CTAN 443L -
Character Development for 3D Animation and
Games

Units: 2
Spring 2017 — Tuesday — Time: 10:00 – 12:50 PM

Location: SCI L113

Instructor: Scott Easley
Office: EGG 207, 746 West Adams Boulevard
Office Hours: Tuesday, 1:30 – 4:00 PM
Contact Info: seasley@usc.edu

Teaching Assistant:
Office: Megan Maniago
Office Hours: Contact Megan to set up
Contact Info: mmaniago@usc.edu
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 help create animations that bring life to the worlds USC Games students create.

Learning Objectives
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 pipeline techniques to finish and submit work in an efficient and timely manner for project deadlines.

Prerequisite(s): CTAN 452
Co-Requisite(s): None
Concurrent Enrollment: None
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.

Technological Proficiency and Hardware/Software Required
Familiarity with basic folder structures on a personal computer is necessary.

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

Description and Assessment of Assignments
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 classtime.
Grading Breakdown

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
<th>% of Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Participation</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Initial Character Rig</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Character Greybox</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Walk Animation</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Chosen Action #1</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Chosen Action #2</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Chosen Action #3</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Grading Scale (Example)
Course final grades will be determined using the following scale

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>95-100</td>
</tr>
<tr>
<td>A-</td>
<td>90-94</td>
</tr>
<tr>
<td>B+</td>
<td>87-89</td>
</tr>
<tr>
<td>B</td>
<td>83-86</td>
</tr>
<tr>
<td>B-</td>
<td>80-82</td>
</tr>
<tr>
<td>C+</td>
<td>77-79</td>
</tr>
<tr>
<td>C</td>
<td>73-76</td>
</tr>
<tr>
<td>C-</td>
<td>70-72</td>
</tr>
<tr>
<td>D+</td>
<td>67-69</td>
</tr>
<tr>
<td>D</td>
<td>63-66</td>
</tr>
<tr>
<td>D-</td>
<td>60-62</td>
</tr>
<tr>
<td>F</td>
<td>59 and below</td>
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</tbody>
</table>

Assignment Rubrics
Due to the nature of the class being both rigging and animation, keeping up with the class is crucial. Assignments are small and reasonable to completed within the following week.

Assignment Submission Policy
Assignments are to be submitted via Google drive – details of this will be covered in class.

Grading Timeline
Grading for assignments will be within two weeks after submission.

Additional Policies
FOOD AND DRINKS (OTHER THAN WATER) ARE NOT PERMITTED IN ANY INSTRUCTIONAL SPACES IN THE CINEMATIC ARTS COMPLEX. Texting during lecture is prohibited.
## Course Schedule: A Weekly Breakdown

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Introduction and course overview/Animation Design Overview</th>
<th>Readings and Homework</th>
<th>Deliverable/ Due Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 9th</td>
<td>Introduction to course expectations and methodologies. Components, concepts, and deliverables for the course will be discussed. Proficiency Survey: Experience and interests Visual Design Overview</td>
<td>1. Familiarity with provided ‘Skyrig’ simple IK and FK rig in class. Video on class tutorial webpage. 2. Study cartoony sprite sheets for basic moves. 3. Skyrig base poses of animated walk using sprite sheet as guide (viewed just from the side)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 2</th>
<th>Review chosen walks Character Visual Design Designing characters for</th>
<th>Readings and Homework</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 16th</td>
<td>Side-scrollers</td>
<td>1. Cut/paste realistic animations using Muybridge photographs 2. Continue animation of character from side</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Arial design</td>
<td>3. Walk animation poses from front</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Puzzle design</td>
<td>2. Find/Build similar 3d mesh for rigging</td>
<td>Greyboxed character with walk poses saved as .ma file Due Jan 30th</td>
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<tr>
<td></td>
<td>3D (versus 2D)</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Week 3</th>
<th>Pre-design - Working from concept to screen</th>
<th>Readings and Homework</th>
<th>Deliverable/ Due Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 23rd</td>
<td>Realism versus cartoony - Greyboxing</td>
<td>1. Chosen main character 2. Find/Build similar 3d mesh for rigging 3. Walk animation poses from front</td>
<td>Polish walk (viewed in perspective) Due Feb 6th</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 4</th>
<th>Weight and gravity in the Game world</th>
<th>Readings and Homework</th>
<th>Deliverable/ Due Dates</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Week 5</th>
<th>Animating in 3D worlds</th>
<th>Readings and Homework</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Feb 6th</td>
<td>Character movement Fundamentals</td>
<td>1. Study character turnaround 2. Start weighting chosen 3d character</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weighting overview</td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 6</th>
<th>Character Design and Animation</th>
<th>Readings and Homework</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb 13th</td>
<td>Finish weighting</td>
<td>1. Finish weighting chosen 3d character 2. Cut/paste yoga animation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yoga animation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Body Posing (Key poses)</td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 7</th>
<th>Terrain design and animation (Ex: underwater, Earth, microscopic)</th>
<th>Readings and Homework</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb 20th</td>
<td>- Building design</td>
<td>1. Cutting/pasting animation - Tutorial video on class website 2. Finish character 3d walk</td>
<td>MIDTERM: Bake and export walk character to Quicktime viewer for verification Due Feb 27th</td>
</tr>
</tbody>
</table>
### Statement on Academic Conduct and Support Systems

**Academic Conduct:**

- Refinement
  - Closed-quarters
  - Outdoors action

#### Week 8
**Feb 27th**

- 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

1. Custom script: Sequencer
2. Choose 3 other animations for your character (Ex: Run, Jump, Punch)

#### Week 9
**Mar 6th**

- Designing in Engine
  - Exporting animations across engines
  - Creating functional and dynamic hierarchies
  - Survey of possible motion in engine design capabilities

1. Series of moves with reference for character’s final moves

#### Week 10
**Mar 13th**

- Interface Design
  - Interface Placement and character movement (Intuitive or Linear)
  - Basic concepts in developing your interface for player motion

1. Begin animating move 1
2. Folder structure for delivery of animation

#### Week 11
**Mar 20th**

- Iconography
  - Review of move 1
  - Advanced concepts in character UI design

1. Schedule completion

Finish animating move 1 – export it Due Mar 27th

#### Week 12
**Mar 27th**

- Advanced Motion
  - Blending two motions

1. Begin move 2

#### Week 13
**Apr 3rd**

- Custom buttons in Maya
  - Review of Move 2

1. In-class animation lab critique

Finish animating move 2 – export it Due Apr 10th

#### Week 14
**Apr 10th**

- Continue to work on move set

1. In-class animation
2. Begin animation of move 3

#### Week 15
**Apr 17th**

- Continue to work on move set

1. In-class animation polish and critique

Finish and export move 3 Due Apr 24th

### Final
**Apr 24th**

- Final Review
  - Evaluations and Post mortem

Grades due 05/09/2018
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, http://policy.usc.edu/scientific-misconduct.

Support Systems:
Student Counseling Services (SCS) – (213) 740-7711 – 24/7 on call
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. engemannshc.usc.edu/counseling

National Suicide Prevention Lifeline – 1 (800) 273-8255
Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. www.suicidepreventionlifeline.org

Relationship and Sexual Violence Prevention Services (RSVP) – (213) 740-4900 – 24/7 on call
Free and confidential therapy services, workshops, and training for situations related to gender-based harm. engemannshc.usc.edu/rsvp

Sexual Assault Resource Center
For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: sarc.usc.edu

Office of Equity and Diversity (OED)/Title IX Compliance – (213) 740-5086
Works with faculty, staff, visitors, applicants, and students around issues of protected class. equity.usc.edu

Bias Assessment Response and Support
Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. studentaffairs.usc.edu/bias-assessment-response-support

The Office of Disability Services and Programs
Provides certification for students with disabilities and helps arrange relevant accommodations. dsp.usc.edu

Student Support and Advocacy – (213) 821-4710
Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. studentaffairs.usc.edu/ssa

Diversity at USC
Information on events, programs and training, the Diversity Task Force (including representatives for each school), chronology, participation, and various resources for students. diversity.usc.edu

USC Emergency Information
Provides safety and other updates, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible. emergency.usc.edu

USC Department of Public Safety – UPC: (213) 740-4321 – HSC: (323) 442-1000 – 24-hour emergency or to report a crime.
Provides overall safety to USC community. dps.usc.edu