

**IMPORTANT:**

Please refer to the [USC Center for Excellence in Teaching](#) for current best practices in syllabus and course design. This document is intended to be a customizable template that primarily includes the technical elements required for the Curriculum Office to forward your proposal to the UCOC.

**CSCI 281: Pipeline Assets for Games****Units: 4****Spring 2022****Lecture: Mondays/Wednesdays 10:00 am to 11:50 am****Location:** Online Zoom Meeting Room (Info on Blackboard)**Instructor:** Scott Easley**Location:** THH 212**Remote:** Zoom link on Blackboard**Office Hours:** By request**Contact Info:** seasley@usc.edu**Teaching Assistant:** David Li**Office:** Online**Office Hours:** By request**Contact Info:** zuoweili@usc.edu**IT Help:**Viterbi IT: <https://vsoeweb.vsoe.usc.edu/helpdeskpro/>USC ITS: <https://itservices.usc.edu/>**Hours of Service:**

Phone: 24 hours per day, 7 days per week

Email: M-F, 8am – 6pm

**Contact Info:** 213.740.5555

## Course Description

An applied introduction to the techniques used for modeling, animating, texturing, rendering, and creating 3D content for games, cinematics, visual effects, animation, and visualizations.

## Learning Objectives

Gain a thorough applied foundation in the practice of 3D modeling, texturing, animation, surfacing, and visual special effects. Understand the processes involved in the creation of 3D content for animation, games, entertainment, and design. Use industry leading software and tools to explore the production cycle of animation, how pipelines are implemented to support the production process, and how to manage vision, budget, and time constraints. Develop an understanding of the diverse methods available for achieving similar results and the decision-making processes involved at various stages of project development. Gain insight into the differences among the various animation tools. Understanding the opportunities and tracks in the field of 3D animation.

**Prerequisite(s):** No Prerequisite

**Recommended Preparation:** Experience with 2d graphics, 3d modeling, or CAD useful but not required.

## Course Notes

There is no text for the course, however each student is expected to make use of the many resources available online, including Autodesk learning documentation, Linda.com resources, and course materials on Blackboard. Course materials, assignment submissions, lecture slides, and updates will be posted on Blackboard. This course is for a letter grade. The grading scale for the course is listed below. Students should plan to bring note taking materials, sketchbooks, or other materials for brainstorming, note taking, sketching, and design work.

## Technological Proficiency and Hardware/Software

- Autodesk Maya 2019
- Adobe Photoshop or Pixlr Editor

## USC technology rental program

We realize that attending classes online and completing coursework remotely requires access to technology that not all students possess. If you need resources to successfully participate in your classes, such as a laptop or internet hotspot, you may be eligible for the university's equipment rental program. To apply, please [submit an application](#). The Student Basic Needs team will contact all applicants in early August and distribute equipment to eligible applicants prior to the start of the fall semester.

## USC Technology Support Links

[Zoom information for students](#)

[Blackboard help for students](#)

[Software available to USC Campus](#)

## Required Readings and Supplementary Materials

Materials available on Blackboard.usc.edu

### **Description and Assessment of Assignments**

Projects will be assigned and submitted via Blackboard or Google Drive. Many assignments will have a deliverable set of 2d and 3d assets but should be supported with the supplementary files and assets required in the assignment details.

## Grading Breakdown

All assignments and grading criteria will be posted and submitted via Blackboard.usc.edu.

Assignment	Points	% of Grade
Pball Modeling	10	5
Pball Model UV layout	10	5
Pball Model Texturing	10	5
Vehicle Modeling	10	5
Vehicle Model UV Layout	10	5
Vehicle Model Texturing	10	5
Dorm Prop (Model, UV, Texture)	10	5
Vehicle with auto-expression wheels	10	5
Vehicle on rails with expression wheels	10	5
Camera on rails, renders with Arnold	10	5
Car setup with camera, rails, rendering	40	5
Finished movies from storyboard	40	20
Participation	20	10
TOTAL	200	100

## Attendance/Tardiness Policy:

Students should be in class every day and for every lab session. If you are not able to attend, you must contact your advisor and instructor. Unexcused absences will negatively affect your grade. Students must arrive to class promptly. Points will be deducted for tardiness. Repeat tardiness will increase the points deduction per instance of tardiness. Additionally, any student who does not show up within 15 minutes of the start of either the morning and afternoon sessions will be reported to the summer program advisor. Please set an extra alarm and show up on time!

## Grading Scale (Example)

Course final grades will be determined using the following scale

A	95-100
A-	90-94
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

## Assignment Rubrics

Assignments and Rubrics will be available on Blackboard.usc.edu

## Assignment Submission Policy

All assignments, submission rules, and details will be published on Blackboard.usc.edu.

## **Grading Timeline**

Assignments will be graded as quickly and efficiently as possible. Due to the five day per week course schedule, grades may not be posted until the weekend following each week.

## **Synchronous session recording notice**

The synchronous sessions will be recorded and provided to all students asynchronously.

Information for faculty on recording class sessions can be found on the [Academic FAQs for Faculty](#) on the USC COVID-19 Resource Center.

## **Sharing of course materials outside of the learning environment**

Sharing of any synchronous and asynchronous course content outside of the learning environment is prohibited.

*SCampus Section 11.12(B)*

*Distribution or use of notes or recordings based on university classes or lectures without the express permission of the instructor for purposes other than individual or group study is a violation of the USC Student Conduct Code. This includes, but is not limited to, providing materials for distribution by services publishing class notes. This restriction on unauthorized use also applies to all information, which had been distributed to students or in any way had been displayed for use in relationship to the class, whether obtained in class, via email, on the Internet or via any other media. (See Section C.1 Class Notes Policy).*

## **Residential and Hybrid Streaming Model Courses**

Continuously updated requirements about COVID-19 can be found on the [USC COVID-19 resource center website](#).

## **Course evaluation**

Course evaluation occurs at the end of the semester university-wide. It is an important review of students' experience in the class. The process and intent of the end-of-semester evaluation should be provided. In addition, a mid-semester evaluation is recommended practice for early course correction. See CET support document [Mid-semester Evaluations](#).

## Course Schedule: A Weekly Breakdown

Below is the detailed course calendar that includes a list of deliverables (homework assignments, examinations, etc.) broken down on a weekly basis. It includes:

- Subject matter, topic and activity
- Required preparatory reading or tasks (e.g., viewing videos)
- Deliverables and when each deliverable is due.

Week	Date	Topics/Daily Activities	In Class/Study	Deliverables
Week 1	Jan 10	<p><b>Introduction to course:</b> Special hours to accommodate orientation:</p> <p><b>Content:</b> USC code of conduct USC Blackboard, USC Lynda.com</p>	<p><b>Areas of Interest:</b> Describe favorite aspects of games or movies you are interested in.</p> <p><b>Expectations of Class:</b> What you will learn, what is graded and handed in and at what time.</p>	<p><b>Homework:</b> Download Maya 2019 successfully onto your local laptop or desktop and have it dependably working for next class.</p> <p>Watch Sizzle Reel (blackboard)</p>
	Jan 12	<p><b>Introduction to Maya</b> Maya and web support resources: Online help, class webpage, tutorials, etc.</p> <p><b>Maya Modeling</b></p>	<p>Construct sub-folders of 'Work' and 'Final' for class in assigned folders. Basic 3d objects, manipulating objects and components.</p>	<p><b>Homework:</b> Finish 3d model of Pball, as per video tutorial for class and upload it in Google Drive 'Work' folder</p>
Week 2	Jan 17	Martin Luther King Day – <b>NO CLASS</b>		
	Jan 19	<p><b>UV Systems and Wrapping 2D images around 3D Objects</b></p>	<p>Sort out the UVs in Pball 3d model for existing texture. UV Texture Dice UV Texture 2 types of 'Globe'</p>	<p><b>Homework:</b> Finish UV layout of Pball using lab time and online tutorial, upload finished work to individual Final folder.</p>
Week 3	Jan 24	<p><b>Lecture: Character Design</b></p> <p><b>Paint Systems</b></p>	<p>Using Pixlr to manipulate images and paint over UVs. Paint over UVs for basic geometry types. Paint over Dogbunny's textures</p>	<p><b>Homework Due:</b> Modeled and UV textured Pball in Final folder.</p>
	Jan 26	<p><b>Create 'Shoobox Garage' guides for modeling with polygons and paint systems</b></p>	<p>Make sure all joints of character turnaround align. Make 'shoobox garage' using Superhero turnaround</p>	<p><b>Homework Due:</b> Superhero 'Shoobox Garage' setup saved in Work folder</p>

Week 4	Jan 31	<b>Lecture: Edge Loops</b>  <b>Modeling using image guide for characters</b>	<b>Character Modeling for Deformation</b> Maya for edge flow modeling and connecting cylinders for organic modeling vs. extrusions. Connect cylinders for 'base doll' geometry	<b>Homework:</b> Create Basemesh from three separate geometric cylinders. Save work in 'Work' Google Drive folder.
	Feb 2	<b>Lecture: Shaping the Basemesh</b>  <b>Align basedoll mesh to character guide</b>	<b>Base Doll realignment</b> Realign the cylinders of the basedoll according to the new image guide. Get edge flow down, smooth things over with no right angles. Add poly lines where needed.	<b>Homework:</b> Reshape circular vertices on base doll character to align with superhero turnaround guide.
Week 5	Feb 7	<b>Lecture: LowPoly Hands and Feet</b>	<b>Create lo-poly Hands and Feet</b> Study geometry and create hands and feet using different methods: Extrusion from existing geometry and creation of geometry from scratch.	<b>Homework:</b> Start creation of 3d hands and feet of Superhero.
	Feb 9	<b>Finish Hands and Poly Feet</b>	Finish modeling hands and feet using extrusions or poly and vertex translation	<b>Homework:</b> Finish 3d models of hands and feet of Superhero.
Week 6	Feb 14	<b>Lecture: Basic 3D Head Modeling</b>  <b>Building a 3D Character Head</b>	<b>Finish Face of Superhero Character</b> Finish modeling character face from cylinder according to image planes.	<b>Homework:</b> Model character face according to new image planes, including face subdivisions.
	Feb 16	<b>Lecture: Modeling Reminders</b>	<b>Finish the 3D Superhero model</b> Complete head, attach face, create hair using original method of chamfering vertices and creating poly lines	<b>Homework:</b> Finish up all 3d modeling of the Superhero: Body, head, hands or feet.

Week 7	Feb 21	President's Day – <b>NO CLASS</b>		
	Feb 23	<b>Unzipping UVs in 3D</b>	Unwrap the UVs of the entire character into one UV space	<b>Homework:</b> Finish UV unwrapping of Superhero
Week 8	Feb 28	<b>Use Pixlr to paint over UV sets for Superhero</b>	Paint over Superhero UVs to make texture for entire character.	<b>Homework:</b> <b>Prepare and finish your Superhero for midterm submission (Mar 9<sup>th</sup>)</b>
	Mar 2	<b>Use Mixamo to rig and animate character</b>	Use online auto-rigging script from Mixamo to rig and animate your character. Use playblast to make a movie	Save playblasted movie in Work directory
Week 9	Mar 7	<b>Student makes 3d .obj file of their face using online machine learning</b>	Student re-sculpts .obj using make live and quad draw to make face loops	<b>Homework:</b> <b>Re-sculpt 3d .obj from picture using Quad Draw</b>
	Mar 9	<b>Pixlr 2d Projections and 3d baking</b>	Create face texture using same image for your .obj face model	<b>Midterm:</b> <b>Upload your single mesh single texture Superhero to 'Final' folder.</b>
<b>Spring Recess Mar 13 - Mar 20</b>				
Week 10	Mar 21	<b>Lecture:</b> <b>Original Design Modeling</b>	Search and choose original character, Draw basic body shapes with simple 2d as placeholder	<b>Homework:</b> Choose original character turnaround to make 3d model
	Mar 23	<b>Original Character Body</b> Start with original character, set up shoebox garage using image guides	<b>Start body of original character</b> Start modeling base body model for original character. Model new or use existing base doll body to align to character.	<b>Homework:</b> Finish shoebox garage for your 3D character's body, head. Work on 3d body of character.



Week 11	Mar 28	<b>Original Character Begin (Body)</b>  Finalize modeling body using basic shapes	Finish Modeling the original 3d character body.	<b>Homework:</b> Finish basic 3d model body for original character
	Mar 30	<b>Original Character Begin (Head)</b>  Begin modeling head using basic shapes	Start modeling base 3d head model for original character.	<b>Homework:</b> Finish basic 3d head for original character
Week 12	Apr 4	<b>Original Character Begin (extras)</b>  Begin modeling extra shapes unique to the character (hair, armor)	Model extras for character	<b>Homework:</b> Finish basic 3d hands, feet and poly loops for face – extras: mouth bag, armor, ponytails props
	Apr 6	<b>Lecture:</b> <b>Considerations as you model</b>	<b>3D:</b> Finish Modeling the original 3d character body, head and extras	<b>Homework:</b> Finish 3d modeling your 3D character's body, head and extras
Week 13	Apr 11	UV unwrap the extras/details	UV unwrap the 3d character body	<b>Homework:</b> Finish UV unwrapping your 3D character's body
	Apr 13	UV unwrap the body	UV unwrap the 3d character head	<b>Homework:</b> Finish UV unwrapping your 3D character's head and extras
Week 14	Apr 18	Paint or project the character body texture map	Paint or project the character body	<b>Homework:</b> Finish painting your 3D character's body
	Apr 20	Paint or project the character head texture map	Finish painting your 3D character's body, head and extras	<b>Final: Original Model due in Final folder</b>

## 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](http://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](http://policy.usc.edu/scientific-misconduct).

### Support Systems:

*Student Health Counseling Services - (213) 740-7711 – 24/7 on call*  
[engemannshc.usc.edu/counseling](http://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](http://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](http://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](http://equity.usc.edu), [titleix.usc.edu](http://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](http://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](http://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](http://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](http://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](http://dps.usc.edu), [emergency.usc.edu](http://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](http://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](mailto: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**