

# CS 22

## 3D Digital Modeling

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Fall 2007 - 10A and 2A  
**Syllabus**

This course teaches the principles and practice of 3D digital modeling, with some instruction on materials, textures and rendering. You will gain a fundamental understanding of polygons, subdivision surfaces, NURBS and splines along with deformations and editing in order to create models using 3D software. You will develop skills in 3D design and apply these in a series of assignments that will end in the creation of a fully rigged biped model complete with skeleton, inverse and forward kinematics and motion controls. In addition to class time, you must spend a significant number of hours in the lab completing homework and gaining proficiency with the tools.

Class will meet each x-hour: you are required to attend. There will be a mandatory special sessions in the first week for students who have not worked with Maya before. (Sunday, September 30, 6-9 PM) Additional advanced seminars on special topics will be held throughout the quarter. Attendance at these advanced seminars is optional but recommended.

Dist: TLA.

### **Course requirements:**

You are given weekly lab assignments that are completed during the week and turned in for review. Assignments are due on Tuesday or Thursday. Assignments are evaluated against a set of technical criteria as well as on aesthetic quality. Attendance at each class and lab is expected. Missing classes or late arrival will result in a lowered grade (see attendance policy below).

### **Course Goals:**

- To learn how to make “good” models using polygons and subdivision surfaces.
- To work using an effective workflow (keeping the files neat, labeling effectively, cleaning up as you go, using the tools efficiently, working smart, saving often, etc.)
- To gain an elementary understanding of NURBS and splines.
- Completing the assignments on time and well.
- To create a biped model that is fully rigged and textured.
- To create a short animation of your biped model.

## What is a “good” model?

A good model is:

Made with a good, clean, optimized geometry:

- rounded, not square
- clean edges that flow through the model
- quads or triangles
- “enough” detail for the intended use
- not too much detail so that it is needlessly heavy
- surface normals all point in the correct direction
- eliminate unnecessary faces
- built smart (build a side and mirror it, use a good workflow and proper labeling, etc.)
- built with the use in mind
- attention to corners: smoothed, beveled or creased

Textured well:

- uses the proper image type
- has “enough” detail to make it look “good”
- works with the design
- layered when needed
- clean and as small as possible
- 2D if possible

Rigged properly for motion:

- know how the model will move
- rig for that motion
- easy to understand controls
- doesn’t break the geometry
- doesn’t break
- no extra attributes

## Books

### Required:

Maya 8 at a Glance  
ISBN: 0-470-05657-6

Polygonal Modeling: Basic and Advanced Techniques  
ISBN-13: 978-1598220070

Stop Staring: Facial Modeling and Animation Done Right (Paperback)  
by Jason Osipa (Author)  
ISBN-13: 978-0471789208

### Optional:

Advanced Maya Texturing and Lighting  
0-471-79404-X

Learning Maya Mel and the API  
(DVD)  
ISBN: 1-897177-21-6

Learning Maya, Mental Ray for Maya  
DVD  
ISBN: 1-894893-95-6

Maya 8 Character Modeling  
SBN-13: 978-1598220209

Maya 8.5 Self Training in Modeling and nCloth  
DVD  
ASIN: B000TGB7DO  
Studio: HungChum Kao

Building a Digital Human (Graphics Series) (Graphics Series) (Paperback)  
SBN-13: 978-1584502852

Maya Techniques: MEL for Artists  
ISBN: 1-897177-35-6

## **Grading:**

Weekly lab assignments: 70 %  
Final project 30 %

**Attendance:** Because this is a small and intensive course, its success depends on the full participation of each student. You are required to attend each session and to contribute to every discussion. If you must miss class, you must notify the instructor in advance. Legitimate absences may be negotiated, but after two unexcused absences your course grade automatically falls by a full grade. Three or more unexcused absences will be brought to the attention of your class dean.

During the quarter, each student will model/texture:

1. A room interior
2. A spider
3. A fully-rigged biped character with both IK and FK and a functional a set of controls.

Additional opportunities to learn about texturing, rigging, NURBS and the Maya Architecture will take place during the Advanced Seminars. The date for these seminars will be determined after the first class.