



CSCI 281 Pipelines for Games

Units: 4

Spring 2020—Day—Time:

Class web page: <https://games.usc.edu/classes-pipelines/>

Location: SCI L113

Instructor: Scott Easley

Office: Office 207 Gamepipe Labs

Office Hours: TBD

Contact Info:

Email: seasley@usc.edu

Course Grader: Runshi Gu

Contact Info:

Email: runshigu@usc.edu

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.

Textbook: Course Notes and technical documentation.

Learning Objectives

The objective of this course is to model and texture 3d models for use in interactive entertainment. Emphasis on the technical process as well as laying out unique plans per assignment in both individual and team environments to gain knowledge of this necessary part of 21st century interactive media.

After successfully completing this course, students should be able to:

- Know the features of mobile games, the workflow of mobile game development and how mobile gaming technologies work;
- Create mobile game apps on mobile devices such as Apple iPhone, using proper technologies;
- Communicate and work effectively with teammates including artists, designers, and programmers.

Prerequisite(s):

Co-Requisite(s):

Concurrent Enrollment:

Recommended Preparation: Basic mobile game apps development technologies (Unity3D, Cocos2D), teamwork tools (Google shared docs, Skype, SVN), languages (C#, Objective C, C++, Javascript)

Course Notes

Description and Assessment of Assignments

Mid-term and Final Project/Presentation evaluation will be based on how a project will realize the goals the team has set out for itself and the project. Ultimately, this course exists to empower students to bring their vision onto the screen. The more you put into the project, the closer it will be to what was envisioned. For the Weekly Deliverables, the results of the online color-coded schedule sheet will be a key input. The professors will evaluate both the amount of tasks fully completed on time and also the complexity of the tasks.

More specifically:

a) Weekly deliverables will be graded based on online color-coded schedule sheet: green=1(fully completed task), yellow = 0.5 (partial completed task), red = 0 (not completed task).

b) Midterm/Final Deliverables will be graded based on how well midterm/final milestone specifications are achieved. And it could be affected by following factors.

- Green-colored task difficulty and completion quality
- Code quality
- Perceived effort

Grading Breakdown

Assessment Tool (assignments)	% of Grade
Weekly Deliverables	50
Midterm Deliverables	15
Final Deliverables	25
Final Presentation	10
TOTAL	100

Grading Scale

(Optional – the following is only an example of what one might look like if included)

Course final grades will be determined using the following scale

A	90+
B	80+
C	70+
D	60+
F	below 60

Course Schedule: A Weekly Breakdown

	Topics/Daily Activities	Specification	Deliverables
Week 1 1/16	Class Introduction/Overview	<ul style="list-style-type: none"> ● Class overview ● Maya software <ul style="list-style-type: none"> ○ Rules for using lab ○ Place to download Maya if using personal laptop <ul style="list-style-type: none"> ▪ Follow-up E-mail from TA ● Team Projects <ul style="list-style-type: none"> ○ Team captains ● Online resources <ul style="list-style-type: none"> ○ OAD (Online Asset Database) ○ Excel sheet checklist 	
Week 2 1/23	Begin Maya Modeling	<ul style="list-style-type: none"> ● Lecture on Maya Basics <ul style="list-style-type: none"> ○ Camera control ○ Five basic geometry shapes ○ Extrusion, Addition and deletion of geometry (objects) ○ Manipulation of components 	

		<ul style="list-style-type: none"> (vertices, edges, faces) • Begin building Phantasm Ball in class (modeling) <ul style="list-style-type: none"> ◦ Corresponding video on class website 	
Week 3 1/30	Finish Maya Modeling	<ul style="list-style-type: none"> • Finish up the 3d modeling of Phantasm Ball <ul style="list-style-type: none"> ◦ Review of principles of geometry manipulation in 3d <ul style="list-style-type: none"> ▪ Grouping, not combining for UV texturing ▪ Cleaning up scene • <u>Assignments Due</u>: Phantasm Ball 3d model Not to be turned in, but prepped for texturing 	
Week 4 2/6	Begin UV texturing the Phantasm Ball	<ul style="list-style-type: none"> • Discussion of principles of UV mapping <ul style="list-style-type: none"> ◦ Cartography comparisons (flaying a 3d into 2d) <ul style="list-style-type: none"> ▪ Compromise UV layout vs slicing UVs • In-class assignment of sphere UV cutting/layout <ul style="list-style-type: none"> ◦ Download 'Dogbunny' from OAD, manipulate UVs • Phantasm Ball texture provided on website 	
Week 5 2/13	Finish texturing the Phantasm Ball	<ul style="list-style-type: none"> • Phantasm Ball UV layout finish (in class) <ul style="list-style-type: none"> ◦ Review of what to hand in <ul style="list-style-type: none"> ▪ All Maya files saved as ASCII (.ma) ▪ All images saved as 512 x 512 .jpg ▪ One object, one texture ▪ How/where/when to hand it in • Follow-up Email from TA 	Phantasm Ball
Week 6 2/20	Shoobox Garage	<ul style="list-style-type: none"> • Discussion of using blueprints to model vehicle • Go to theblueprints.com 	

		<ul style="list-style-type: none"> ○ Review website for good/bad examples of modeling blueprints <ul style="list-style-type: none"> ▪ No shaded wireframes ▪ No color ▪ Four views ▪ Simple designs ● Choose blueprint for vehicle ● In-class setup of 'shoebox garage' for modeling accuracy ● In-class begin building vehicle <ul style="list-style-type: none"> ○ Lab time for class to begin modeling their vehicle ● <u>Assignments Due</u>: Vehicle 3d model <ul style="list-style-type: none"> ○ Not to be turned in, but prepped for texturing 	
Week 7 2/27	Using images for textures on vehicles	<ul style="list-style-type: none"> ● How to save out UV map of 3d model from Maya ● Class lecture on finding online texture for vehicle <ul style="list-style-type: none"> ○ Examples of good/bad textures <ul style="list-style-type: none"> ▪ Inconsistent color/lighting ▪ Perspective (warped) angles ● Examples of how to download/use image ● In-class examples of grabbing texture and basic manipulation <ul style="list-style-type: none"> ○ Using Photoshop ○ Using Pixlr ● <u>Assignments Due</u>: Vehicle 3d model (modeled, textured) <ul style="list-style-type: none"> ○ Review of what to hand in <ul style="list-style-type: none"> ▪ One object, one texture ▪ How/where/when to hand it in ● Follow-up Email from TA 	Vehicle 3d model
Week 8 3/5	Midterm Assignment	<ul style="list-style-type: none"> ● Teams chosen from class <ul style="list-style-type: none"> ○ Team Captains ○ Team Names ● Review of checklist usage for class 	

		<ul style="list-style-type: none"> ● Team Project: <ul style="list-style-type: none"> ○ As a group decide the theme of your series <ul style="list-style-type: none"> ▪ (Ex: Galleons, Mollusks, Bears) ▪ Each team member has to contribute to a large team tableau (Ex: A Galleon with cannons, rigging, sails) ▪ Each team member makes a separate model with a separate texture ▪ Only the team tableau model is turned in ● Team decides what to model from Natural History Museum <ul style="list-style-type: none"> ○ Review of necessary items to go to NHM ○ Field trip for teams to go to NHM, find/research items for modeling ● <u>Assignments Due:</u> individual item models from team members <ul style="list-style-type: none"> ○ Not to be turned in, but prepped for texturing 	
Week 9 3/12	Midterm	<ul style="list-style-type: none"> ● In-class lab time to finish modeling and texturing individual models for team tableau ● Assignments Due: team tableau ● Review of what each person on team contributes <ul style="list-style-type: none"> ○ One object, one texture ○ How/where/when to hand it in ● Follow-up Email from TA 	team tableau
Week 10	No Class(Spring Recess)		
Week 11 3/26	3d Props and lighting	<ul style="list-style-type: none"> ● Examples of 'baked lighting' for models in video games <ul style="list-style-type: none"> ○ Real-time lighting and shadows in mobile games ○ Normal maps 	prop model

		<ul style="list-style-type: none"> • In-class demonstration of Maya baked light as texture map • Labtime for students to do example using 3d sphere • <u>Assignments Due</u>: prop model (modeled, textured) <ul style="list-style-type: none"> ◦ Review of what to hand in <ul style="list-style-type: none"> ▪ One object, one texture ▪ How/where/when to hand it in <p>Follow-up Email from TA</p>	
Week 12 4/2	Organic (Avatar) modeling	<ul style="list-style-type: none"> • Character Assignment • Modeling organic versus 'statue' modeling <ul style="list-style-type: none"> ◦ Modeling for deformation • In-class assignment of fusing two cylindrical pipes smoothly at skew angle <ul style="list-style-type: none"> ◦ Concentric blending for arms/legs of characters • <u>Assignments Due</u>: individual 'selfie' shots for modeling and 'Shoebox Garage' setup <ul style="list-style-type: none"> ◦ not to be turned in, but prepped for texturing 	
Week 13 4/9	Organic (Avatar) texturing	<ul style="list-style-type: none"> • Lecture on Maya Projection texturing <ul style="list-style-type: none"> ◦ Projection vs. painting on UVs ◦ Baking the projection into UV map ◦ In-class example using sphere • Projection or UV painting choice for avatar models • In-class Lab time to texture avatar model <ul style="list-style-type: none"> ◦ Review of what to hand in <p>One object, one texture</p>	avatar model
Week 14 4/16	Uploading models to the OAD database	<ul style="list-style-type: none"> • Lecture on uploading to the OAD • Exporting FBX from Maya • Quicktime viewer outside of Maya to verify model • In-class assignment of exporting/viewing previous 	

		<ul style="list-style-type: none"> assignments • How to .zip up exports for upload <ul style="list-style-type: none"> ○ Obj.ma + image.jpg/Obj.fbx + image.jpg ○ Handing in previous assignments to the OAD <ul style="list-style-type: none"> ▪ Cleaned up ▪ Verifying ▪ Report of incorrect uploads for deletion <p>In-class Lab time to upload all models</p>	
Week 15 4/23	Finals assignments	<ul style="list-style-type: none"> • Assignments for Mobile Games Classes (CS 526) and AGP (CS 491) classes to teams • Teams now autonomous <ul style="list-style-type: none"> ○ In-class lab time for teams to begin modeling assignments <p>Individual tutoring from instructor to teams and students</p>	
FINAL 5/6	Final assignment due	<ul style="list-style-type: none"> • <u>Assignments Due</u>: Team models (modeled, textured) <ul style="list-style-type: none"> ○ Turned in, verified and uploaded to OAD <p>Follow-up Email from TA</p>	

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” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.

Support Systems:

Student Health Counseling Services - (213) 740-7711 – 24/7 on call
engemannshc.usc.edu/counseling

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

Student Health Leave Coordinator – 213-821-4710

Located in the USC Support and Advocacy office, the Health Leave Coordinator processes requests for health leaves of absence and advocates for students taking such leaves when needed.

<https://policy.usc.edu/student-health-leave-absence/>

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call

suicidepreventionlifeline.org

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-4900 – 24/7 on call
engemannshc.usc.edu/rsvp

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED) | Title IX - (213) 740-5086
equity.usc.edu, titleix.usc.edu

Information about how to get help or help a survivor of harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following protected characteristics: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations.

Bias Assessment Response and Support - (213) 740-2421
studentaffairs.usc.edu/bias-assessment-response-support

Avenue to report incidents of bias, hate crimes, and microaggressions for appropriate investigation and response.

The Office of Disability Services and Programs - (213) 740-0776
dsp.usc.edu

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Support and Advocacy - (213) 821-4710
studentaffairs.usc.edu/ssa

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101
diversity.usc.edu

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call
dps.usc.edu, emergency.usc.edu

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call
dps.usc.edu

Non-emergency assistance or information.

Diversity and Inclusion

Diversity and Inclusion are foundational to the SCA community. We are committed to fostering a welcoming and supportive environment where students of all identities and backgrounds can flourish. The classroom should be a space for open discussion of ideas and self-expression; however, SCA will not tolerate verbal or written abuse, threats, harassment, intimidation or violence against person or property.

If students are concerned about these matters in the classroom setting they are encouraged to contact their SCA Diversity and Inclusion Liaison, <http://cinema.usc.edu/about/diversity.cfm>; e-mail diversity@cinema.usc.edu. You can also report discrimination based on a protected class here <https://equity.usc.edu/harassment-or-discrimination/>

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.

PLEASE NOTE:

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