CSCI E – 21b 3D Modeling for Animation
Syllabus and Course Outline
Spring 2009
Prof. Tereza Flaxman

Course Description
This course focuses on 3D character design and modeling for animation. Students will be introduced to character design and modeling methods such as modeling with primitives, NURBS, polygons and subdivision surfaces. Production pipeline issues such as geometry deformation and level of detail will be emphasized.

Pre-requisite: CSCI E – 21 Introduction to 3D Modeling and Animation with Maya, or permission of the instructor.

Course Organization
This class has a two hour lecture session each Tuesday. Core topics will be introduced at this time, often with a live demonstration of the workflow within Maya. The class is based on a series of weekly assignments which will be given out and discussed at this time. Following the lecture session, there will be a two hour lab, which provides supervised time for work on your assignment. Assignments will be due each Sunday at midnight. Lab attendance is mandatory and work outside of class is essential in order to complete assignments successfully.

Attendance
Class attendance is mandatory. Students are expected to be on time every class and lab section. Attendance will be given to those who attend the entire session. Three absences will drop a course grade letter grade. More than three absences will result in an F grade for the course. Except in cases of dire emergency, excuses must be provided in advance of missing a class by email.

Academic Honesty
Cheating and/or dishonest behavior relative to this course will result in failure in the course. Examples include: use of other's work without appropriate credit, copying animations or models from tutorials, CD-ROMs or the web, or having someone else do the work for you.

Deadlines, Grading and Working Environment
As in a commercial production environment, it is expected that assignments will be submitted on time, and late work will be penalized. Review and critique of work in progress is a critical part of this class, and this is only possible when work is turned in on time. For this reason, late assignments will lose one full letter grade per day.

In order to facilitate the learning process, students are expected to do most of their work in the school lab. Students who choose to work on their private computers must have their Maya project files on the school system and available for class. The transfer of Maya projects between various system configurations is a frequent source of problems, so students choosing to work off campus must leave themselves appropriate time for checking data transfers and fixing compatibility problems prior to assignment deadlines.

In courses such as this one, technical problems should be expected and planned for in advance. Part of the process becoming a 3d computer animator is learning how to work around technical problems, and leaving yourself enough time to do so. Unless there is a complete system failure in school facilities, technical difficulties are never an acceptable excuse for not meeting a deadline.
All the assignments will be graded on the quality, originality, completeness and neatness of the work.

Readings about modeling for animation may be assigned for class discussion. I reserve the right to conduct pop quizzes about the readings and technical topics discussed in class.

**Professionalism and Problem Solving**

You are expected to demonstrate a professional attitude in class and anytime in the school lab. The ability to troubleshoot your own problems is key to successful animation. You are expected to make reasonable efforts to solve problems independently before asking assistance. There will of course be times where you get stuck and are unable to move forward without assistance. In this case, you should first try to simplify the problem to its essential and replicable elements. For example, you might create a new file isolating a piece of problematic geometry. Keep in mind that the best way forward is sometimes to take a half step back.

Finally, remember that one of the reasons for working together in labs is so that students can learn from each other.

**Grading Breakdown**

Weekly Assignments: 60%
Final Assignment: 30%
Class participation: 10%

**Required Book**

*Maya 2008 Character Modeling and Animation*
Author: Tereza Flaxman

**Recommended Books**

*Mastering Maya 8.5*
Authors: John Kundert-Gibbs, Mick Larkins, Dariush Derakhshani, and Eric Kunzendorf

**Online Resources:**

- [http://highend3d.com](http://highend3d.com)
- [http://area.autodesk.com](http://area.autodesk.com)
- [http://cgchannel.com](http://cgchannel.com)
- [http://www.3drender.com](http://www.3drender.com)
- [http://www.learningmaya.com](http://www.learningmaya.com)

**Digital File Submission**

All files should be digitally uploaded to the class website. Your files should be named starting with your last name, and a suffix indicating the assignment. For example: smith_fish.mb.
Course Outline

Week 1: Modeling & Texturing a Simple Character with Polygons
- Modeling with Polygon Tools
- Working with Symmetry
- Using Image Planes
- Block Modeling
- Sculpting the Character
- UV Texturing

Week 2 and 3: Modeling and Texturing a Simple Character with Subdivision Surfaces
- Concepts of Modeling with Subdivision Surfaces
- Subdivision Surfaces Levels
- Refining Surface Components
- Techniques for Texturing Subdivision Surfaces
- Designing and Modeling a Character with Subdivision Surfaces
- Testing Geometry Deformation

Week 4 and 5: Modeling and Texturing a Character with NURBS
- NURBS Topology
- Modeling with Profile Curves
- Tools and Methods
- Designing and Modeling a Character with NURBS

Week 6: Designing a Humanoid and Modeling the Head
- Human Anatomy for Modelers
- Using Distortions for Artistic Purposes
- Methods and Tools

Week 7 and 8 – Modeling the Humanoid Torso and Limbs
- Blocking the Torso and Limbs
- Shaping and Refining the Torso and Limbs
- Testing Geometry Deformation

Week 9 – Spring Break

Week 10 – UV Mapping the Humanoid
- UV Mapping

Week 11- Facial Expression
- The Anatomy of the Face (Physiognomy)
- Universal Human Emotions and Their Physical Expression
- Overall Workflows for Facial Expressions

Week 12 - 15 Final Project

Week 16: Final Project Presentation.

General Notes:

I reserve the right to change this outline and class assignments as necessary for the best development of the class.