.edu/scampus/>.

Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct,

<https://policy.usc.edu/research-and-scholarship-misconduct/>.

Discrimination, sexual assault, intimate partner violence, stalking, and harassment are prohibited by the university. You are encouraged to report all incidents to the *Office of Equity and Diversity/Title IX Office* <http://equity.usc.edu> and/or to the *Department of Public Safety* <http://dps.usc.edu>. This is important for the health and safety of the whole USC community. Faculty and staff must report any information regarding an incident to the Title IX Coordinator who will provide outreach and information to the affected party. The sexual assault resource center webpage <https://studenthealth.usc.edu/sart-resources/> fully describes reporting options. Relationship and Sexual Violence Prevention Services <https://studenthealth.usc.edu/sexual-assault> provides 24/7 confidential support.

### 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://ali.usc.edu>, which sponsors courses and workshops specifically for international graduate students. *The Office of Student Accessibility Services and Programs* <https://osas.usc.edu/> 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.

### Disruptive Student Behavior

Behavior that persistently or grossly interferes with classroom activities is considered disruptive behavior and may be subject to disciplinary action. Such behavior inhibits other students' ability to learn and an instructor's ability to teach. A student responsible for disruptive behavior may be required to leave class pending discussion and resolution of the problem and may be reported to the Office of Student Judicial Affairs for disciplinary action