

CTAN - 485L Pipeline and Character Modeling for Animation

2.0 Units

Fall semester 2021, Tuesdays 6-9pm PST



Location: Tuesday 7-9:50pm PST through Zoom.

Instructor: Marty Havran

Office Hours: Thurs 7-9 pm PST by appointment only through Zoom.

Contact Info: havran@usc.edu (Will respond to emails within 24 hours).

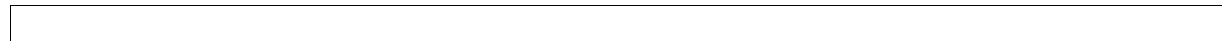
Teaching Assistant:

Office Hours: TBD

Contact Info: TBD

IT Help: Creative Tech Help Desk

Contact Info: 213-821-4571



Course Description

This course teaches 3D modeling and pipeline integration of 3D models for the use in production. Students will use modeling and texturing software to create and color their models while adhering to common standards used in production pipelines.

This is a highly practical class, teaching the students techniques that can be used right away to expedite the CGI asset creation process. The practical nature of the class means there is no required weekly reading but there are weekly assignments. Additional resources will be provided that are tailored to the concepts and objectives of that week.

Learning Objectives

- Learn how to translate 2D designs into digital sculptures for animation.
- Learn how 3D models are used in productions by other departments.
- Understand common production standards for 3D models.
- Deepen understanding of modeling and texturing software.
- Learn the concepts for creating hair, and clothing for characters.
- Learning how to present their work to a group.

Recommended Preparation: Basic understanding of 3D modeling in Maya, Zbrush and using Photoshop is advisable, not mandatory.

Course Notes

This course will be taught online for the Fall semester and will receive a Letter grade. The course is Web-Enhanced via Blackboard. Recordings, additional learning resources, weekly learning expectations and assignment will be available on Blackboard.

Technological Proficiency and Hardware/Software Required

Autodesk Maya 2020, Pixologic Zbrush 2020, Adobe Substance Painter and Photoshop. We will discuss other software packages that are commonly used in production for modeling, texturing, cloth, hair, lighting, and rendering.

Supplementary Materials

- Autodesk Maya: <https://academy.autodesk.com/software/maya>
- Pixologic Zbrush: <http://pixologic.com/zclassroom/>
- Adobe Photoshop: <https://helpx.adobe.com/photoshop/tutorials.html>
- Substance Painter: <https://academy.substance3d.com/>
- Arnold Rendering: <https://vimeo.com/arnoldrenderer>

Description and Assessment of Assignments

Characters are generally the most complex assets on a CGI project. The principles and techniques learned during this course can also be applied to inanimate assets such as prop and environment 3D models.

The student will work on one simple character design provided by the instructor and then on one character of their choosing. Ideally, the character the student creates will be for their personal projects and complex enough to challenge them but still meet their assignment deadlines.

- **Character 1** (4 weeks) will work as a test subject where the new techniques and pipeline will be learned.
- **Character 2** (11 weeks) will work as a test subject where the new techniques in Maya and Zbrush will be learned.

The learning outcome will be assessed by these criteria:

- Aesthetically: How well does the 3D model resemble the reference art and images for the character?
- Technically: How closely the 3D model meets the technical specifications discussed in the lecture.

Grading Breakdown

Evaluation criteria

- **Participation:** Students will be assessed based on class engagement and implementation of the techniques learned during the weekly lecture and how the students apply the feedback given by the instructor and the other students. Participation also includes presenting your work to the group.
- **Weekly Assignments:** Each week students will be given weekly assignments. These assignments are required to be completed by next week class. All weekly assignments will need to be uploaded into a class online drive and will be reviewed prior to class.
- **Final Project:** Students will model and texture one character of their choosing and provide a video turntable of the character. In addition, the students will create a character model sheet of their character using renders of their character and a character description and include their initial designs of the character

Assessment Tool (assignments)	Points	% of Grade
Class participation	15	15
Weekly Assignments	50	50
Final	35	35
TOTAL	100	100

Grading Scale

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 Submission Policy

Each weekly submission will need to be uploaded before 8:00 pm PST by the Sunday prior to the next class.

Grading Timeline

Grading for each assignment will be completed by the following Sunday night after the submission is due.

Additional Policies

Any student arriving 10 minutes late will be marked “LATE”. Three “LATES” constitute an absence. Three absences will result in failure. The only exceptions will be valid emergencies with appropriate documentation. Impersonating other classmates when signing roll sheet will not be tolerated and will be subject to disciplinary action

Course Schedule: A Weekly Breakdown

	Topics/Daily Activities	Deliverables
Week 1 8/24	<ul style="list-style-type: none"> • Introductions • Animation production overview • Intro to Maya • Character design, 2D to 3D translation, character description 	Due 8/29 8pm PST <ul style="list-style-type: none"> • Import image planes of simple character and block out basic shapes of the character • Pick 1 character reference you are going to model and color. Write a character profile for your character.
Week 2 8/31	<ul style="list-style-type: none"> • Maya demo, scene creation, directories, modeling tools, image planes. • Simple character modeling. 	Due 9/5 8pm PST <ul style="list-style-type: none"> • Set up your scene for your character model and block out the character using basic forms. • Revise character reference and descriptions based on instructor feedback. • Find photo reference for your character and create an inspiration page.
Week 3 9/7	<ul style="list-style-type: none"> • Maya modeling tools continued. • Analyzing an animation style and how that applies to your character. • UV's for simple character. UVs vs UDIMs. • Character modeling standards. 	Due 9/12 8pm PST <ul style="list-style-type: none"> • Finalize the simple character following the character modeling standards checklist. • Pick an animated film that you like and break down the stylization of the characters.
Week 4 9/14	<ul style="list-style-type: none"> • Posing your character • Arnold lighting and rendering 	Due 9/19 8pm PST <ul style="list-style-type: none"> • Simple character should be completed! • Pose your character in Maya • Render a turntable render in Maya.
Week 5 9/21	<ul style="list-style-type: none"> • Maya to Zbrush and Zbrush to Maya • Zbrush intro and modeling approaches. • Introduction to Zbrush. • Sculpting in Zbrush. Subtools and polygroups. 	Due 9/26 8pm PST <ul style="list-style-type: none"> • Using simple character, start your own character in Zbrush. • Set up image planes in Zbrush
Week 6 9/28	<ul style="list-style-type: none"> • Zbrush continued. • Alternate rendering than Arnold: 	Due 10/3 8pm PST <ul style="list-style-type: none"> • Continue working on your character adding details. Character 50%

	Marmoset, Zbrush, Keyshot, Blender	completed.
Week 7 10/5	<ul style="list-style-type: none"> • Facial expressions 	Due 10/10 8pm PST <ul style="list-style-type: none"> • Continue adding final details to your Zbrush sculpture. Should be 90% completed • Create facial expression for your character
Week 8 10/12	<ul style="list-style-type: none"> • Facial hair modeling 	Due 10/17 8pm PST <ul style="list-style-type: none"> • Facial hair sculpting
Week 9 10/19	<ul style="list-style-type: none"> • Clothing modeling • Retopology in Maya and Zbrush 	Due 10/24 8pm PST <ul style="list-style-type: none"> • Finalize clothing details for your character
Week 10 10/26	<ul style="list-style-type: none"> • CG Hair • Xgen in Maya. • Rendering Hair 	Due 10/31 8pm PST <ul style="list-style-type: none"> • Create stand-in hair • Create some form of hair for your character using Xgen in Maya
Week 11 11/2	<ul style="list-style-type: none"> • Blendshapes • Texturing in Zbrush and Substance Painter 	Due 11/7 8pm PST <ul style="list-style-type: none"> • Finish posing your character 100% • Add color/texture to character
Week 12 11/9	<ul style="list-style-type: none"> • Neutralizing character • Retopology of Neutral 	Due 11/14 8pm PST <ul style="list-style-type: none"> • Create a neutral model of your character for rigging.
Week 13 11/16	<ul style="list-style-type: none"> • Finishing touches on your character 	Due 11/21 8pm PST <ul style="list-style-type: none"> • Complete modeling and texturing character 2. 100% complete, • Render turntable of character.
Week 14 11/23	Thanksgiving Holiday	No Class
Week 15 11/30	<ul style="list-style-type: none"> • Lighting and Rendering • Finishing touches on your character • Rendering a turntable 	Upload by 12/5 8pm PST <ul style="list-style-type: none"> • Create a character model sheet of their character using renders of their character and a character description and include their initial designs of the character.

Week 16 12/4-7	Study Days	
FINAL 12/14 7-9pm	<ul style="list-style-type: none"> Present your character. Discuss the character and show your movie and character packet. 	Upload by 12/12 8pm PST <ul style="list-style-type: none"> Provide a video turntable of your character. Create a character model sheet of their character using renders of their character and a character description and include their initial designs of the character.

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/ HYPERLINK "https://policy.usc.edu/scampus-part-b/"-part-b.](https://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:

Counseling and Mental Health - (213) 740-9355 – 24/7 on call
studenthealth.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 and Services (RSVP) - (213) 740-9355(WELL), press “0” after hours – 24/7 on call

studenthealth.usc.edu/sexual-assault

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

Office of Equity and Diversity (OED)- (213) 740-5086 | Title IX – (213) 821-8298
equity.usc.edu, titleix.usc.edu

Information about how to get help or help someone affected by 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. The university also prohibits sexual assault, non-consensual sexual contact, sexual misconduct, intimate partner violence, stalking, malicious dissuasion, retaliation, and violation of interim measures.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298

[usc-advocate.symplicity.com/](https://usc-advocate.symplicity.com/care_report/) [HYPERLINK "https://usc-advocate.symplicity.com/care_report/"care_report](https://usc-advocate.symplicity.com/care_report/)

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office of Equity and Diversity | Title IX for appropriate investigation, supportive measures, 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 Campus Support & Intervention - (213) 821-4710

campussupport.usc.edu

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) 442-1200 – 24/7 on call

dps.usc.edu

Non-emergency assistance or information.

Office of the Ombuds - (213) 821-9556 (UPC) / (323-442-0382 (HSC)

ombuds.usc.edu

A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

PLEASE NOTE:

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