

UW CSE 490B

Character Design and Animation For Real-Time Cinematics

Summer B Term, 2024

Website

Canvas: <https://canvas.uw.edu/courses/1729298>

Course Web: <https://courses.cs.washington.edu/courses/cse490b/24su/>

Personnel

Program Director:

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

Instructor:

- Terrell Strong: stront2 [at] cs.washington.edu

Staff:

- Amy Duer: duera [at] uw.edu

TAs:

- Graham Godfrey
- David Le
- Eli Matamoros

Important Email Addresses

Staff Mailing List: cse490ab-staff [at] 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 [at] cs.washington.edu

- This will be the alias that we use to send announcements to the class

Support Email: support [at] cs.washington.edu

- When you have a computer or account issue, email the support help desk.
- Please CC the staff alias when contacting support so we can keep up to date on the status of any issues and/or requests

General Information

Course Overview

In this 4.5 week class students will learn to create their own animated character for 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.

Class Topics

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, jump
8. *Lab time to prepare for Final Project*

Class Format

Classes:

- Critique of previous assignments
- Lecture
- Demo of upcoming assignment
- (remainder) Supervised lab time

Labs:

- Progress check-ins with TAs
- Supervised lab time

Class is when we will introduce new concepts and their corresponding assignments.

Lab is scheduled time for you to work on assignments alongside other students while TAs, staff and instructors are all available to help and answer questions.

Office hours with TAs will be an opportunity to receive assistance outside of class and lab times.

Schedule

Summer Quarter B-Term [UW academic calendar 2024](#)

- First day of instruction: July 18
- Last day of instruction: August 16

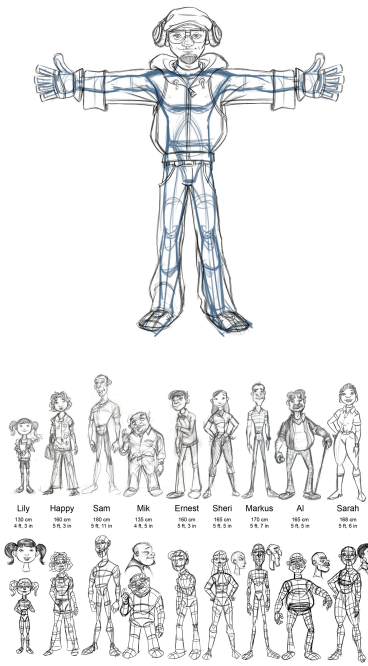
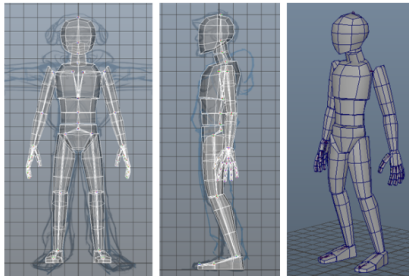
Monday	Tuesday	Wednesday	Thursday	Friday
July 15	16	17	18 Class 1	19 Lab 1
22 Lab 2	23 Class 2	17 Lab 3	25 Class 3	26 Lab 4
29 Lab 5	30 Class 4	31 Lab 6	August 1 Class 5	2 Lab 7
5 Lab 8	6 Class 6	7 Lab 9	8 Class 7	9 Lab 10
12 Lab 11	13 Class 8	14 Lab 12	15 Final critique	16

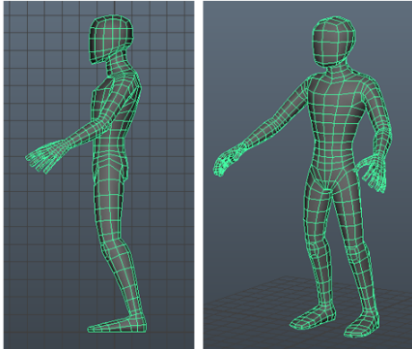
Classes: CSE2 141, Tuesday and Thursday 10:20am - 12:20pm

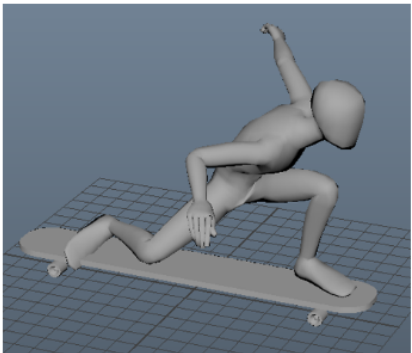
Labs: CSE2 143, Monday, Wednesday, and Friday 1:50pm - 4:00pm

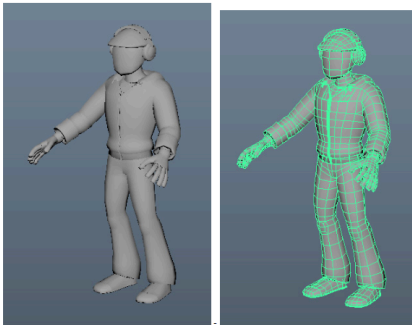
Office Hours: Specific times are TBA

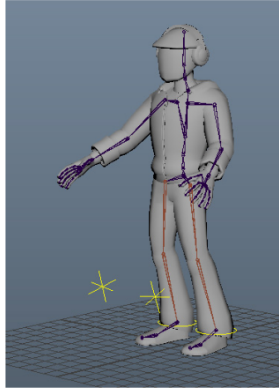
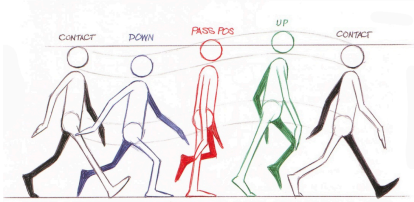
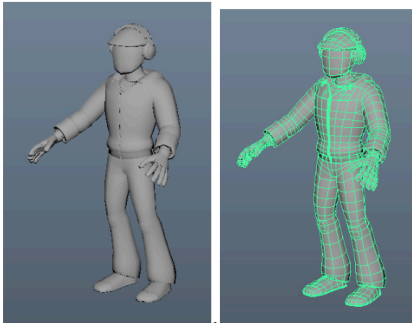
Class Details

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 for next class:</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>

Character class 3	Gray model
	<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>

Character class 4	Gray model pose test
	<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>

Character class 5	Costume model
	<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>

Character class 6	Rigging and Animation - idle, wave
	<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>
Character class 7	Animation - walk
	<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>
	Animation - jump
	<p>Lecture presentation:</p> <ul style="list-style-type: none"> - Creating a jump animation <p>Assignment (Optional)</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>

Grading

Participation - 25%

Assignments - 65%

Final - 10%

Each assignment document will include a rubric for how it will be graded. Assignments will be given twice a week and due a week from when they are assigned.

Final

Your final project is the culmination of all assignments. The final project is due August 15th at 10:20 am, before the final class period. During the final class, everyone will share a brief (~5 minute) presentation of their projects. The final is worth 10% of your course grade. The grading rubric will be handed out closer to the final date.

Attendance Policy

We take daily attendance. If you are late or absent, your grade will reflect this. 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.

Work Expectations

It is assumed that your work will be on time. Incomplete work should still 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.

This is in line with the [third golden rule](#) we use in the animation capstone series of classes. Even if work is incomplete, it is important to have it available and presentable so that you can receive feedback and support to move forward.

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/>).

Course Materials

CSE2 143 lab computers

The computer lab in CSE2 143 has all of the software required for the class, though all of the required software is also available to students to download and use for free on their personal machines.

Unity 2021.3.30f1

We will be working with Unity version 2021.3.30f1. 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. If you don't see the appropriate version in Unity Hub, you can search for it in the download archive: <https://unity.com/releases/editor/archive>

Maya 2023.3

We will be using Maya version 2023. In order to get a Autodesk Maya educational license for use on personal computers, 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.

Miro

We will be using Miro in order to organize screenshots and videos for each assignment. Miro works in the browser and doesn't require a download. It will still require an account to be made using your school email before you can use it to create a board to present your work. You can access Miro via this link: <https://miro.com/>

Screen2Gif

We will be using Screen2Gif to create gifs and short videos of your work. It is available to download here: <https://www.screentogif.com/>. Once you reach the animation assignments, you will use this to capture clips of your character in motion to add to your miro board