

## **Advanced Projects: Animation - FNAR 353/653**

Professor: Joshua Mosley  
Email: jmosley@design.upenn.edu  
Website: joshuamosley.com  
TA: Erinn Hagerty – erinn@alumni.upenn.edu

**Books** (may be found at amazon.com)

### **Shading:**

*mental ray with Maya, 3ds Max, and XSI: A 3D Artist's Guide to Rendering*, Boaz Livny

### **Mel Scripting:**

*Complete Maya Programming: An Extensive Guide to MEL and C++ API*, David Gould

*Complete Maya Programming, Vol. II: An In-Depth Guide to 3D Fundamentals, Geometry, and Modeling*, David Gould

### **Compositing:**

*Creating Motion Graphics with After Effects Vol. 1*, Trish Meyer and Chris Meyer (Buy 4<sup>th</sup> Edition)

*Creating Motion Graphics with After Effects Volume 2*, Trish Meyer and Chris Meyer

*After Effects in Production*, Trish Meyer and Chris Meyer

### **Facial Animation:**

*Stop Staring: Facial Modeling and Animation Done Right*, Jason Osipa

### **General Maya**

*Learning Autodesk Maya 2008: Foundation*, by AutoDesk Maya Press

*Mastering Maya 8.5*: by John Kundert-Gibbs, Mick Larkins, Dariush Derakhshani

*Maya 8 for Windows and Macintosh: Visual QuickStart Guide*, by Morgan Robinson and Nathaniel Stein

*Maya Character Animation*, 2nd Edition, Jae-Jin Choi, Sybex

### **Absences:**

3 unexcused absences will result in an F.

After 5:00 PM you will be marked absent.

### **Advice:**

Backup your files on CD-R or DVD-R and save sequential versions of your projects and scenes!

Files stored on lab computers may become corrupt or deleted at any time.

This is an advanced course; animation work is difficult and takes time.

### **Required:**

5 DVD-R (for Backups and Class Compilation)

### **Optional:**

1 Wacom Intous 3 Pen (available at Computer Connection for \$69.95)

1 Firewire Drive (email me if interested, we only recommend certain types in the labs).

### **The Assignment and Thoughts on Grading:**

The expectation for this course is that you will create a work or series of works of animation over the course of the semester.

You will propose and execute the project as an individual or a small group of two members. The technical demonstrations will respond to the needs and timing of your projects. You will be graded on innovation, your ability to meet deadlines, your participation in the general effort of the course to be a shared research environment with a healthy conversation, proficiency and effectiveness of the execution of the project, and the strength of the concept of the animation. I will meet with each of you at midterm to give you an assessment of your progress in these areas.

### **Timeline:**

Jan 15 - Feb 3: Develop concept and animatic

Jan 22 – Feb 5: Modeling

Feb 5 – 24: Rigging

Feb 26 – March 5 First Animation Pass (playblast of whole project, render one scene)

March 5 – March 24 Second Animation pass (mental ray half res, no secondary motion)

March 26 – April 7 – Secondary motion Third Pass

April 9 – April 21 – Final Animation Pass

April 23 – May 8 – Final Rendering at full res, Compositing and Editing.

## Syllabus:

- Thurs, Jan. 15 Discussion of Interests and What we will focus on in the Course**  
Assignment: Write a 2 paragraph Proposal for the final project and email before Sunday midnight. The first paragraph should outline the topic of the project and the second should explain what technical aspects you would be interested in working with.  
Inclass examples of storyboards, Field Trip – 6PM ICA Opening
- Tue, Jan. 20 Storyboards**  
Discuss goals of projects with class and Josh. Work in class to prepare animatics for the pitch. Demonstration of timing the stills in aftereffects and settings for rendering a movie. Your after effects composition settings should be 1280x720 at 29.97 fps.
- \*Thurs, Jan. 22 Production Pipeline**  
Demo: Using Maya's Database, Referenced Scenes. Creating Presets for Rendering, Managing File Names, Managing Data and Backing up. See these tutorials for our basic Maya and Aftereffects render settings.  
<http://www.joshuamosley.com/tutorials/MayaHDRender>  
<http://www.joshuamosley.com/tutorials/AEHDRender>
- \*Tue, Jan. 27 Preparing Models**  
Erinn will demo techniques for preparing character or object models for rigging. This includes the procedures for preparing models for UV texturing, for IK systems, and for blend shapes. As you build your models be sure to continue to delete history, freeze transformations, merge vertices, check your normal's, make sure your various models are scaled in relation to each other.  
During class you will screen your rough animatic to Erinn for tweaks and suggestions.
- \*Thurs, Jan. 29 Preparing Environments**  
Erinn will demonstrate several techniques of building environments in Maya. This includes using a large flat polygon disc (the top of a cylinder) for a good horizon, building a spherical bubble to represent the atmosphere, and using shading and flat planes to build complexity without overtaxing the renders.
- Tue, Feb. 3 Pitch for final projects**  
You will pitch your proposal to the class for final feedback.  
Discussion of the storyboards will follow your pitch.
- 
- Wed, Feb. 4, 5:30PM Review Models and Environment**  
Lecture – James Duesing, Artists Talk, location t.b.a.
- Thurs, Feb. 5 Review Models and Environment**  
Review of models  
Lecture – James Duesing, History of Animation from his perspective.
- Tue, Feb. 10 Deformation 1**  
Demo: Blend Shapes (partition and in-between), Lattices, Non-Linear and Sculpt, Jiggle, wire
- Thurs, Feb. 12 Deformation 2**  
Demo: Full Body Inverse Kinematics, Setting up Skeleton, Characterizing, Animating with FBIK, Dope Sheet and Graph Editor Editing, Intro to trax editor  
Lecture – Patti Smith, 5:30 PM, B1 Meyerson
- Tue, Feb. 17 Deformation 3 – Soft Bodies**  
Demo: Soft and Rigid Bodies, Fields, Presets  
Demo: Configuring Models for High Quality Rendering, Nurbs Tessellation, texture mapping and UV.
- Thurs, Feb. 19 Interconnecting Attributes**  
Using the connection editor, driven key and expressions to connect attributes.  
Writing expressions, initializing variables, and using basic functions.  
Creating External Scripts, Scripting Control Panels, and Executing Scripts
- Tues, Feb. 24 Final Project – Lab Work Session** *Work in Class on Final Project*  
Lectures will be based on your needs.

- Thurs, Feb. 26 Shading and Rendering 1 – Mental Ray**  
 General Discussion of Rendering Engines (Hardware, Maya Software, Mental Ray, Renderman)  
 Mental Ray Demo: Lights, Settings, and MR Shaders, Camera and Lighting Rigs  
 Raytrace shadows, photons and global illumination  
 Render Globals, Sampling, Filtering, Raytracing - Scanline, Motion Blur, Caustics and Global Illumination,  
 Final Gather, Frame Buffer (Data Type, Gamma, and Premultiply), Render Layers and Passes
- Tue, Mar. 3 Shading and Rendering 2 – Hypershade**  
 Mental ray and Maya Default shaders and utilities, Using Bitmap textures (and setting filters)  
 Networking Shading nodes, Using Ramps, and conditional shaders to dynamically change shading  
 Assignment: Using template shader file, create 10 high quality shading networks and export each one with the following naming convention “lastname\_material.ma”. Also export a preview thumbnail of the shader.
- Thurs, Mar. 5 Rendering and Compositing**  
 Demo: Rendering in Passes, Using Background Plate, Compositing Techniques, Color for Final Output
- Tue, Mar. 10 & 12 SPRING BREAK** No Class.
- Tue, Mar. 17 Final Project – Lab Work Session** *Work in Class on Final Project*  
 Lectures will be based on your needs.
- \*Thurs, Mar. 19 Final Project – Lab Work Session** *Work in Class on Final Project*  
 Lectures will be based on your needs. Josh in London
- Tue, Mar. 24 Final Project – Lab Work Session** *Work in Class on Final Project*  
 Lectures will be based on your needs.
- Thurs, Mar. 26 Final Project – Lab Work Session** *Work in Class on Final Project*  
 Lectures will be based on your needs.
- Tue, Mar. 31 Final Project – Lab Work Session** *Work in Class on Final Project*  
 Lectures will be based on your needs.
- Thurs, April 2 Final Project – Lab Work Session** *Work in Class on Final Project*  
 Entire Hardware Render Animation and Sound should be complete.
- \*Tue, April 7 Final Project – Lab Work Session** *Work in Class on Final Project*  
 Lectures will be based on your needs. Josh in Critiques
- Thurs, April 9 Final Project – Lab Work Session** *Work in Class on Final Project*  
 Lectures will be based on your needs.
- Tue, April 14 Final Project – Lab Work Session** *Work in Class on Final Project*  
 Lectures will be based on your needs.
- Thurs, April 16 Final Project – Lab Work Session** *Work in Class on Final Project*  
 Lectures will be based on your needs.
- Tue, April 21 Final Project – Lab Work Session** *Work in Class on Final Project*  
 Lectures will be based on your needs.
- Thurs, April 23 Final Project – Lab Work Session** *Work in Class on Final Project*  
 Lectures will be based on your needs.
- Thur, April 28 Final Project – Lab Work Session** *Work in Class on Final Project*  
 Lectures will be based on your needs.
- Fri, May 8, 3-5 PM Final Critique – Attendance Required**  
 All work must be completed. The final assignment should be completely finished.  
 Lab time can be competitive during this part of the semester so plan ahead!

**You will turn in your quicktimes on the course server as a movie. Archive projects to DVD-R**