

# USC Cinematic Arts

## ***Land Acknowledgement***

USC acknowledges that we are on the traditional land of the Tongva People. For thousands of years, the Tongva people lived on this land we occupy today and were considered the most powerful indigenous peoples to inhabit the Los Angeles basin. Along with the Tongva, we also recognize the Chumash, Tataviam, Serrano, Cahuilla, Juaneño, and Luiseño People, for the land that USC also occupies around Southern California. To learn about the Indigenous land on which your learning location resides, please visit [Native-Land.ca](https://www.native-land.ca) to discover the Original People of your home.

## **CTAN-485L Character Modeling for Animation**

### **2.0 Units**

### **Fall semester 2024, Tuesdays 7 - 9:50pm**

**Location:** SCA 356 7-9:50pm

**Instructor:** Jaewon Lee

**Office Hours:** Tues 7-10pm

**Contact Info:** [jlee6574@usc.edu](mailto:jlee6574@usc.edu)

**Student Assistant:** Floria Huang

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

**IT Help:** Creative Tech Help Desk

Tech support:

[creativetech@cinema.usc.edu](mailto:creativetech@cinema.usc.edu)

**Contact Info:** 213-821-4571

**THIS IS AN IN-PERSON CLASS**

## **Course Description**

This course teaches 3D modeling and pipeline integration of 3D models for the use in production. Also, students will learn the fundamental human anatomy and practice human body modeling. 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 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 create 3D model from 2D designs.
- Learn the basic human anatomy for 3D modeling fundamental
- Learn how 3D models are used in productions by other departments.
- Understand common production standards for 3D models.
- Learn the concepts for creating hair, fur, feathers, and clothing for characters.
- Create 3D models and texture them for their animation projects or personal enlightenment.
- 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 on campus for the Fall semester and will receive a Letter grade.

## **Technological Proficiency and Hardware/Software Required**

Autodesk Maya, Maxon Zbrush, 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>
- Maxon 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 male or female body provided by the instructor and on two characters of their choosing. Ideally the characters students choose will be for their personal projects and complex enough to challenge them but still meet their assignment deadlines.

- **Base model** (4 weeks) will work as a test subject where the new techniques and pipeline will be learned. Pick male or female anatomy-based reference.
- **Mid-term** (4 weeks) will work as a practice subject where the new techniques in Maya and Zbrush will be learned. Pick any character from animated film.
- **Final project** (5 weeks) will work reinforcing the techniques and methods learned from Base model and Mid-term projects in addition to learning alternative modeling techniques in production.

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.

## **AI (*Artificial Intelligence/Generative software*)**

AI may be used as reference or inspiration for your work, but we do not accept AI-generated art as your own original work as it is deemed derivative of other works whose originators may not have granted permission for its use.

## **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.

## **Grading Breakdown**

Evaluation criteria

- **Assignments & Mid-term:** Each week students will be given weekly assignments. These assignments are required to be completed by next week class.

Mid-term and weekly assignments will need to be uploaded into a class online drive, to be reviewed prior to class.

- **Final Project:** Students will model and texture a character of their choosing and provide a video turntable of each 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

<b>Assessment Tool (assignments)</b>	<b>Points</b>	<b>% of Grade</b>
Class participation	10	10
Assignment (include 'Base model')	30	20
Mid-term	30	30
Final project	30	40
<b>TOTAL</b>	<b>100</b>	<b>100</b>

### **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 6:00 pm PST by the Tuesday prior to the next class.

### **Grading Timeline**

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

**Attendance**

10% of the grade may be awarded for class attendance, but non-attendance can be the basis for lowering the grade, when clearly stated on the syllabus. Attendance policies may address student athletes with approved Travel Request Letters and students who give advance notice of religious observation.

**This is an in-person class**

In accordance with university recommendations, all meetings of this class will be held in person. Students who become ill and need to self-isolate will be supported in their efforts to stay current with classwork and assignments, to the extent possible. Please contact Prof. Lee and your SA Floria Huang at least one hour prior to class start time if you become ill and need to self-isolate. Do not come to class if you are experiencing any symptoms of COVID-19 or other illnesses.

Timely attendance is mandatory and failure to attend all class sections from beginning to end may affect grades.

- Exemptions will be allowed on a case-by-case basis and must be supported by a written accommodation request from the USC Office of Student Accessibility Services (OSAS).
- Students who become ill and need to self-isolate will be supported in their efforts to stay current with classwork and assignments.

**Students must contact the professor or SA 24 hours prior to class start time if they need to miss class for any reason.**

**Info on use of AI Generators in the John C. Hench Division of Animation and Digital Arts**

In this course, AI may be used as reference or inspiration for your work, but we do not accept AI-generated art as your own original work as it is deemed derivative of other works whose originators may not have granted permission for its use.

**Academic Integrity**

The University of Southern California is foremost a learning community committed to fostering successful scholars and researchers dedicated to the pursuit of knowledge and the transmission of ideas. Academic misconduct is in contrast to the university's mission to educate students through a broad array of first-rank academic, professional, and extracurricular programs and includes any act of dishonesty in the submission of academic work (either in draft or final form).

This course will follow the expectations for academic integrity as stated in the [USC Student Handbook](#). All students are expected to submit assignments that are original work and prepared specifically for the course/section in this academic term. You may not submit work written by others or “recycle” work prepared for other courses without obtaining written permission from the instructor(s). Students suspected of engaging in academic misconduct will be reported to the Office of Academic Integrity.

Other violations of academic misconduct include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

The impact of academic dishonesty is far-reaching and is considered a serious offense against the university and could result in outcomes such as failure on the assignment, failure in the course, suspension, or even expulsion from the university.

For more information about academic integrity see the [student handbook](#) or the [Office of Academic Integrity's website](#), and university policies on [Research and Scholarship Misconduct](#).

### **Policy for the use of AI Generators in the John C. Hench Division of Animation and Digital Arts**

In this course, AI may be used as reference or inspiration for your work, but we do not accept AI-generated art as your own original work as it is deemed derivative of other works whose originators may not have granted permission for its use.

You should also be aware that AI text generation tools may present incorrect information, biased responses, and incomplete analyses; thus, they are not yet prepared to produce text that meets the standards of this course. To adhere to our university values, you must cite any AI-generated material (e.g., text, images, etc.) included or referenced in your work and provide the prompts used to generate the content. Using an AI tool to generate content without proper attribution will be treated as plagiarism and reported to the Office of Academic Integrity. Please review the instructions in each assignment for more details on how and when to use AI Generators for your submissions.

### **Course Content Distribution and Synchronous Session Recordings Policies**

USC has policies that prohibit recording and distribution of any synchronous and asynchronous course content outside of the learning environment.

Recording a university class without the express permission of the instructor and announcement to the class, or unless conducted pursuant to an Office of Student Accessibility Services (OSAS) accommodation. Recording can inhibit free discussion in the future, and thus infringe on the academic freedom of other students as well as the instructor. ([Living our Unifying Values: The USC Student Handbook](#), page 13).

Distribution or use of notes, recordings, exams, or other intellectual property, based on university classes or lectures without the express permission of the instructor for purposes other than individual or group study. This includes but is not limited to providing materials for distribution by services publishing course materials. 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. ([Living our Unifying Values: The USC Student Handbook](#), page 13).

### **Course Evaluations**

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.

## Course Schedule: A Weekly Breakdown

	Topics/Daily Activities	Deliverables
<b>Week 1</b> <b>8/27</b>	<ul style="list-style-type: none"> <li>• Introductions</li> <li>• Animation production overview</li> <li>• Intro to Maya</li> <li>• Maya UI, scene creation, directories, modeling tools</li> </ul>	
<b>Week 2</b> <b>9/3</b>	<ul style="list-style-type: none"> <li>• Continue tools in maya</li> <li>• Maya image plane setup</li> <li>• Low polygon modeling demo</li> <li>• Modeling pipeline</li> </ul>	<b>Due 9/10</b> <ul style="list-style-type: none"> <li>• Complete the helmet modeling</li> </ul>
<b>Week 3</b> <b>9/10</b>	<ul style="list-style-type: none"> <li>• Human head anatomy</li> <li>• Learn how to prepare images for Image plane in Photoshop</li> <li>• Use 'Create Polygon' tool to start face modeling</li> </ul>	<b>Due 9/17</b> <ul style="list-style-type: none"> <li>• Complete the face area of the head</li> </ul>
<b>Week 4</b> <b>9/17</b>	<ul style="list-style-type: none"> <li>• Face extras</li> <li>• Nose and ear anatomy</li> <li>• Nose and ear modeling</li> <li>• Explore 'Sculpting Tools' in Maya</li> </ul>	<b>Due 9/24</b> <ul style="list-style-type: none"> <li>• Complete the head model with nose and ear parts.</li> </ul>
<b>Week 5</b> <b>9/24</b>	<ul style="list-style-type: none"> <li>• Body anatomy – torso, hand and foot</li> <li>• Torso, hand and foot modeling</li> <li>• Using Primitives to build torso</li> <li>• Deformer – Lattice tool</li> </ul>	<b>Due 10/1</b> <ul style="list-style-type: none"> <li>• Complete the body model with hands and feet.</li> <li>• Pick a character from an animated film that you like for Mid- term project</li> </ul>

<b>Week 6</b> <b>10/1</b>	<ul style="list-style-type: none"> <li>• UV basics- UV tools</li> <li>• Unwrap face UVs</li> <li>• UDIM &amp; 0-1 UV space</li> <li>• File formats</li> </ul>	<b>Due 10/8</b> <ul style="list-style-type: none"> <li>• Start to work on Mid-term project. Expect 25% done (ex. Head part).</li> </ul>
<b>Week 7</b> <b>10/8</b>	<ul style="list-style-type: none"> <li>• Texture maps <ul style="list-style-type: none"> <li>- Color, Bump, Spec and Normal</li> </ul> </li> <li>• Learn how to create color maps in Photoshop with Maya Snapshot</li> <li>• Create Normal map in Maya</li> <li>• Introduction of Zbrush <ul style="list-style-type: none"> <li>- UI, menu, tools, brushes etc.</li> </ul> </li> <li>• Extract Normal map in Zbrush</li> </ul>	<b>Due 10/15</b> <ul style="list-style-type: none"> <li>• Expect 50% done (ex. Body part).</li> </ul>
<b>Week 8</b> <b>10/15</b>	<ul style="list-style-type: none"> <li>• Create clothes in Maya</li> <li>• Add wrinkle details in Zbrush and bake Normal maps.</li> <li>• Model geometry hair clumps</li> <li>• Face extras - Create brow hair, eyelash and temporary lip</li> </ul>	<b>Due 10/22</b> <ul style="list-style-type: none"> <li>• Continue to work.</li> <li>• Expect 75% done (ex. Clothes).</li> </ul>
<b>Oct. 10-11</b>	<b>Fall Recess</b>	

<b>Week 9</b> <b>10/22</b>	<ul style="list-style-type: none"> <li>• Pose in Zbrush - Transpose</li> <li>• Rigging characters in Maya</li> <li>• Posing characters and neutral pose</li> </ul>	<b>Due 10/29</b> <ul style="list-style-type: none"> <li>• Create a pose in Maya or Zbrush.</li> </ul>
<b>Week 10</b> <b>10/29</b>	<ul style="list-style-type: none"> <li>• Blender Shape &amp; Wrap deform tools</li> <li>• Create Facial expressions</li> <li>• Using Wrap &amp; Blend Shape tool for posing with clothes</li> <li>• Retopology - Maya Quad tools <ul style="list-style-type: none"> <li>- Zbrush ZRemesher</li> </ul> </li> </ul>	<b>Due 11/5</b> <ul style="list-style-type: none"> <li>• <b>Submit Mid-term</b> project.</li> <li>• Includes simple pose, expression, and extras.</li> <li>• Prepare the Final project plan <ul style="list-style-type: none"> <li>– Pick a character with 2D concepts</li> </ul> </li> </ul>
<b>Week 11</b> <b>11/5</b>	<ul style="list-style-type: none"> <li>• Intro to Substance Painter. <ul style="list-style-type: none"> <li>- UI, work space</li> <li>- Layers</li> <li>- Smart materials</li> </ul> </li> <li>• Maya and Substance Painter work process</li> </ul>	<b>Due 11/12</b> <ul style="list-style-type: none"> <li>• Start the Final project either Maya or Zbrush.</li> <li>• Expect 20% complete (ex. Head and Body).</li> </ul>



<b>Week 12</b> <b>11/12</b>	<ul style="list-style-type: none"> <li>CG hair, fur, and feather discussion.</li> <li>Xgen in Maya.</li> <li>Fibermesh in Zbrush.</li> </ul>	<b>Due 11/19</b> <ul style="list-style-type: none"> <li>Create a facial expression.</li> <li>Expect 40% complete (ex. Clothes and Pose).</li> </ul>
<b>Week 13</b> <b>11/19</b>	<ul style="list-style-type: none"> <li>Lighting basics</li> <li>3-point lighting: Key, Fill and Rim light</li> <li>Setup background image.</li> </ul>	<b>Due 11/26</b> <ul style="list-style-type: none"> <li>Create some form of hair for your character using Xgen in Maya or fibermesh in Zbrush.</li> <li>Expect 60% complete (ex. UVs and hair).</li> </ul>
<b>Week 14</b> <b>11/26</b>	<ul style="list-style-type: none"> <li>Renderer - Maya Arnold</li> <li>Create a back stage &amp; Arnold lights</li> <li>Learn how to assign the textures to Arnold shader</li> </ul>	<b>Due 12/3</b> <ul style="list-style-type: none"> <li>Continue to work.</li> <li>Expect 80% complete (ex. Texture).</li> </ul>
<b>Nov. 27-</b> <b>Dec. 1</b>	<b>Thanksgiving Break</b>	
<b>Week 15</b> <b>12/3</b>	<ul style="list-style-type: none"> <li>Rendering - Turntable movies</li> <li>Final checkup &amp; critiques</li> </ul>	<b>Due 12/17 FINAL</b> <ul style="list-style-type: none"> <li>Render set up and final tweaks.</li> <li>Prepare the final presentation.</li> </ul>
<b>Dec. 7-10</b>	<b>Study Days</b>	
<b>FINAL</b> <b>12/17</b>		<b>Submit Final Project by 12/17 7pm</b> <ul style="list-style-type: none"> <li>Provide a video turntable of the Final project.</li> <li>Provide a character model sheet.</li> <li>Description includes initial designs of the character.</li> </ul>

## The School of Cinematic Arts Support Systems and Statements

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 persons 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) or anonymously submit a report on SCA Community: <https://scacommunity.usc.edu/secure/diversityEquity/>. You can also read more about how to report discrimination based on a protected class here: <https://eeotix.usc.edu/get-help/what-are-my-choices-text/>

**SCA Office of Student Services**

213-740-8358 or [StudentAffairs@cinema.usc.edu](mailto:StudentAffairs@cinema.usc.edu)

**SCA Embedded Therapists**

Students enrolled in an SCA major program can schedule an appointment with an embedded therapist for the School of Cinematic Arts through the student health portal [MySHR](#).

**SCA Community**

For additional SCA resources please visit [scacommunity.usc.edu](http://scacommunity.usc.edu)

**[Creative Technology and Support](#)**

(213) 821-4571

[creativetech@cinema.usc.edu](mailto:creativetech@cinema.usc.edu)

Location: SCA 128

Support Hours: Monday - Friday, 8:30 AM - 8:30 PM

<https://knowledgebase.sca.usc.edu/>

<https://workstations.sca.usc.edu/>

**Physical Production Office**

The Physical Production Office assists students and faculty with production-related matters including production numbers, locations, permits, insurance, gear and equipment vendors, safety issues, and crew and actor policies. More information can be found by visiting the online [Production Procedures and Safety Handbook](#). The Physical Production Office is located at SCA 304 and is open every weekday from 9am-5pm (Fridays 9am-1pm). You can also reach the Office by calling 213-740-1298 or by email at [spo@cinema.usc.edu](mailto:spo@cinema.usc.edu).

**Office of Industry Relations**

School of Cinematic Arts - SCA 235

(213) 740-4432

[ir@cinema.usc.edu](mailto:ir@cinema.usc.edu)

**Cinematic Arts Library Research Guide**

<https://libguides.usc.edu/cinema>

**Statement on Academic Conduct and Support Systems****Academic Integrity:**

The University of Southern California is a learning community committed to developing successful scholars and researchers dedicated to the pursuit of knowledge and the dissemination of ideas. Academic misconduct, which includes any act of dishonesty in the production or submission of academic work, compromises the integrity of the person who commits the act and can impugn the perceived integrity of the entire university community. It stands in opposition to the university's mission to research, educate, and contribute productively to our community and the world.

All students are expected to submit assignments that represent their own original work, and that have been prepared specifically for the course or section for which they have been submitted. You may not submit work written by others or "recycle" work prepared for other courses without obtaining written permission from the instructor(s).

Other violations of academic integrity include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), collusion, knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

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For more information about academic integrity see [the student handbook](#) or the [Office of Academic Integrity's website](#), and university policies on [Research and Scholarship Misconduct](#).

Please ask your instructor if you are unsure what constitutes unauthorized assistance on an exam or assignment, or what information requires citation and/or attribution.

### **Students and Disability Accommodations:**

USC welcomes students with disabilities into all of the University's educational programs. [The Office of Student Accessibility Services](#) (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodation is not retroactive. More information can be found at [osas.usc.edu](https://osas.usc.edu). You may contact OSAS at (213) 740-0776 or via email at [osasfrontdesk@usc.edu](mailto:osasfrontdesk@usc.edu).

### **Support Systems:**

*COVID-19 Resource Center* - <https://coronavirus.usc.edu/what-should-i-do/>

*Counseling and Mental Health* - (213) 740-9355 – 24/7 on call

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

*988 Suicide and Crisis Lifeline* - 988 for both calls and text messages – 24/7 on call

The 988 Suicide and Crisis Lifeline (formerly known as the National Suicide Prevention Lifeline) provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week, across the United States. The Lifeline is comprised of a national network of over 200 local crisis centers, combining custom local care and resources with national standards and best practices. The new, shorter phone number makes it easier for people to remember and access mental health crisis services (though the previous 1 (800) 273-8255 number will continue to function indefinitely) and represents a continued commitment to those in crisis.

*Relationship and Sexual Violence Prevention Services (RSVP)* - (213) 740-9355(WELL) – 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender- and power-based harm (including sexual assault, intimate partner violence, and stalking).

*Office for Equity, Equal Opportunity, and Title IX (EEO-TIX)* - (213) 740-5086

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.

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

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

[The Office of Student Accessibility Services \(OSAS\)](#) - (213) 740-0776

OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

[USC Campus Support and Intervention](#) - (213) 740-0411

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

[Diversity, Equity and Inclusion](#) - (213) 740-2101

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

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

Non-emergency assistance or information.

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

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.

[Occupational Therapy Faculty Practice](#) - (323) 442-2850 or [otfp@med.usc.edu](mailto:otfp@med.usc.edu)

Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.

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