

**CTAN 443L Character Development for 3D Animation and Games
(2 units)
Spring 2019**

Course Information

Course: Character Development for 3D Animation and Games,
CTAN 443L, 2 units

Place and Time: [SCI L113](#)
10:00-12:50pm Tuesday

Class web page: <http://gamepipe.usc.edu/animation/>

Instructor: Scott Easley

Office location: Office 207 Gamepipe Labs
<http://tinyurl.com/q8n4emg>

Email: seasley@usc.edu

Office hours: Tuesday 2:00 p.m. – 4:00 p.m.
Wednesday 2:00 p.m. – 5:00 p.m.

Course TA: Yimin Zhang

Email: yiminzha@usc.edu

Course Objective

This course teaches both rigging and animation of 3d characters using the software Maya. The course also introduces the students to using custom scripts and efficient pipeline techniques to finish and submit work.

Course Description

This course instructs the technical and artistic development to achieving unique, compelling, and intuitive character animation for video games. This course also works in tandem with the USC Games Advanced Games classes to create animations that bring life to the world that USC Games students create.

Prerequisite(s): CTAN 452

Recommended Preparation: Familiarity with Maya and/or any 3d animation is helpful.

Course Notes: Lectures will be posted on Blackboard and links to youtube videos will sometimes supplement (but not replace) the lessons taught in class.

Required Reading and Supplementary Materials: Supplementary materials will be posted on the class website tutorial section:

<http://gamepipe.usc.edu/animation/tutorials.php>

Evaluation of student performance

Assignments	Points	% of Grade
Rigged Char	30	20
Moves 1,2	30	30
Moves 3,4,5	40	50
	Total:	100

Finished 3d work of both rigging and animation will be reviewed by Professor Easley after hours of the class, with personal reviews of the work during class time.

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

Course Outline

Week 1 (Jan 8th)

- Introduction and course overview/Animation Design Overview
- Introduction to course expectations and methodologies. Components, concepts, and deliverables for the course will be discussed.
- Proficiency Survey: Forms and interviews will take place to acquire student artistic skill sets and interests
- Visual Design Overview
- **Homework:** Familiarity with provided 'Skyrigged' simple Ik and FK rig in class. Video on tutorial page
- **Deliverables:** Study sprite sheets for basic moves choose basic walk.

Week 2 (Jan 15th)

- Character Visual Design- Designing characters for
 - Side-scrollers
 - Arial design
 - Puzzle design
 - 3D (versus 2D)
- **Homework:** Study animation using Muybridge photographs
- **Deliverables:** Base poses of a 3d animation walk using sprite sheet

Week 3 (Jan 22nd)

- Pre-design
 - Working from concept to screen
 - Realism versus cartoony
 - Greyboxing
- **Homework:** Sketches of character
 - Find similar 3d mesh
 - Bitgem3d
 - Polycount
- **Deliverables:** Animate same walk 3d animation using sprite sheet (viewed from front)

Week 4 (Jan 29th)

- Weight and gravity in the Game world
- Fundamentals of weight
- Fundamentals of gravity and speed in character
- **Homework:** List animation needs for chosen character and finalize proportions
- **Deliverables:** Polish walk (viewed in perspective)

Week 5 (Feb 5th)

- Animating in 3D worlds
 - Character weighting Fundamentals
 - Weighting overview
- **Homework:** Start weighting chosen 3d character

Week 6 (Feb 12th)

- Character Design and Animation
 - Finish weighting
 - Yoga animation
 - Body Posing (Key poses)
- **Homework:** Finish weighting chosen 3d character

Week 7 (Feb 19th)

- Terrain design and animation (underwater, Earth, microscopic?)
 - Building design
 - Highlighting and refinement
 - Closed-quarters
 - Outdoors action
- **Deliverables:** Finish first-pass walk and weighting for 3d character

Week 8 (Feb 26th)

- From Models to the Engine/Designing for models for game constraints
 - Motion manipulated as function curves
 - The polygon count
 - Graph Editor/Animation exporter
 - Baking/Exporting the character
- **Deliverables:** Bake and export character to Quicktime viewer for verification.

Week 9 (Mar 5th)

- Designing in Engine
 - Exporting animations across engines
 - Creating functional and dynamic hierarchies
 - Survey of possible motion in engine design capabilities
- **Homework:** Choose 3 other animations (Ex: Run, Jump, Punch)

NOTE: The week of Mar 11th is Spring Break

<https://academics.usc.edu/calendar/academic-calendar-2018-2019/>

Week 10 (Mar 19th)

- Interface Design
 - Interface Placement and character movement (Intuitive or Linear)
 - Basic concepts in developing your interface for player motion
- **Homework:** Begin animating move 1

Week 11 (Mar 26th)

- Iconography
 - Review of move 1
 - Advanced concepts in character UI design
- **Homework:** Finish animating move 1

Week 12 (Apr 2nd)

- Advanced Motion
 - Blending two motions
 - Fake vs. Dynamic motion (ragdolling)
- **Homework:** Begin animating move 2

Week 13 (Apr 9th)

- Custom scriptsets
- Review of Move 2
- **Deliverable:** Finish animating move 2 – export it

Week 14 (Apr 16th)

- Continue to work on move set
- **Deliverable:** Start animating move 3

Week 15 (Apr 23rd)

- Continue to work on move set
- **Deliverable:** 3 chosen moves are due:
 - Finish and export move3

Study Days: April 27 – 30th

Week 16 (April 30th)

- **Final:**
 - Final Review
 - Evaluations and Post mortem

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/sssa

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