

CTAN 480 – Advanced 3-D Game Character Animation

Spring 2025 – Lecture/Lab Time: Monday, Thursday: 6:00 - 7:50 pm Units: 2 Location: SCI L105

Instructor: Cristian Thompson Office:Remote Office Hours: By Request Contact Info: ct84095@usc.edu

TA: TBD Contact Info: TBD Office Hours: By Request

Course Description and Notes

This course is a BFA GART Advanced-level course creating character animation for games. Focus is on professional practice and collaboration, 3d animation production, principles, presentation and Unreal techniques, workflows and processes with bipedal and non-bipedal characters.

- A "playable" in-engine character with basic locomotion, idles and attacks.
- Projects can be realized in 3D
- Animation Style development
- Content organization docs: e.g.: asset lists, schedule, etc.
- Integration of assets into game engine using Maya Tools
- Unreal Animation Systems fundamentals (AnimBlueprint, Blendspace, AnimMontage, etc)

• Project work-product integrated into the student's website/online portfolio (graded as a part of the course final).

Learning Objectives

By the end of this course, students will be able to:

- Use industry standard process, software and tools to create 3-D character animations and integrate them into a game engine. (UEFN, UNREAL, Unity).
- Use functional critique to improve their work.
- Communicate (verbal and written) in a Professional manner
- Identify opportunities and future career tracks in the field of Animation
- Use the learnings of the course as a basis for the student's choice to follow the BFA GART Generalist Track.

• Collaborate individually, and in small groups to provide and receive critique and feedback as the student develops the specific assignments each week.

• Create and maintain a publicly accessible online portfolio showing their technical and creative process.

Integrate the course work-product into their portfolios, telling the story of their work in this course.

- Present their work using professional documentation and presentation techniques.
- Be prepared for USC's Interactive Media and Games Division's AGP capstone.

• Assignments in this course are used to develop the creative and technical tool skills to produce the "work products" used by industry professionals and to build the students portfolio.

Prerequisite(s):

CTAN 280 Intermediate 3-D Character Animation

Recommended Preparation and Optional Course Materials:

Exploring and using the development tools in UNREAL, UEFN or UNITY will prepare you for this course. Links to useful tutorial videos (mainly sourced from YouTube) will be provided in Brightspace to support completion of the assignments.

Technological Proficiency and Hardware/Software Required:

Fundamental proficiency with MS Office and/or Google Suite tools. A proficiency in Adobe Creative Cloud software and 3D software such as Maya and Blender.

• Agnostic 3D software

- o <u>3DS Max</u> o <u>Maya</u> o <u>BLENDER</u> o <u>UNREAL Engine</u> o <u>UEFN – Unreal Fortnight</u> o <u>UNITY</u>
- <u>Adobe Creative Cloud tools (Paid Subscription)</u>
 - o Or equivalent toolset such as ACDSEE (Free)
- MS Office, Google Docs: for written critique, style guides, and presentations
- USC Computing Center Laptop Loaner Program.
- USC Technology Support Links:
 - o <u>Zoom information for students</u> o<u>USC Brightspace</u>

o Software available to USC Campus

USC BFA Game Art Projects/Portfolio - Core Competencies

Game art courses are built around projects intended to unlock your creative potential, hone your ability for useful and actionable critique, advance your learning capacity, and build your "work-ready" professional portfolio and toolbox. These core competencies are embedded in all game art courses and include the following skills and abilities. Think of these as exercising your art muscles on a consistent and regular basis, developing creative literacy and "muscle-memory".

- Presentation and Critique
 - \circ Presenting your work Understanding your audience.
 - \circ Online Portfolio and deployment tools
 - \circ Giving and Receiving Critique
- Concept Development,
 - Critical thinking (see below)
 - \circ Research, Ideation, Sketching, and Rendering
 - Principles and Process
- Literacy
- 3D software mastery
 - \circ Tool agnostic foundation
 - Learning How to Learn
- Professional Principles, Process and Practice
 - Principles
 - First: Make it ugly
 - Game Art serves the design of the Game and Gameplay
 - Reducing Uncertainty
 - Eliminating Fear-based development
 - Data-informed guidance
- E.g.: past AGP Projects Student postmortems
 - Critical Thinking
- Process Stages of Development Our focus in this specific course is the following Phases of development:
 - Discovery
 - Pre-production
 - Prototyping
 - Beautiful Corner
 - In Game Integration
 - X-SLICE Toll gate
- Professional Practice
 - Critique
 - Documentation
 - Presentation

Critical Thinking - Principles and Components

Every project in development will have its parts reworked, modified or outright changed throughout production during its evolution. To be comfortable throughout these natural cycles of production and before they begin any technical work the student needs to become very aware of the game project, the various digital journeys of a player and the proposed world and gameplay. This will allow them to think critically about the project's art needs, and more importantly how to organize and set up the pipeline to facilitate ease of iterative change.

• Test using previous or current AGP project

- $^{\circ}$ The student will receive the initial pitch of the game including any addendum data
- \circ Submit projections of specific changes to the project that may come up in production
- \circ In response to these issues, the student will then submit proposals of:
 - Pipeline of work
 - Software needed
 - Modularity
 - Schedule of specific items to be built
 - \circ Semester 1
 - Semester 2
 - Asset organization
 - Naming convention
 - Format
 - Folder Hierarchy
 - Communication Schedule with larger art team
 - Approval hierarchy in management

Resources: Creative Content Software

- Artstation (pro level): <u>https://bit.ly/45zLgwT</u>
- Zoom information for students
- Autodesk Help (official Site): <u>https://bit.ly/3qlqwEo</u>
- Maya Learning Channel on YouTube: <u>https://bit.ly/44j8XJ0</u>
- 3D Maya Animation Excellent intro course on YouTube: <u>https://bit.ly/3E7bwTP</u>
- Alan Becker 12 Principles of Animation: <u>https://bit.ly/30Ewnml</u>
- Brightspace help for students
- Software available to USC Campus
- Autodesk Student Software
- Adobe Creative Cloud for Students
- Blender
- Digital Mood Board Reference Software: <u>https://www.pureref.com/</u>
- UEFN Unreal Fortnight
- UNITY
- YouTube

Participation

Your participation grade (5% of your Assignments grade) is the grade you receive for submitting your work and completing assigned critiques on time.

Use of Pre-made assets

Some rigged assets will be provided. You may also use premade rigged assets of your choice. You must always use your own animation work (keyframes, graph editor etc.) for assignments

Using Brightspace: Learning Content Management System

All course materials including grading, attendance, assignment descriptions and submission guidelines, lecture topics, lab activities, course announcements, updates, and so forth will be posted on Brightspace. Course components include the following:

- Lecture and in-class assignments
- Lab in-class assignments and exercises
- Homework assignments presentation and critique
- Project completion verification
- Written participation in critique when assigned
- Grading
- Sketchbooks (may be required)

• Bring analog note taking materials, sketchbooks, or other materials for brainstorming, note taking, sketching, and design work. See the Professor if you require accommodations.

Course Specific Policies

Access to the internet and Social Media in class

We will access the interwebs for in-class assignments. However, the in-class use of social media, including text and internet messaging are prohibited unless explicitly permitted by the instructor. A 5-point deduction will result from each occurrence of a student using the social media noted above. You may freely use these tools during breaks. Please see the chart below: Points Breakdown for additional information.

Attendance Policy

Attendance is not graded. However, punctual attendance at all classes is mandatory. Students arriving more than five minutes late to three classes, more than ten minutes late to a single class, or leaving early, will be marked as having an absence from class.* If you must be absent, contact your professor before class starts. Communication is key to professional practice and conduct. Absences Affecting Grading

- Two unexcused absences: lowers your grade one full letter grade (e.g., from A to B)
- Three unexcused absences: lowers your grade two full letter grades (e.g., from A to C)
- Four or more unexcused absences: a request to withdraw from course at the instructor's Discretion
- *Avoid unexcused absences by communicating directly with the professor (see above).

Description and Assessment of Assignments

Students will create both interactive experiences and documentation. The interactive experiences will be either simple prototypes of core game mechanics or a more polished vertical slice. Assignments will be graded on effort, collaboration, execution as compared to goal, and overall quality.

Documentation may consist of: pitch presentations, design documents, technical specifications, playtesting logs, design journals, and other forms of documentation as assigned. Students will learn professional documentation and presentation techniques. Assignments will be graded on effort, collaboration, execution, and, where applicable, iterative improvement.

Prototype Deliverables: Core poses, blocking, for non-bipedal character for use in a student game. Includes planned moves. View Model Animation blocking

Midterm Presentation: Unreal Character Animation, using Unreal to animate a small character set as an NPC.

Final Deliverables: Highly polished moves for an in-game non-bipedal character and View Model Character imported into Unreal project.

Final Presentation: Presentation of final polished animations in-game non-bipedal character and View Model Character Animations. As well as NPC. Includes performance capture of animation in game.

Assignment	% of Grade	Due
Prototype Deliverables	20	Week 6
Midterm Presentation	20	Week 10
Final Deliverables	20	Ongoing
Final Presentation	25	Week 15
Participation	15	Ongoing
TOTAL	100	

Grading Breakdown

Game Art Projects/Portfolio:

- All game art courses are built around projects intended to unlock your creative potential, hone your ability for useful and actionable critique, advance your learning capacity, and build your "work-ready" professional portfolio.
- Your online portfolio will be reviewed by faculty and industry professionals, and feedback will be given. This review is an ongoing part of our Game Art culture: always be prepared to share your work.
- Every Game Art course requires an updated online portfolio showing your work and telling the story of your learning.

CTAN 280 portfolio projects include, but are not limited to:

- Animated non-bipedal character
- Your portfolio website and behance course project
- Animated videos showing:
 - o Walk, run, special action, attack combos and death
- View Model Character Animations:
 - Shoot, Reload, Melee, Idle, Weapon Swap, Aiming, etc.
- NPC Character Animated in Unreal: Idle, Talk, Action 1, Action 2.
- Tech-art style guides detailing the process of migrating your work into Unreal and Unity game engines
- Unreal Procedural Animation using Control Rig, AnimBlueprints, etc.
- Niagara Basics (Unreal VFXs)

Class Meeting Agenda

Beginning the week of Jan 13th, 2025 this course meets twice a week from SCIL105. Each meeting will follow this basic agenda:

- Introduction and activity
- Next project discussion
- Project review and critique
- Submit in-class work

Each basic project takes approx. 2 weeks to complete, usually delivered in 2 versions. Version 1 (v1) is the rough guide for review and feedback which is used for v2.

Assignment Submission Policy

Written assignments and prototypes are due at the beginning of class of the assigned week.

Diversity

In making games and interactive media in a professional and ethical way, it is important that you consider diversity. When looking at your projects, you should consider who is depicted and how this work will impact others. What kinds of individuals and communities are represented in your work? What point of view does your work express? This class may assist you in learning how to make work that includes diverse viewpoints, and may discuss racial, religious, gender and sexual orientation issues in the context of games and interactive media.

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.

Creating an Inclusive Space

In this class, we make a commitment to foster a welcoming and supportive environment where students of all identities and backgrounds can flourish. This means that you will be expected to offer content warnings when appropriate, use students' stated pronouns, and respect self-identifications. While debate and discussion are welcome, please remain aware of the implications of your words and the images that you include in your work. If the instructor or another student points out something problematic, avoid being defensive; this is a valuable opportunity for us to grow and learn together. If you have a concern about any aspect of the class, you are welcome to speak with the instructor or the advisor for the division.

Syllabus Updates

This syllabus is liable to change up to the beginning of class and possibly over the semester. Please check the posted syllabus regularly, and note all changes that are shared by the instructor in class.

Additional Policies

This course emphasizes teamwork, and one of the desired learning outcomes is for students to develop communication and leadership skills. Students are expected to treat each other with respect, listen to each other, and work together towards a shared, collaborative, healthy work culture. Any student found to be disruptive or engaging in behavior that doesn't meet the standards of respectful teamwork may be asked to leave by the instructor.

If you experience any problems with a fellow student regarding their work, please bring up your concerns with the instructor.

Course Schedule: A Weekly Breakdown **Subject to change**

	Topics/Lectures	In Class Exercises	Homework/ Due
Week 1	Introduction to the Course and Goals. Intro to Advanced Game Animation	Research: Creatures animations from games. Designers are chosen and teams present their attack idea	Homework: Prepare Pitch of the chosen attack move, and how it works in game.
	Presenting Pitch Combat Design for Animators 101	Teams begin animating their special move	Present block outs by next class Propose folder structure.
Week 2	Lecture: How do Animals Move Where can I find Resources	Create Idle, walk/run animation cycle for their character	Homework: Blockout passes of all animations
Week 3	Lecture: Animation Layers Maya Procedural Animation Unreal	Take the previous animations further with Animation Layers, practicing non-destructive workflows. Import animations into Unreal, add Procedural elements to our creature.	Homework: New pass of animations with shakes, and movements. In Unreal show off Procedural element
Week 4	Lecture: Combat Design for Animators 102	Create an attack combo for your creature, understand the concept of fairness, and context to better work with designers. Continue working on attacks	Due: Block outs Import into Unreal. Add FX to the attack in a montage.
Week 5	Lecture: Character gravity, weight speed	Finish core combat, hit reaction, death, fidget for your creature Continue working on animations	Due: Block outs 2nd Pass of hit react and Death
Week 6	Lecture: Skeletal Mesh Set Up for Advanced Characters Unreal Set Up	Explain and walk through how we handle a complicated character set up and how to use bones to transfer useful information to Unreal.	Due: In class assignment Feb 20th All Creature animations in Unreal

Week 7	Lecture: Creating an NPC Animation List Animating in Unreal pros and cons, tools/resources	Learn about the needs of non-playable characters, how we animate them. Plan out animations required Animate the character inside of Unreal using the Sequencer and Control Rig	Due: Brief on character bio and back story Block out of 1-2 actions
Week 8	Lecture: How to schedule your animations – which will take longer vs. which ones team needs first	Continue working on NPC work Further set up Creature enemy if caught up.	Due: Completed NPC animations.
Week 9	Lecture: Behavior set up NPC	Unreal integration set up NPC characters to do their thing. Give our creature a brain	Due: Unreal set up of NPC character complete Creature enemy alive

Week 10	MIDTERM PRESENTATION	MIDTERM PROTOTYPE Students present (individually) their animated characters.	Due: Midterm Presentation
Week 11	Midterm Review View Model Animations Video Reference and YOU	Animator becomes the designer to choose a weapon to be creative with and will make a set of animations for a View Model Character.	Due: At next class a chosen weapon, and planning for View Model Character. Idle and Shooting animations block out
Week 12	Lecture : Game fixes vs Animation fixes	Continue working on next animations. Reload, Taunt, Fidget, Melee	Due: Block outs Integrated in Unreal
Week 13	Lecture: Demo Reel Breakdowns Show your work!	Create a special ability move, similar to popular hero games. Finish core combat.	Due: Integrate Anims into Unreal

Week 14	Lab work for finishing moves	Polish week, final set up in Unreal. Adding FXs, working Blends	
Week 15	Final Project Run your game, attack your creature, use your special move, talk with NPC	In addition to the final showing off our work, we will export gameplay and take screenshots of our work both technical and artistic	DUE: Final Presentation Final Publication
Final	Future explorations in Real Time Animation		Final Documentation

Holidays and Import Events

Jan. 20	Martin Luther King Day, university holiday
Feb. 17	Presidents' Day, university holiday
March 16-23	Spring recess
April 11	Last day to drop a class with a mark of "W" for Session 001
May 2	Spring semester classes end
May 3-6	Study days
May 7-14	Final examinations
May 14	Spring semester ends
May 14-17	Commencement Week

Statement on Academic Conduct and Support Systems

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.

Academic dishonesty has a far-reaching impact and is considered a serious offense against the university. Violations will result in a grade penalty, such as a failing grade on the assignment or in the course, and disciplinary action from the university itself, such as suspension or even expulsion.

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.

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

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information, which had been distributed to students or in any way had been displayed for use in relation to the class, whether obtained in class, via email, on the internet, or via any other media. Distributing course material without the instructor's permission will be presumed to be an intentional act to facilitate or enable academic dishonestly and is strictly prohibited. (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. Contact CET for support in creating a mid-semester evaluation.]

University Academic and Support Systems

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 accommodations are not retroactive. More information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Student Financial Aid and Satisfactory Academic Progress:

To be eligible for certain kinds of financial aid, students are required to maintain Satisfactory Academic Progress (SAP) toward their degree objectives. Visit the Financial Aid Office webpage for undergraduate and graduate-level SAP eligibility requirements and the appeals process.

Support Systems:

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 consists 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) 740-2500

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

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