

UW CSE 490

Character Design And Animation For Real Time Cinematics
Summer A & B 2023

Website

Canvas: <https://canvas.uw.edu/courses/1643304>

Personnel

Program Director: Barbara Mones - mones[at]cs.washington.edu

Instructor: Dave Hunt - kloctower[at]gmail.com

Staff: Terrell Strong - stront2[at]cs.washington.edu, Amy Duer - duera[at]uw.edu

TAs will be logged in and available on the class discord server during lab hours.

Important Email Addresses

Staff Mailing List: cse490ab-staff@cs.washington.edu

- If you need to contact the staff (and TAs), ask them a question, let them know of tardiness or absences, this is the email you must use.

Class Mailing List: cse490ab@cs.washington.edu

Support Email: support@cs.washington.edu

When you have a computer or account issue, email the support help desk.

- Please CC Dave and Terrell on the email, so we can keep up to date on the status of any issues and/or requests

General Information

Schedule

Summer Quarter [UW academic calendar 2023](#)

- Instruction begins: June 20
- Last day of instruction: August 18
- Summer holidays: July 4

Classes:

- Class time: Tuesdays, 10:30am to 1:30pm (includes lab time after instruction)
- Lab time: Thursday, 10:30pm to 1:30pm

Monday	Tuesday	Wednesday	Thursday	Friday
June 19 (holiday)	20 Class 1	21	21 Lab 1	23
26	27 Class 2	28	29 Lab 2	30
July 3	4 (holiday)	5	6 Class 3	7
10	11 Class 4	12	13 Lab 4	14
17	18 Class 5	19	20 Lab 5	21
24	25 Class 6	26	27 Lab 6	28
31	August 1 Class 7	2	3 Lab 7	4
7	8 Class 8	9	10 Lab 8	11
14	15 Final lab	16	17 Final critique	18

Course Overview

In this 9 week class students will learn to create their own animated character for a cinematic in real-time 3d in Unity, with art content creation in Maya. Classes include assignments that are designed to complement each other in skill progression. Covered are the fundamentals of real-time cinematic production including character design, modeling, rigging and animation.

Students get hands-on experience working with real world industry tools and production pipelines. No prior experience is required.

Character class schedule

1. Character design
2. Skeleton and block model
3. Gray model
4. Gray model pose testing
5. Costume modeling
6. Rigging, Animation - idle, wave
7. Animation - walk
8. Animation - jump

Class format

- 3 hour class, once a week
 - Critique of past assignments
 - Lecture
 - Demo of next assignment
 - (remainder) supervised class lab time

Course Materials

Unity 2021.3.9f1

We will be working with Unity version 2021.3.9f1. First, install the Unity Hub from this address: <https://unity.com/download#how-get-started> and then, within the Unity Hub select and install the correct version. As soon as possible, register for Unity Student: <https://store.unity.com/academic/unity-student>. This requires a GitHub account as it is part of the GitHub Student Developer Pack: <https://education.github.com/pack>. You may be required to submit proof of enrollment and verification can take a few weeks (GitHub will provide an estimate if this is needed). Unity Student gives access to all learning material for free as well as a number of asset packages (called Snaps). These educational materials and assets will be used throughout this class.

Maya 2020

We will be using Maya version 2020. For the Autodesk Maya educational license students will have to login at <https://www.autodesk.com/education/home> and they will be required to send a photo of their school ID to autodesk. It should be a quick process for them to approve it and send a license.

Grading Guidelines

Participation and contribution in lectures and labs: 25%

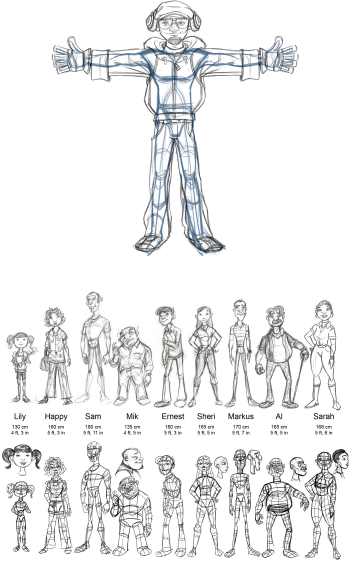
Assignments (1 per week): 65%

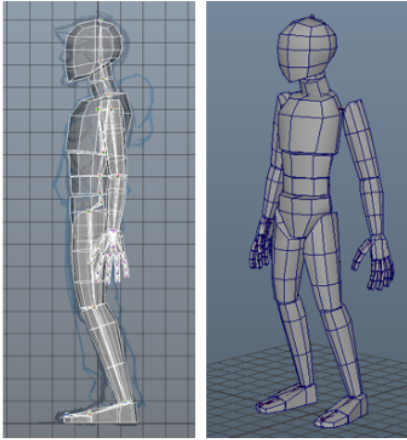
- Rubrics for each assignment will be given at time of assignment.

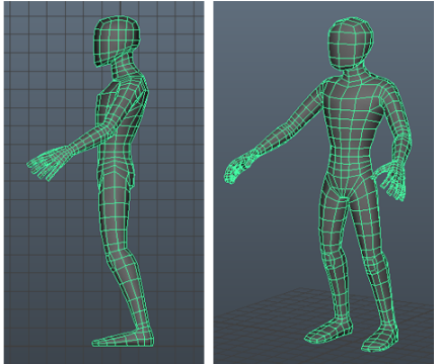
Final: 10%

Classes

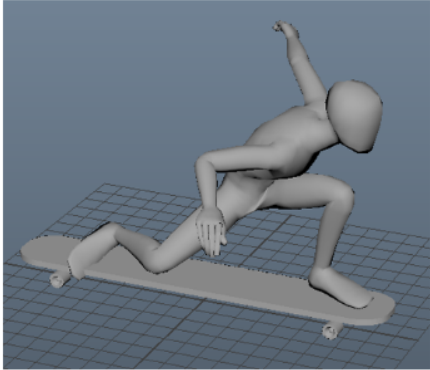
Character classes are designed to work in sequence so that students can create a complete animated cinematic experience for the final result.

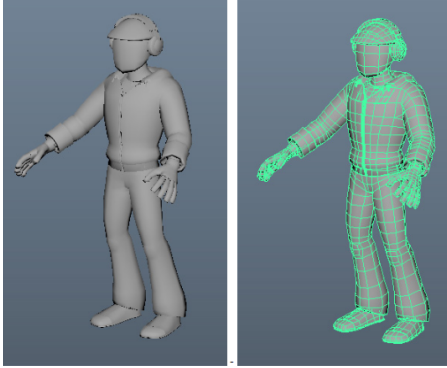
Character class 1	Character design
	<p>Lecture presentation</p> <ul style="list-style-type: none"> - Class intro, character pre-production process <p>Assignment</p> <ul style="list-style-type: none"> - Write character description and story [Miro] - Draw concept art and front/side orthographics - Set up reference images in Maya <p>Skills learned:</p> <ul style="list-style-type: none"> - Sketching concept art - Intro to Maya, reference image setup <p>Turn in:</p> <ul style="list-style-type: none"> - Character concept art [Miro] - Orthographics: front and side [Miro] - Screenshots of ref images in Maya [Miro] - Character description [Miro] - Short character backstory [Miro] - Reference images scene [Maya] <p>Programs: Maya, Miro</p>
Character class 2	Skeleton and block model

	<p>Lecture presentation</p> <ul style="list-style-type: none"> - Block model / gray model iterations <p>Assignment</p> <ul style="list-style-type: none"> - Build skeleton based on orthographics [Maya] - Build block model [Maya] - Add to basic player control [Unity] <p>Skills learned:</p> <ul style="list-style-type: none"> - Skeleton building [Maya] - Polygon modeling basics: object t-r-s, vertices, edges, faces, insert edge loops [Maya] - Animator state machine setup [Unity] <p>Programs: Maya, Unity</p>
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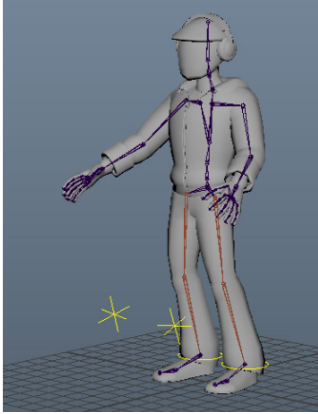
<p>Character class 3</p>	<p>Gray model</p>
	<p>Lecture presentation:</p> <ul style="list-style-type: none"> - Polygon topology for characters - Polygon modeling demo part 2 [Maya] <p>Assignment</p> <ul style="list-style-type: none"> - Combine blocks, manifold gray model [Maya] - Add to basic player control for critique [Unity] <p>Skills learned:</p> <ul style="list-style-type: none"> - Polygon topology theory [Maya] - Polygon modeling part 2: combine, merge [Maya] <p>Programs: Maya, Unity</p>

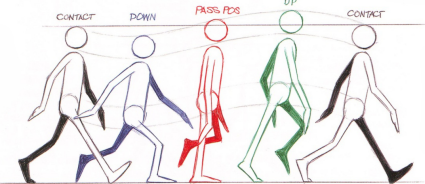
<p>Character class 4</p>	<p>Gray model pose test</p>
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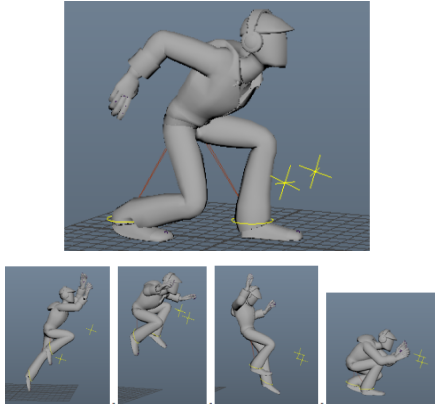
	<p>Lecture presentation:</p> <ul style="list-style-type: none"> - Character deformations: skin weights - Creating dynamic character poses <p>Assignment</p> <ul style="list-style-type: none"> - Paint skin weights [Maya] - Pose testing with Timeline for critique [Unity] <p>Skills learned:</p> <ul style="list-style-type: none"> - Skin weights [Maya] - Character posing [Unity] - Sequencing poses with Timeline [Unity] <p>Programs: Maya, Unity</p>
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<p>Character class 5</p>	<p>Costume model</p>
	<p>Lecture presentation:</p> <ul style="list-style-type: none"> - Polygon modeling demo part 3 [Maya] <p>Assignment</p> <ul style="list-style-type: none"> - Model the character's costume [Maya] - Add to basic player control for critique [Unity] <p>Skills learned:</p> <ul style="list-style-type: none"> - Polygon modeling: cut, extrude, duplicate [Maya] - Copy skin weights [Maya] <p>Programs: Maya, Unity</p>

<p>Character class 6</p>	<p>Rigging and Animation - idle, wave</p>
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	<p>Lecture presentation:</p> <ul style="list-style-type: none"> - Rigging for animation <p>Assignment</p> <ul style="list-style-type: none"> - Set up animation rig [Unity] - Animate idle and wave <p>Skills learned:</p> <ul style="list-style-type: none"> - Building control rigs [Unity] - Basic animation [Unity] <p>Programs: Unity</p>
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<p>Character class 7</p>	<p>Animation - walk</p>
	<p>Lecture presentation:</p> <ul style="list-style-type: none"> - Creating a walk cycle animation <p>Assignment</p> <ul style="list-style-type: none"> - Animate walk cycle [Unity] - Add idle and walk to player control [Unity] <p>Skills learned:</p> <ul style="list-style-type: none"> - Animating motion cycles [Unity] - Animation state machine setup [Unity] <p>Programs: Unity</p>

<p>Character class 8</p>	<p>Animation - jump</p>
	<p>Lecture presentation:</p> <ul style="list-style-type: none"> - Creating a jump animation <p>Assignment</p> <ul style="list-style-type: none"> - Animate jump [Unity] - Add jump to player control [Unity] <p>Skills learned:</p> <ul style="list-style-type: none"> - Animating body mechanics [Unity] - Animation state machine setup [Unity] <p>Programs: Unity</p>

Character Classes Assignments and grading

Assignments will be given each week and due before class the following week. Grading rubrics will be provided with each assignment on the day of class instruction.

Final

Your final project is the culmination of all assignments. The final project is due August 17th at 10:30am. During class on this day everyone will share a brief (~5 minute) presentation of their projects using Zoom screen sharing. The final is worth 10% of your entire course grade.

You will be creating a short presentation that must contain your character performing 2 animations and walking.

The grading rubric will be handed out closer to the final date.

Lab

Lab is scheduled time for you to work on assignments alongside other students while TAs, staff and instructors are available for help. Since this is an online course you must be proactive to use these lab times and ask questions when needed. Classes are long and will not be spent as lectures only. Half of each class will be time set aside for students to work on the homework. During this time the professor and TAs will be available to answer questions from individuals and screen share through solutions as needed.

For lab communication we will be using Discord. Students will receive an invitation to the Discord server on the first day of class.

Work expectations

It is assumed that your work will be on time. Incomplete work will be turned in on time so that it can be evaluated with everyone else. Under some rare and extenuating circumstances, the staff may decide to grade revised projects.

Religious Accommodations

Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious

activities. The UW's policy, including more information about how to request an accommodation, is available at Religious Accommodations Policy (<https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/>). Accommodations must be requested within the first two weeks of this course using the Religious Accommodations Request form (<https://registrar.washington.edu/students/religious-accommodations-request/>).

Attendance Policy

We take daily attendance. If you are late or absent to your online class your grade will reflect this. If you miss more than 15 minutes of the class, you will be marked absent. If you are unable to attend class for any reason please contact the staff in advance and let us know your reasons, we will do our best to accommodate situations that are unavoidable.