

# Introduction to 3D Modeling and Rigging

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## Office Hours

Tues: 10 - 11:30AM  
Wed: 10 - 11:30AM  
Thur: 10 - 11AM  
Fri: 11 - 12PM

## Class Times

Thursday (Room: CM110)  
1:00 - 2:50p.m. - *Lecture*  
3:00 - 4:15p.m. - *Lab*

## Course Description

This course introduces students to the creation of 3D models using the personal computer with an emphasis on Game Characters and Vehicle Development. Students learn historical perspective, the animation production process and industry trends in 3D modeling. Students work on hands-on projects that focus on developing model building fundamentals.

## Goals

In the late 1970's, computer generated images, or CGI, exploded onto the scene. The television and film industry embraced this new technology as it allowed them to explore new characters and worlds that were previously unattainable.

Our journey into computer animation and 3D modeling will start by focusing on the basics of working in a 3-Dimensional space. We will study the fundamentals of form, line and shapes and delve into the intricacies of creating photo-realistic computer generated objects.

The complex tools and techniques of 3D modeling will introduce us to fun, new ways of approaching creative problem solving. In many ways, 3D modeling is like putting together a jig-saw puzzle. Starting with one small piece, we will continue to add more pieces and details to our model until they resemble the original object.

## Objectives

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Unlike goals, objectives are supposed to be measurable. Here's what you will have to do to pass with course with flying colors:

- Develop skills for planning 3D models through diagrams and sketches
- Create 3D models using the personal computer
- Develop a working knowledge of Luxology's Modo
- Develop an understanding of the different modeling workflows
- Create assets and images for your 3D modeling portfolio
- Familiarize each student with one's own personal speciality
- Constructively critique the work and models of your classmates
- Demonstrate an understanding of the different careers in 3D Modeling

*\*\* Students with prior training will be assigned more advanced projects \*\**

## Text and Materials

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### Required Text:

The Official Luxology Modo 301 Guide  
ISBN: 978-1598634976

### Recommended Text:

Polygonal Modeling: Basic and Advanced Techniques  
ISBN: 978-159822070

Stop Staring: Facial Modeling and Animation Done Right  
ISBN: 978-0782141290

## Required Materials:

USB Flash Drive (at least 128mb) for homework assignments

## Class Policies

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- Please arrive and conduct yourself in a professional manner.
- Please show up to class on time.
- At the beginning of each class, there will be an attendance sheet for you to sign next to your name. If you miss **THREE OR MORE** classes, and have not discussed these absences with me, I may drop you from the class.
- Please do not bring guests to class unless prearranged with the instructor.
- Contact the instructor in advance to make appropriate arrangements for missing a class and lesson.
- The student is responsible to learn the assignment and/or information if a class/lecture is missed.
- **NO** active cellular phones/beepers (turn the ringers OFF) in class or lab.
- Please raise your hand to ask questions or speak up if I'm not looking!
- Feel free to tape record lectures, but your recording device must be compact and you must come to class early enough to set it up without disturbing the class—do not bring in your boom box to record lectures and do not interrupt the class to set up your recorder.

**If you miss **THREE OR MORE** classes, and have not discussed these absences with me, I may drop you from the class.**

# Evaluation

Grades are compiled from the following:

	Ind. Value	Opportunities	Total
<b>Class Participation</b>	10	15	150pts
<b>Weekly Assignments</b>	50	12	600pts
<b>Lab Assignment</b>	25	12	300pts
<b>Final Project</b>	250	1	250pts
<b>Grand Total =</b>			<b>1300pts</b>

All assignments are due at the beginning of class. The first 15 minutes of class will be devoted to turning in assignment, unless otherwise noted by the instructor. All assignments must be physically turned into the instructor during class. Assignments handed-in after class will be counted as "Late".

**\*\* Assignments CANNOT be emailed to the instructor \*\***

## Late Assignments

- One Class = One Letter Grade
- Two Classes = Two Letter Grades
- Three or more classes = the assignment will not be accepted

Only extreme circumstances warrant a grade of "incomplete". An incomplete grade is reserved for those students who meet all of the following criteria:

- Student experiences an extreme situation which is unexpected (Such as a death in the family, serious illness requiring the student to miss several classes)
- Student's grades are passing ( C or higher) at the time of the extreme situation.
- Student notifies the instructor within 10 days of an extreme situation

**\*\* A home computer crash is not an acceptable excuse \*\***

## **Academic Dishonesty**

Students are expected to maintain the highest standards of academic honesty while pursuing their studies at Sacramento City College. Academic dishonesty includes but is not limited to: plagiarism and cheating; misuse of academic resources or facilities; and misuse of computer software, data, equipment or networks.

Plagiarism is the use (copying) of another person's ideas, words, visual images or audio samples, presented in a manner that makes the work appear to be the student's original creation. All work that is not the student's original creation, or any idea or fact that is not "common knowledge," must be documented to avoid even accidental infractions of the conduct code.

Cheating is to gain unfair advantage on a grade by deception, fraud, or breaking the rules set forth by the instructor of the class. Cheating may include but is not limited to: copying the work of others; using notes or other materials when unauthorized; communicating to others during an exam; and any other unfair advantage as determined by the instructor.

## **Disability Policy Statement**

It is our policy not to discriminate against qualified students with documented disabilities in our educational programs, activities, or services. If you have a disability-related need for adjustments or other accommodations in this class please contact the Disabilities Resource Center. You must inform your instructors and the Disabilities Resource Center before the end of week one of classes and preferably before the class start.

## **Desire to Learn (D2L)**

This class will utilize Desire to Learn, our online learning resource system. Assignments, grades, rubrics and class materials will be placed in our class's D2L website. Please bring your student ID number and password to class each session. We will be actively using this platform for this class.

# Advanced Technology Lab Hours and Information

**Lab Location:** T109

**Lab Phone:** 916-558-2277

**Lab Schedule:** The Lab is open 6 days a week, during the following hours:

Monday - Thursday: 8:00 AM - 9:00 PM

Friday: 11:00 AM - 5:00 PM

Saturday: 1:00 pM - 5:00 PM

Sunday: Closed

The computer lab is equipped with Apple iMac computers and are loaded with the latest software. They are for you to use for class projects —please treat them with respect. Every time you use the computer lab you **MUST** sign-in at the computer near the door using your student ID number. The lab attendance records generate funds for new equipment and software. The lab coordinators and tutors are available for assistance if you are experiencing difficulty with the homework.

They have been asked **NOT** to hand-feed you answers. They are there to help you learn and remember the material. There should always at least one lab employee close by to help you, but do not use the help as a crutch or you will not learn the material. I also recommend that you bring your text book to the lab as reference material, especially during busy hours when one-on-one help is harder to get.

## A New Greener Approach

The GCOM Department at SCC recently became the first community college in the U.S. to join the Designers Accord—an international coalition of designers, educators, researchers, engineers, business consultants, and corporations, who are working together to create positive environmental and social impact. As part of GCOM’s effort, we are planning to implement more “sustainable” practices in the way we teach and run our program.

For more info on the Designers Accord, visit [www.designersaccord.org](http://www.designersaccord.org)

Most lesson assignments will come from the textbook and any extra instructions will be detailed on the class blog. As much as possible, any additional assignments and handouts will be available only as PDF files on the blog and **NOT** be handed out in paper form in the classroom. You are

encouraged to NOT print out these files, but to read them and keep them in digital form only.

## Online Resources

SCC Website: [www.scc.losrios.edu](http://www.scc.losrios.edu)

Desire 2 Learn: <https://d2l.losrios.edu/>

GCOM Department Website: [http://wserver.scc.losrios.edu/~tech/gc/gcom\\_home.html](http://wserver.scc.losrios.edu/~tech/gc/gcom_home.html)

GCOM Blog: <http://gcomscc.blogspot.com/>

Class Website: [www.renderography.com](http://www.renderography.com)

Adobe's Website: [www.adobe.com](http://www.adobe.com)

Autodesk Website: [www.autodesk.com](http://www.autodesk.com)

Luxology Website: [www.luxology.com](http://www.luxology.com)

Academic Software: [www.journeyed.com](http://www.journeyed.com)

# Calendar of Assignments

## January

Due Date	Assignment
01/24/13	Bring D2L Login Info
01/31/13	Student Survey

## February

Due Date	Assignment
02/07/13	Coffee Cup
02/14/13	Cork Board Geometry
02/21/13	Cork Board Texture
02/28/13	Medicine Bottle

## March

Due Date	Assignment
03/07/13	Cocktail Glass
03/14/13	Stoplight
03/21/13	Residential House - Geo

## April

Due Date	Assignment
04/04/13	Residential House - Tex
04/11/13	Cell Phone - Geometry
04/18/13	Cell Phone - Texture
04/25/13	Human Hand

## May

Due Date	Assignment
05/02/13	Human Body
05/09/13	Final Project

# GCOM 402 PROJECTS

## Coffee Cup

Due: Week 03

Ch. 01

### *Skills Learned*

- Application interface
- Basic object creation
- Bevel tool
- Rendering basics
- Working with reference images
- 3 Point Lighting Setup

## Cork Board

### Model

Due: Week 04

Ch. 06

### *Skills Learned*

- Working with Layers
- Items in Modo
- The Bend Tool
- The Basics of Using Fall-Offs (Linear & Radial)
- Duplication Tools
- Using Sub-Division Surfaces

## Cork Board

### Texture

Due: Week 05

Ch. 07

### *Skills Learned*

- Shader Tree Fundamentals
- Creating Material Masks
- Adding Diffuse Textures
- Apply Procedural Textures
- Changing Material Effects (Bump and Stencil)
- Using Area Lights
- Using Spot Lights

# Medicine

## Bottle

Due: Week 06

### *Skills Learned*

- Beg. Sub-Div Modeling
- Creating Compound Shapes
- Managing Multiple Mesh Items
- Mesh Cloning
- Item Cloning
- Editing Environments
- Creating Scenes
- Using Reference Images
- Using Directional Lights

# Cocktail

## Glass

Due: Week 07

Ch. 11

### *Skills Learned*

- UV Mapping Basics
- Creating Textures
- Using Photoshop for Textures
- Interactive Texture Painting
- Advanced Material Editing
- Radial Arrays
- Creating Lumignons

# Stoplight

Due: Week 8

### *Skills Learned*

- Adv. Hard Surface Modeling
- Creating Product Shots
- Adv. Lighting Techniques
- Modeling to Reference Images
- Using Material Presets
- Using Environment Presets
- Beg. Box Modeling
- UV Mapping
- Beg. Texturing

## Residential

### House - Geo

Due: Week 9

#### *Skills Learned*

- Architectural Modeling
- Visual Storytelling
- Adv. Global Illumination
- Physical Sun Techniques
- Adv. Polygonal Modeling
- Adv. Material Creation
- Adv. Box Modeling
- Adv. Texturing

## Residential

### House - Tex

Due: Week 10

#### *Skills Learned*

- Architectural Modeling
- Visual Storytelling
- Adv. Global Illumination
- Physical Sun Techniques
- Adv. Polygonal Modeling
- Adv. Material Creation
- Adv. Box Modeling
- Adv. Texturing

## Cell Phone

### Geometry

Due: Week 11

#### *Skills Learned*

- Visual Storytelling
- Mixing Sub-Div & Polygons
- Creating a Scene
- Lighting with Lumigons
- Mesh Sculpting
- Adv. Render Settings
- Adv. Texturing

## Cell Phone

### Texture

Due: Week 12

#### *Skills Learned*

- Visual Storytelling
  - Mixing Sub-Div & Polygons
  - Creating a Scene
  - Lighting with Lumigons
  - Mesh Sculpting
  - Adv. Render Settings
- Adv. Texturing

## Human

### Hand

Due: Week 13

#### *Skills Learned*

- Beg. Organic Modeling
- Adv. Sub-Div Surface Techniques
- Modeling to Reference Images
- Creating Soft Surface Shape
- Understanding Polygonal Flow
- Adv. Loop Slice Modeling

## Human

### Body

Due: Week 14

#### *Skills Learned*

- Adv. Sub-Div Surface Techniques
- Mastering Compound Curves
- Mastering Polygonal Flow
- Modeling to Reference Images
- Sub-Surface Scattering
- Adv. Loop Slice Modeling