

CSAT 2313: INTRODUCTION TO 3-D DESIGN

9.50–11.25am, MTWRF | July 9–August 13, 2015 | Room BAB 302, Sul Ross State University

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Office Hours: MTWRF : 11.25am-12.25pm and by appointment

Course Introduction

In this class you will learn how to use Autodesk's Maya 2014 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.

Exercises #1-7 are graded pass/fail. These are from the textbook – it is *vital* you complete these so that you understand how Maya works. I can only demonstrate so much during class and becoming more comfortable with the software can be achieved by completing the exercises.

Projects #A-F are graded from 0-100%. The project description at the end of the book explains what you need to do to achieve a good grade. These projects build on the skills you learn from class demonstrations and from the book exercises.

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:

- Seven exercises : 20%
- Six creative projects : 60%
- Attendance, participation, and book quiz : 20%

Materials and Text

- Introducing Autodesk Maya 2014 by Dariush Derakhshani. ISBN: 1118574907
- 4GB (minimum) jump/flash drive
- A copy of Autodesk's Maya 2014, student edition, installed on a personal computer

The required text for this course is *Introducing Autodesk Maya 2014* by Dariush Derakhshani. There will be a book quiz to ensure you have a copy of the text.

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 2014 can be found in BAB 302. 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**. **Five** absences result in you being dropped from the course with a grade of "F" as per Sul Ross State University policy. **Four** unexcused absences will result in a zero for your attendance and participation grade. Arriving to class **on time** is also essential – arriving 15 minutes after class begins will be considered a half-absence.

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|---------------------------------|------|--------------------------------|--------|
| • One (1) unexcused absence: | -25% | • Four (4) unexcused absences: | -100% |
| • Two (2) unexcused absences: | -50% | • Five (5) unexcused absences: | - Fail |
| • Three (3) unexcused absences: | -75% | | |

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 Ferguson Hall, room 112 or call (432) 837-8691. Please relate all requests for special accommodations to the instructor by the third class period.

Please note that this syllabus is subject to change.

COURSE SCHEDULE

WEEK ONE – *Introduction to Maya*

- Jul 9 (R): * Class introduction and syllabus overview.
* Download Maya 2014, student edition, to your personal computer.
* Buy the class textbook.
* Download the book's exercise files from <http://www.wiley.com/WileyCDA/WileyTitle/productCd-1118574907,miniSiteCd-SYBEX.html> (or search on the internet for “Introducing Autodesk Maya 2014: Autodesk Official Press”).
* Playing around with Maya: setting up a project, creating polygons, moving around the screen, using the transformation tools, shaded and wireframe views
* EXERCISE #1: Solar System project (pp 34-62). Replace the planet spheres with cubes.
- July 10 (F): Continue working on exercise #1.
Project #A: Detailed drawing of a 2/4 legged figure.
* **BOOK QUIZ** – please have a copy of the book in class.

WEEK TWO – *Basic modeling*

- July 13 (M): * **DUE TODAY - Exercise #1: Solar System**
* EXERCISE #2: Catapult (pp 148-169)
- July 14 (T): Continue working on exercise #2
- July 15 (W): Continue working on exercise #2
- July 16 (R): * **DUE TODAY - Exercise #2: Catapult**
* EXERCISE #3: Lamp (pp 217-236)
- July 17 (F): Continue working on Exercise #3

WEEK THREE – *Shading and further modeling*

- July 20 (M): * **DUE TODAY - Exercise #3: Lamp**
* **DUE TODAY - Project #A: Detailed drawing of a 2/4 legged figure**
* PROJECT #B: Modeling a table and four chairs
- July 21 (T): Continue working on Project #B
- July 22 (W): Continue working on Project #B
- July 23 (R): * **DUE TODAY – Project #1: Table and Chairs**
* EXERCISE #4: Shading a toy wagon
- July 24 (F): Continue working on exercise #4

WEEK FOUR – *UV mapping and animation*

- July 27 (M): * **DUE TODAY – Exercise #4: Shading a toy wagon.**
* Project #C – Building a 2/4-legged model
- July 28 (T): Continue working on Project #C
- July 29 (W): Continue working on Project #C
- July 30 (R): * **DUE TODAY – Project #C – Building a 2/4-legged model**
DEMONSTRATION – Adding a UV map to a torus tire.
PROJECT #3 – Adding a UV map to your model.
- July 31 (F): Exercise #4: Animating a ball / graph editor (pp 346-349 and pp 352-355)

WEEK FIVE – *Lighting and rigging*

- Aug 3 (M): * **DUE TODAY - Project #3: UV map texture for your two-legged figure.**
Continue working on exercise #4
Exercise #5: Rigging a skeleton to walk (pp 396-405)
- Aug 4 (T): * **DUE TODAY – Exercise #4: Animating a ball**
* **DUE TODAY – Exercise #5: Rigging a skeleton to walk**
DEMONSTRATION – Smooth and Rigid Binds (pp 414-425)
- Aug 5 (W): Exercise #5: IK Handles (pp 427-429)
- Aug 6 (R): * **DUE TODAY – Exercise #6: IK Handles**
PROJECT #4 – Bind a skeleton to your model and have it perform an animation that repeats.
- Aug 7 (F): * **DUE TODAY – Project #E: Animating your model**
* EXERCISE #6: Lighting several objects using three-point lighting (pp 460-462, pp 479-482)

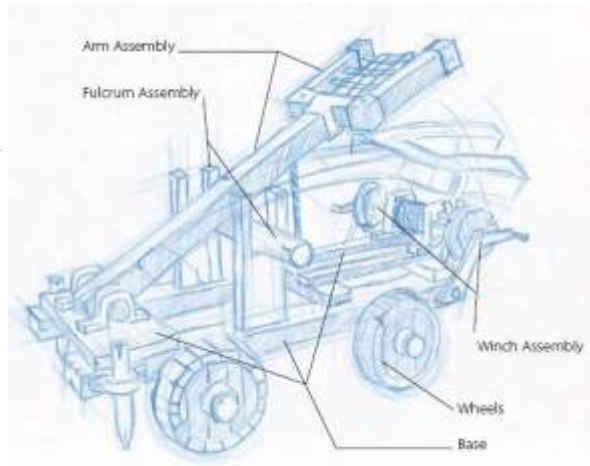
WEEK SIX – *Final Project*

- Aug 10 (M): * **DUE TODAY – Exercise #6: Lighting several objects using three-point lighting**
* EXERCISE #7: Adding a glowing bulb to a scene *and* lighting a simple scene (pp 486-494)
- Aug 11 (W): * **DUE TODAY – Exercise #7: Glowing light bulb.**
Project #F – Lighting your model
- Aug 12 (W): * **DUE AT 5PM – Lit, animated model as a Maya scene**
- Aug 13 (R): EXAM: Present your four lit scenarios, and then your lit, animated model.

PROJECT DETAILS

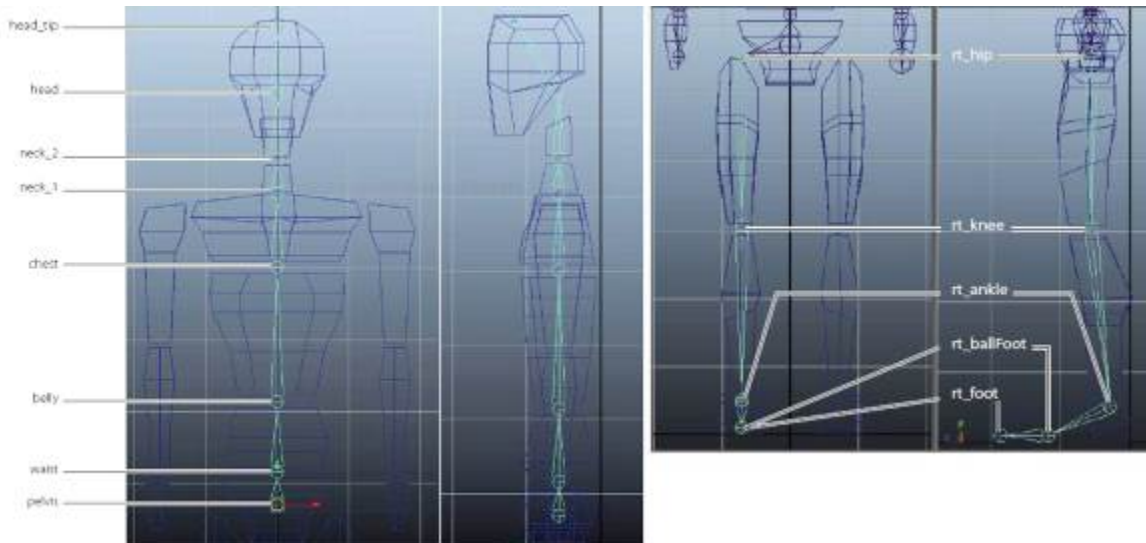
Project #A – Detailed drawing of a 2/4-legged figure

Choose a 2-legged OR a 4-legged creature you want to turn into a 3d figure. Draw as detailed a model as you can of the creature. DO NOT worry about shading, texture, etc. Instead, make a line drawing similar to the one of the catapult in the textbook.



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.

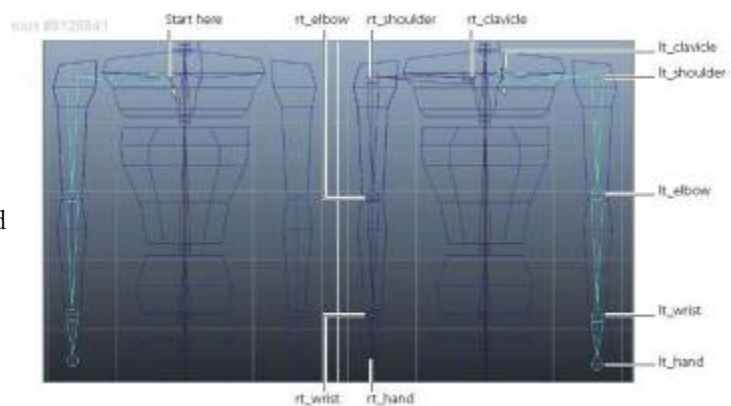
Below are images with the human anatomy you must include in your design. Relevant anatomy must be included if you choose to draw a quadraped.



Grading

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

- Provide two JPEGs of your drawing – a side view and a front view.
- Include all the anatomical parts listed in the images – later you will be adding a skeleton to your creation
- Make your design sufficiently detailed to work from in Maya
- Put a lot of creativity and effort into your work .



Project #B – Building a table and chairs

Create a table and four chairs in Maya from the photos provided. Use the photos as reference planes to ensure a fairly accurate model.

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.
- Add a simple wooden texture and relevant colors for each piece of furniture.
- Model as accurately as you can. Remember to bevel!

Project #C – Building a 2/4-legged model (biped or quadruped)

Build a model of your biped/quadruped in Maya using your detailed drawings.

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.
- Feel free to deviate from your drawings but not so much that they bear no relation to one another.
- Make a complete figure that has all the anatomical parts listed in the photos from Project #A.
- Remember to bevel.

Project #D – Texturing your model

Create a UV map of your model and output it as a TIFF. Use Photoshop to add textures to your model. Save your photoshop texture as a layered TIFF. Remember to hide the UV map layer when saving!

Grading

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

- Create good textures that help make your model look like a character and not a pile of polygons.
- Be creative in your color and texture choices.
- Put plenty of effort into your texturing.

Project #E – Animating your model

Again, using the project description images from Project #A, 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.)

Grading

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

- Add a full skeleton to your model and BIND it
- Create a simple animation that REPEATS. Ensure your animation is as lifelike as possible.

Project #F – Lighting your model

Play with lights to create the following moods. Render each lighting setup, put all the images onto one page, and email as a JPEG.

1. Morning light.
2. Spooky green
3. Cold
4. Teal and Orange lighting (ala Han Solo Carbonite freezing scene from *The Empire strikes back*)

Finally, add a series of lights to your animated model.