MRTS 2300 Section 001 Digital Asset Creation and Animation

Instructor: Cory Haltinner

University Of North Texas

Location:

RTFP room 180Y

Days: Tuesday/Thursday

Time: 9:30 am - 10:50 am

Instructor:

Cory Haltinner

Cory.Haltinner@unt.edu

Office Hours:
Mondays 1130 am -1:30 pm
RTFP Room 225. Can meet with me before or after class as needed, or other times by appointment.
Class will be notified via canvas of changes or updates to office hours times, or online office hours.

Course Description:

This course is designed to introduce individuals to the fundamentals of creating game assets from an industry perspective. Students will become familiar with production techniques such as modeling, UV mapping, creating textures, animation, optimization for games, and other aspects of game art asset creation. All assets will be created with a focus on efficiency in design, color, balance and usability in a modern game engine.

Learning Outcomes:

- **Comprehend core principles, tools, and processes of 3D graphics, understanding how various elements contribute to overall design.**
- **Recall and apply fundamental concepts in 3D modeling, texturing, and animation, demonstrating a foundational understanding of terminology and principles.**
- **Critically evaluate design choices, optimization strategies, and aesthetics in 3D graphics, gaining insight into decision-making processes.**

- **Apply knowledge and skills to create 3D content, showcasing the practical application of theoretical concepts.**

Communication Practices:

Connect with me through email and/or by attending office hours. During busy times, my inbox becomes rather full, so if you contact me and do not receive a response within two business days, please send a follow up email. A gentle nudge is always appreciated.

Attendance Policy:

Because this course involves collaboration, participation is essential to learning. Our project-based activities require you to be actively engaged in discussions and group work. I understand tardiness and absences may occur. If you are late to class, please drop me an email to let me know the circumstances.

If you must miss class, please let me know prior to your absence. Attendance will count towards a student's final grade, accounting for 20% of the overall final grade.

Late Work Policy:
Late work may be turned in for most assignments and will be accepted unless otherwise stated, however there will be a penalty assessed as follows. 10% will be deducted for every week that the assignment is late, to a maximum penalty of 30%.

- **Please note that late work will not be accepted for the "Progress Update" turn-ins for projects. Those need to be turned in on time to receive feedback in a timely manner.**
- **Accommodations will be made in accordance to Title IX, University observed holidays, approved absences, sicknesses, etc. Please communicate with me if and when accommodations are needed.**

Examples: an assignment turned in 1-7 days late will be assessed a 10% point deduction
an assignment turned in 8-14 days late will be assessed a 20% point deduction
an assignment turned in 15+ days late will be assessed a maximum 30% point deduction

- **This means that an assignment which has been turned in 15+ days late will receive a maximum score of 70%.**
- **I do allow for resubmissions of work that have been turned in on time if the student wishes to address feedback on their projects and resubmit.**

Evaluation Methods and Criteria Methods: Presentations, papers, production and public critiques.

Grade Scale:
90+ = A
80-89 = B
70-79 = C
60-60 = D
59-0 = F

Suggested texts (not required):
1. Williams, R "The Animator's Survival Kit" -- Faber & Faber, 2002, ISBN: 0571202284
2. Murdock, K "Autodesk Maya 2024 Basic Guide" -- SDC Publications, 2023 ISBN: 1630575801
3. Johnston, O Thomas, F "Illusion of Life"

Required Software:
Autodesk Maya: Free student version available on Autodesk website
Adobe Photoshop: Available at discounted student rate for UNT students
Unreal Engine: Available for free on the Epic Games Launcher

Optional Not Required Software: Available on classroom computers and may be used occasionally during in class practices
Substance Painter
Zbrush

Assignments and Projects:
Lab Activities: Weekly in class activities using tools and software discussed and demonstrated in class and through readings.
Project 1 - (Low Poly Character) design, model, and texture a character with a strict constraint of 1000 triangles or fewer with a focus on efficient polygonal modeling, UV mapping, and texture application.
Project 2 - (Bouncing Ball Animation) A short animated sequence featuring a bouncing ball with a focus on keyframe animation techniques, timing, and principles of motion.
Project 3 - (Diorama Environment) A small 3d modeled and textured scene with organic foliage, props, and buildings. Final renders will be created in the Unreal Engine

Final Grade Formula:
Attendance 20%,
Speed Practice Activities 20%,
Project 1 - Low-Poly Character Project 20%,

Project 2 - Animation Project 20%,
Project 3 - Final Environment Project 20%

Weekly Class Schedule:

Schedule is subject to change based on student needs, guest speakers and needs that arise. Students will be notified of changes.

Other Relevant and Important Information:

Acceptable and Unacceptable Use of AI:

Generative AI tools (e.g. ChatGPT, Dall-e, etc.) are permitted to be used in this course under specific circumstances:

- **They can be used to fuel your creative process as sources for potential ideas, approaches, or solutions, however, they CANNOT be used to directly create any portion of the end-product that you turn in for any assignment.**
    - **For example, you cannot:**
        - **Use AI to generate your responses to a Worksheet or discussion board post.**
        - **Use AI to summarize assigned Videos rather than watching them.**
    - **However, you can:**
        - **Use AI as a resource**
        - **Use AI to ideate and generate possibilities that feed into your personal creative process.**
        - **Use AI to generate reference images for your Mood Board.**

Simply put, you can use AI as part of the process to produce *your own* creations (posts, documentation, concepts), but you cannot use it to replace your own creations or as a substitute for your own final work product.

Additionally, if you use AI tools:

- **You are responsible for the information you submit based on an AI query (for instance, that it does not violate intellectual property laws, or contain misinformation or unethical content).**

- **Any usage of AI tools must be clearly disclosed (along with a note about the scope and purpose of its usage) in order to stay within university policies on academic honesty.**
- **Any assignment that is found to have used generative AI tools in unauthorized ways or to generate the final submission for any assignment will result in a penalty on that assignment.**
- **When in doubt about permitted usage, please ask for clarification.**

Inclusion Statement:

I value the many perspectives students bring to our campus. Please work with me to create a classroom culture of open communication, mutual respect, and belonging. All discussions should be respectful and civil. Although disagreements and debates are encouraged, personal attacks are unacceptable. Together, we can ensure a safe and welcoming classroom for all. If you ever feel like this is not the case, please stop by my office and let me know. We are all learning together.

ADA Statement:

The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking reasonable accommodation must first register with the Office of Disability Access (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with a reasonable accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request reasonable accommodations at any time; however, ODA notices of reasonable accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of reasonable accommodation for every semester and must meet with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of reasonable accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information, refer to the Office of Disability Access

Links to an external site.

website (http://www.unt.edu/oda

Links to an external site.

). You may also contact ODA by phone at (940) 565-4323.

Week #1

Tuesday 1/13:

Intro to the Class

Professor/Student Introductions

Syllabus Review

HW: Student Introduction Worksheet

Thursday 1/15:

Introduction to Low Poly Character Project

HW: Collect References and start on character orthos

Due: Student Introduction Worksheet

Week #2

Tuesday 1/20:

Intro to Maya
In class Speed Model Assignment

1. Basic Navigation

- **Pan, Zoom, and Orbit: Alt + LMB (Orbit), Alt + MMB (Pan), Alt + RMB (Zoom).**
- **View Cube: For navigating different orthographic views.**

2. Creating Basic Geometry

- **Polygon Primitives: Creating basic shapes like cubes, spheres, cylinders.**

How to Install Maya 2026 (Student Version)

Step 1: Create an Autodesk Account

1. Go to Autodesk Education and click **Get Started**.
2. **Sign In** or click **Create Account**. Fill in your details.

Step 2: Verify Student Status

1. Enter your **institution name**, **area of study**, and **enrollment status**.
2. Upload proof of student status (e.g., student ID). Wait for verification.

Step 3: Download Maya 2026

1. Once verified, go to the Autodesk Education page and select **Maya**.
2. Choose **Maya 2026**, your **operating system**, and **language**.
3. Click **Download**.

Step 4: Install Maya 2026

1. Run the downloaded installer file.
2. Follow the on-screen instructions to complete the installation.

Step 5: Activate Maya

1. Open Maya and **Sign in** to your Autodesk account.
2. Activate the software with your student license.

Notes:

- Check system requirements on the Autodesk website.
- Contact Autodesk support if you encounter issues.

Thursday 1/22: OPEN LAB

- **creating Orthographic model reference in Photoshop, will be used for Project 1**

- Practice Maya

Week #3

Tuesday 1/27:

Review Character References

HW: Continue working on Character Orthos/references and start box modeling character

Orthographic Viewports: Understanding Front, Side, and Top views for aligning references.

Box Modeling Techniques

- **Extrude**: Creating new geometry by extruding faces.
- **Insert Edge Loop**: Adding more edge loops for extra detail.
- **Merge Vertices**: Combining vertices to clean up geometry.
- **Multi-Cut Tool**: Manually cutting and adding edge loops.

In class demo and Practice: box modeling the generic person character

Thursday 1/29:

Due: Character Reference and Orthos

Check in on Character Reference progress

speed model activity sword

Week #4

Tuesday 2/3:

In class speed model assignment: Gum Drop Dude Speed Model
In class modeling demo:

May tools covered in class demo:

Smooth mesh = subdivided geometry
hold d = move pivot
B = brush tool (don't use this one)
v = snap to vert
c = snap to curve/edge
x = snap to grid
ctrl d = duplicate
shift + i = isolate selected
f = focus in on selected object
meshtool --> multicut

shift + right click = merge vertices
Y = resets tool

G = repeats last action

HW: Continue working on Project #1

Thursday 2/5: Open Lab work time on Project 1

Week #5

Tuesday 2/10:

Class speed model assignment: Low Poly Hand 30 minute speed model practice

Low Poly Hand Modeling Demo:

New Tool Introduced: **Append to Polygon**

Thursday 2/12: Open Lab

Continue working on Project 1

Submit progress on your character.

Part 2 of the character we started box modeling week 3:

Week #6

Tuesday 2/17:

Class speed model assignment: Low Poly Head 30 minute speed model practice - 500 triangle limit

In Class Demo:

Thursday 2/19:
In class demo on UV Unwrapping
HW - Continue working on Project 1 - Submit progress assignment for next week.

Basic UV Unwrapping Tools for Beginners in Maya:

1. **UV Editor**
    - The primary workspace for UV mapping. It shows the model's UVs and allows you to manipulate them.
    - *Location*: `UV > UV Editor`.
2. **Automatic Mapping**
    - Automatically creates a UV map by splitting the model into planes, great for beginners starting with UV unwrapping.
    - *Location*: `UV > Automatic`.
3. **Cut UV Edges**
    - Allows stdents to manually create seams by cutting UV edges for better control over unwrapping.
    - *Location*: `UV Editor > Cut UV Edges` or `Modeling Toolkit`.
4. **Sew UV Edges**
    - After cutting UVs, this tool is used to sew edges back together to form cleaner UV shells.
    - *Location*: `UV Editor > Sew UV Edges`.
5. **Unfold Tool**
    - Spreads out the UV shells, minimizing distortion. This tool is essential for properly unwrapping the UVs.
    - *Location*: `UV Editor > Unfold`.
6. **Layout Tool**
    - Organizes and packs UV shells within the UV space efficiently after unwrapping.
    - *Location*: `UV Editor > Layout`.
7. **Checker Map Texture**
    - A visual aid that helps identify UV stretching or distortion when applied to a model. It allows students to verify if the UVs are laid out correctly.
8. **Grab and Move UVs**
    - Basic manipulation of UVs, including moving, scaling, and rotating UV shells using the `W`, `E`, and `R` keys. Essential for refining UV layouts.

Full Character Unwrapping Demo Video:

Week #7

Tuesday 2/24:
Open lab, work on final low poly Character

Thursday 2/26:

In Class Demo: 3D Poly Painting

In Class Speed Practice Assignment

Week #8

Tuesday 3/3:

Mixamo/Unreal Engine
Open lab, finish final low poly character

Thursday 3/5: PROJECT 1 IS DUE - Turn-in before class
Low-poly character showcase

Week #9 SPRING BREAK - NO CLASS

Week #10

Tuesday 3/17:

Intro to Animation - Class demo:

Your first Ball Rig

Open and look at: simple_ball_rig_1.1

12 Principles of Animation:

- **Squash and Stretch** – Gives objects flexibility and weight by exaggerating their compression and elongation.
- **Anticipation** – Prepares the audience for an action, making the main movement more believable.
- **Staging** – Focuses the viewer's attention on the most important elements of a scene.

- **Straight Ahead Action and Pose to Pose** – Straight ahead animates frame by frame, while pose to pose focuses on key moments.
- **Follow Through and Overlapping Action** – Shows how different parts of an object or character move after the main action.
- **Slow In and Slow Out** – Adds more frames at the beginning and end of a movement to make it smoother.
- **Arc** – Most movements follow a curved path, making actions feel more natural.
- **Secondary Action** – Adds smaller movements that complement and enhance the main action.
- **Timing** – Determines the speed and rhythm of actions, affecting their weight and impact.
- **Exaggeration** – Enhances actions or expressions to make them more dynamic and engaging.
- **Solid Drawing** – Ensures characters and objects are drawn with weight, volume, and balance.
- **Appeal** – Ensures that characters and actions are interesting and engaging to the audience.

https://www.youtube.com/watch?v=uDqjIdI4bF4

Thursday 3/19:

Review Ball Project assignment:

Class demo: Creating a Ball Bounce Animation and a Playblast

HW: Work on Ball Bounce Project

Week #11

Tuesday 3/24:

In Class Ball speed animation class assignment

Thursday 3/26:

Work on: Open Lab Work on Ball Bounce - Project 2

New Ball Rig: ball rig 1.6.zip

Week #12

Tuesday 3/31: PROJECT 2 IS DUE - Turn In

Lecture: Review Project 2 - Introduce Project 3 aka Final Project

In-Class - search for references, get feedback

HW: "Find Concept for Project 3 Diorama Project" (find 3 reference images)

Thursday 4/2: Review "Find Concept for Project 3 Diorama Project" Homework

Lecture: Seamless/Tileable Textures

A good youtube video explaining how to turn any texture image into a tiling one:

https://www.youtube.com/watch?v=9_36YihB8I4

HW: Start your final projects

Week #13

Tuesday 4/7: In class speed practice assignment: Week 11: 30-Minute Speed Practice Assignment: Low-Poly Well Modeling

Project 3 Work Time

Thursday 4/9: Review final project progress

Open lab, work on projects

Due: Project 3 Progress Check #1

HW: continue working on Final Project

Week #14

Tuesday 4/14:

Lonely Island model texture speed assignment

Class Demo: palm leaves alpha map material

Sped up Lonely Island Demo:

Thursday 4/16:

Lab Time

Due: Project 3 Progress Check #2

HW: Continue work on Final Project

Week #15

Tuesday 4/21: Speed Activity: Splash Damage Art Challenge

Thursday 4/23: One on One check-in with Professor

Open Lab, final project work

Due: Project 3 Progress Check #3

Week #16

Tuesday 4/28: Lecture: Unreal Engine implementation

Lab Time - work on final project

Thursday 4/30: Project 3 Due - Turn-in before class

Submit final projects and present