

CSAT 5304: GRAD ART STUDIO: 3D DIGITAL

930am–12.15pm

Tuesday and Thursday, January–May, 2017 | Room BAB 302, Sul Ross State University

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432-837-8380 Office: FAB 07

Office Hours: MW: 8.30-10am

TR: 8.30-9.25pm

and by appointment

Course Introduction

In this class you will learn how to use Autodesk's Maya 2016 software to build, rig, texture, light, animate, and render 3D objects. The skills you learn and develop in this class will allow you to create 3D graphics for games, animation, sculpture, etc.

Learning Objectives

In this course, you will:

- Learn how to build a 3D model in 3 dimensions using polygons and NURBS.
- Build skeletons (rigs) for various models so that you can animate them.
- Add simple colors to your models., and add detailed texturing via UV Mapping.
- Place lights around your models to create a particular mood or draw attention to certain aspects of your creation.

Grading and Evaluation

You will be graded on attendance and participation in discussions and critiques, projects and assignments, and a final examination. All assignments will be evaluated for effort, technical ability, concept, execution, and presentation.

Please note that work submitted **no later** than the beginning of class, the day of the deadline, will be graded. **Any work submitted *one minute* past the beginning of class will be awarded a zero. There are no exceptions to this rule.**

Your final class grade will consist of:

- Book Quiz – 5%
- Nine Projects : 45%
- Graduate Component : 15%
- Final Project : 20%
- Attendance, participation, and book quiz : 15%

Graduate Component

Besides following the same work as ARTC students, you are to focus on 3D portraiture. Use book and video references to further your 3D modelling knowledge to build 3 detailed 3D portraits.

Materials and Text

- Introducing Autodesk Maya 2016 by Dariush Derakhshani. ISBN: 1119059631
- 4GB (minimum) jump/flash drive
- A copy of Autodesk's Maya 2016, student edition, installed on a personal computer

The required text for this course is *Introducing Autodesk Maya 2016* by Dariush Derakhshani. Not having a copy of the textbook will impact your grade.

A jump-drive is essential for saving your work. You are expected to back up your projects to another location, such as at a free service like www.dropbox.com or www.google.com/drive. Not submitting a project because you lost your jump-drive or some other technical difficulty **will not be accepted as an excuse** and will earn you a zero for that project.

Availability of Autodesk Products

Autodesk's Maya 2016 can be found in BAB 302-303. You can also download a student version onto a personal computer that lasts three years. You will also need access to Photoshop, which you can find on the second floor of the library and in the BAB labs. Adobe also offers a fully functional 30-day trial of the software.

Tobacco Products

Any tobacco products and e-cigarettes are not permitted in the classroom.

Rules and expectations

Attendance is **compulsory**. If you must miss a class for a school-related activity, the absence must be discussed (and arrangements made regarding coursework) **prior to the absence**. If you must miss a class for an emergency or illness, please contact me **by email or phone as soon as possible**. Six (6) absences result in you being dropped from the course with a grade of "F" as per Sul Ross State University policy. Five (5) unexcused absences will result in a zero for your attendance and participation grade. Arriving to class **on time** is also essential – **arriving late more than two times will be counted as one absence. Lateness is defined as 15-minutes after the start of class. Leaving before class ends will result in you being marked absent.**

Below is a guide to how much each absence impacts your attendance and participation grade.

• One (1) unexcused absence:	-20%	• Four (4) unexcused absences:	-80%
• Two (2) unexcused absences:	-40%	• Five (5) unexcused absences:	- 100%
• Three (3) unexcused absences:	-60%	• Six (6) unexcused absences:	FAIL

No cell phone usage. No social-networking websites. No instant-messaging. No checking personal emails. Headphones and earbuds are allowable **ONLY** when you are working, but not when the professor or a fellow student is speaking. **Doing any of these, or anything I consider disruptive to the class, will drastically drop your attendance and participation grade. You may be also asked to leave the class and will be marked absent for that day.**

Late work will not be accepted.

Plagiarizing, cheating, or any other dishonest behavior in the classroom will not be tolerated. Rules and regulations regarding plagiarism, dishonesty, and other issues concerning classroom participation can be found in University Rules and Regulations and Student Handbook. This course will abide by these established policies. A student found to be engaging in these activities will be penalized to the full extent of Sul Ross State University policy.

ADA Needs

It is Sul Ross State University policy to provide reasonable accommodations to students with disabilities. If a student would like to request such accommodations because of a physical, mental, or learning disability, please contact the ADA Coordinator in the Ferguson Hall, room 112 or call (432) 837-8691. Please relate all requests for special accommodations to the instructor by the third class period.

Student Learning Outcomes

- Expressively communicate an original idea or concept visually.
 - Proper techniques applied to the medium,
 - Use of principles and elements of good composition,
 - Development of technique and personal style.
 - Use of original concepts and non-clichéd ideas.
- Students with a concentration in Digital Art will be able to demonstrate knowledge and familiarity of digital image creation and knowledge of professional practices in digital art.
 - Demonstrate the ability to produce a cohesive professional thematic capstone project, which is well crafted and has a defined technique or personal style.
 - Demonstrate technical mastery of digital skills as they apply to the selected media.
 - Ability to produce a professional portfolio that meets current industry standards.

Please note that this syllabus is subject to change.

COURSE SCHEDULE

WEEK ONE

- Jan 17 (T): * Class introduction and syllabus overview.
* Download Maya student edition, to your personal computer from Autodesk.com and be sure to choose the **2016**, not 2017 edition.
* Buy the class textbook.
* Download the book's Exercise files from <http://www.wiley.com/WileyCDA/WileyTitle/productCd-1119059631,miniSiteCd-SYBEX.html> (or search on the internet for “Introducing Autodesk Maya 2016: Autodesk Official Press”).
- Jan 19 (R): * Playing around with Maya: 1) setting up a project, 2) creating polygons and the input box, 3) moving around the screen, 4) using the transformation tools, 5) shaded and wireframe views, 6) animation, and 6) grouping.

WEEK TWO

- Jan 24 (T): * **BOOK QUIZ** – Please have a copy of the book in class.
Project #1: *Birth, Expansion, Recession*
- Jan 26 (R): DUE TODAY: Exercise #1: *Birth, Expansion, Recession*
Maya notes (1) – Building a Podracer
Project #2: *Detailed drawing of a 2-legged figure (ARTC Students – two 2-legged figures).*

WEEK THREE

- Jan 31 (T): Book Exercise: *Solar System project (pp 17-43)*. Replace the planet spheres with *cubes*. Note that this is due NEXT class. When you're finished the exercise, Playblast the animation, upload to Youtube.com, and email me the video link
- Feb 2 (R): DUE TODAY: *Solar system*
Maya notes (2) – Box Modelling
Project #3: *Nested Structures*

WEEK FOUR

- Feb 7 (T): DUE TODAY: *2-legged figure (ARTC Students – two 2-legged figures)*
Continue working on *Nested Structures* project.
- Feb 9 (R): DUE TODAY: *Nested Structures*
Book Exercise: *Catapult (pp 124-152)*.

WEEK FIVE

- Feb 14 (T): Continue working on Book Exercise: *Catapult*
- Feb 16 (R): DUE TODAY: *Catapult*
Project #4: *Table and Chairs (ARTC students – Table and Chairs, plus wooden car)*

WEEK SIX

- Feb 21 (T): Continue working on your table and chairs (plus wooden car if you are an ARTC student)
- Feb 23 (R): DUE TODAY: *Table and Chairs* (plus wooden car if you are an ARTC student)
Project #5: *Modelling a Biped*

WEEK SEVEN

- Feb 28 (T): Continue modelling your 2-legged character(s)
- Mar 2 (R): Continue modelling your 2-legged character(s)

WEEK EIGHT

- Mar 7 (T): DUE TODAY: *2-legged character(s)*
Project #6: *Modelling Freestyle (two objects)*.
ARTC Students – Model four objects.
- Mar 9 (R): Continue building your freestyle objects.

--- **SPRING BREAK** ---

WEEK NINE

- Mar 21 (T): Continue building your freestyle objects.
- Mar 23 (R): DUE TODAY: Modelling Freestyle
Maya notes (3) – Door Exercise (set driven keys)
Maya notes (4) – Joints, Forward and Inverse Kinematics

WEEK TEN

- Mar 28 (T): Book Exercise: *Skeleton, FK and IK (pp 352-368 and pp 383-386)*.
- Mar 30 (R): Continue working on book exercise: Skeleton

WEEK ELEVEN

- Apr 4 (T): DUE TODAY: Skeleton
Project 7: Rigging your biped(s)
- Apr 6 (R): Book exercise: Animation (pp 316-327)
Maya notes (5) – Animation, Perpetual Motion, Lenses, Renderers
Maya notes (6) – Animating on a path

Note: April 7 is the last day to withdraw from the 16-week course/term with a grade of “W.” Drops must be processed and in the Admissions Office by 4P.M.

WEEK TWELVE

Apr 11 (T): *Maya notes (7)* – Chunky to Smooth graphics, Lights
Project #8: *Light your table and chairs models, your bathroom objects, and your 2-legged model(s).*

Apr 13 (R): DUE TODAY: Lit models
Maya notes (8) – Materials, Shaders, Planar Projections
Book exercise: Toy plane shading (pp 242-246)

WEEK THIRTEEN

Apr 18 (T): DUE TODAY: Book exercise: Shading
Project #9: Texturing your model.

Apr 20 (R): DUE TODAY: Texturing your model(s)
Final project – design, build, and texture a simple 2-legged character.
ARTC students – Build two models.

WEEK FOURTEEN

Apr 25 (T): Continue working on your final project

Apr 27 (R): Continue working on your final project

WEEK FIFTEEN

May 2 (T): Continue working on your final project
FINAL CLASS DAY.
Your final project is **due at 5pm, May 7.**

WEEK SIXTEEN

May 8 (M): FINAL EXAM: Please meet in class from 830-10am on Monday, May 8, with your completed final project.

Project #1: Birth, Expansion, Recession

Description

Design and animate an abstract piece lasting between 150-200 frames that explores the concept of birth, expansion, and/or collapse using primitive shapes and simple transformations learned in class.

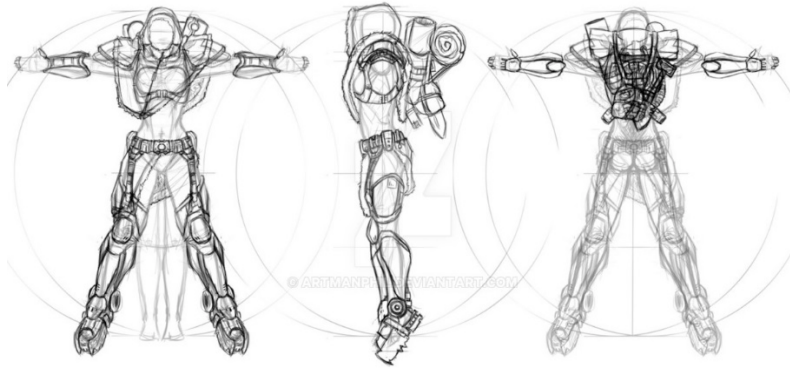
- 1) Set up a new project: *File > Project Window*. Name the current project “Class Projects”, choose a location (e.g. the desktop or your flashdrive), and click Accept.
- 2) Save your new project right now. Use “Birth” or something similar.
- 3) Ensure you’re on the Modelling shelf (the other options are Rigging, Animation, FX, Rendering, Customize...).
- 4) Begin by setting up your timeline. Add 150 in the timeframe option box at the bottom right of the screen.
- 5) Create a poly primitive (torus, box, pyramid, etc.) that is located at 0,0,0.
- 6) Press ‘S’ to mark a keyframe. You should see a red vertical line appear on your current frame.
- 7) Move to a later part of the timeline (for instance, frame 20). Grab the poly shape you created and move it, rotate it, resize it, etc. When happy with the transformation, press ‘S’ to mark the new keyframe.
- 8) Repeat with enough shapes and transformations to fully realize the concepts posed in the project assignment.
- 9) When you’re happy with your work, create a movie file – *Window > Playblast*. This will make a lo-res movie from the camera view you’re currently at so make sure everything you’ve created can be seen.
- 10) Playblasts are large files so you want to get it off your storage soon. Before you do, upload the file to YouTube.com and send me the link so I can grade it.
- 11) To find the file you created so you can delete it, copy the filename at the bottom of the screen. It should look something like this: // **Result:C:\Users\ADUMIT~1\AppData\Local\Temp\blast17.avi**

Grading

To do well in this project, do the following:

- Have at least 20 animated polygons. This is an absolute minimum. – 30%
- Make sure they all transform their location, size, rotation, etc. – 30%
- Aesthetics of your animation. Spend time exploring the terms of Birth and Expansion/Collapse – 40%

Project #2: Detailed Drawings of 2-legged creature(s)



<http://artmanphil.deviantart.com/art/Character-Concept-02-t-pose-142203739>

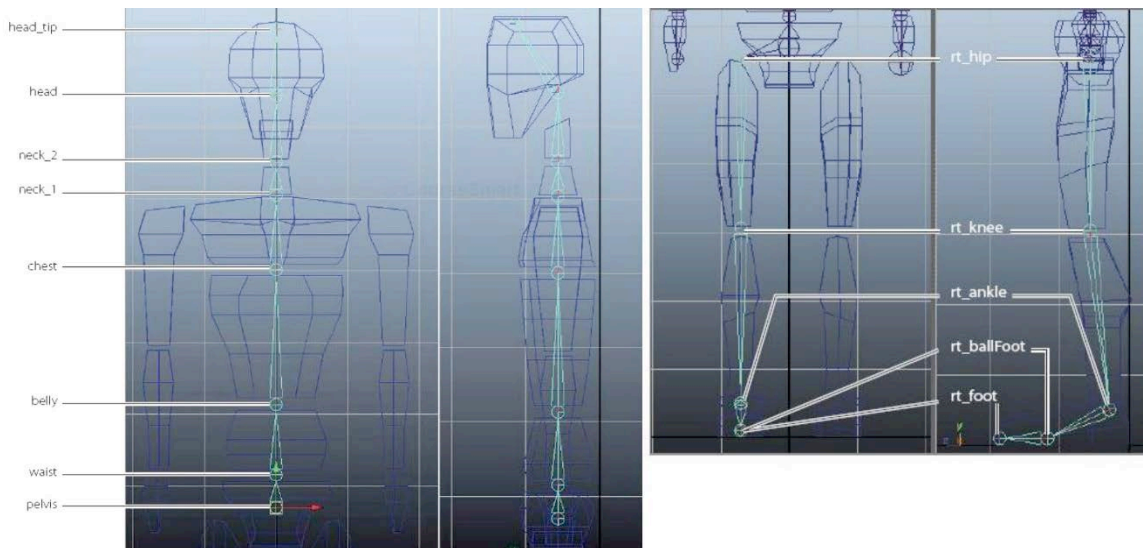
Description

Design a 2-legged creature you want to turn into a 3d figure. Draw as detailed a model as you can of the biped in a T-pose. I cannot stress how important it is to put your character into a t-pose – if you do not, it will be extremely difficult to add a skeleton so that you can animate your creation. DO NOT worry about shading, texture, etc. Instead, make a line drawing similar to the one of the catapult in the textbook. Your character must consist of a front, side, and back view. Use guides to line up the size of the head, placement of the eyes, hands, feet, etc.

You are looking to achieve a guide from which you can build a design using a guide. The drawing is a chance for you to work out any problems you might have before assembling the model. I'd suggest making some rough sketches first to get a feel for your character before you commit to detail.

ARTC Students

You are to design TWO characters.



Grading

To do well in this project, do the following:

- Provide a single JPEG of your drawing with a side, front and back view, three views in total – 60%
- Include all the anatomical parts listed in the images – later you will be adding a skeleton to your creation – 10%
- Make your design sufficiently detailed to work from in Maya – 30%

Project #3: Nested Structures

Description

Design and animate a simple abstracted or non-representative piece of no less than 150 and more than 300 frames at 30fps based on your understanding of a simple nested structure and how it moves. The solar system is an example of a nested structure. A mobile that hangs over a baby's crib and rotates is another. An expanding police baton, etc. The whole structure must have a movement, while it's children move under it as well. When completed, upload a playblast to YouTube and email the link to adumitrescu@sulross.edu

Grading

To do well in this project, do the following:

- Have a reasonably complex animation that uses a nested structure(s) – 30%
- Effort – 40%
- Aesthetics of your animation. – 30%

Project #4: Table and Chairs (plus Wooden Car)

Description

Create a table and four chairs in Maya from the photos provided. Use the photos as reference planes to ensure a fairly accurate model. Try to assign colored wooden materials to all five objects.

ARTC Students

Besides the table and chairs, you must also use the reference photos to build the wooden car. Make the wheels and axels their own objects separate from the bar body.

Grading

You will be graded from 0-100% on this project. To score well, please do the following:

- Email me a completed scene of your completed table with four chairs in Maya format.
- Add a simple wooden texture and relevant colors for each piece of furniture – 20%
- Model as accurately as you can. Remember to bevel! – 80%
- *(note that the same grading breakdown applies for the wooden car)*

Project #5 – Modelling a Biped

Description

Using your designs from earlier this semester, build your biped. Feel free to deviate from your drawings but not so much that they bear no relation to one another.

ARTC Students

Build both your bipeds.

Grading

You will be graded from 0-100% on this project. To score well, please do the following:

- Email me a completed scene of your completed model.
- Effort – 80%
- Make a complete figure that has all the anatomical parts listed in the photos from Project #A – 20%

Project #6 – Modelling Freestyle

Description

Choose TWO real-world objects and model them in Maya. You MUST have your object approved by the professor. Remember to photograph the object from all angles.

ARTC Students

You must model FOUR objects.

Grading

You will be graded the following way:

- Effort – 70%
- Accuracy – 30%

Project #7: Rigging your biped(s)

Description

Add a skeleton to your 2-legged model. Adding a skeleton is fairly simple (remember to bend the knees slightly forward). Once done, bind the skeleton to your model and animate it doing something simple – a jump, a wave, a turn, a stretch, etc.). When done, playblast your animation and upload to YouTube.

Grading

You will be graded from 0-100% on this project. To score well, please do the following:

- Full skeleton that has been bound – 40%
- Quality of animation – 60%

Project #8: Lighting

Description

Light your table and chairs models, your freestyle objects, and your 2-legged model(s). The mood is up to you. Below are some suggestions. Remember to have at least a 3-point lighting system.

- Morning light.
- Spooky green
- Cold
- Teal and Orange lighting



Grading

You will be graded from 0-100% on this project. To score well, please do the following:

- Light the following – 33 ⅓ each
 - Table and Chairs (plus wooden car)
 - Freestyle objects
 - Biped(s)

Project #9 – Texturing your model

Add a texture to your biped(s).

Grading

This project is pass/fail.

Project #10 – Final Project

Description

Spend the remainder of the semester building another model from scratch – design, model, rig, texture, and light it. The more you build, the better you will become as a 3D artist.

ARTC Students

Build two models.

Grading

You will be graded from 0-100% on this project. To score well, please do the following:

- Effort – 50%
- Creativity – 50%