

The Art Institute of California – San Francisco

Course Syllabus

Course Number: MA3312

Course Title: Advanced Lighting & Texture

Class Meetings: Fridays, 6-10pm, room 015, 1170 Mkt

Session/Year: Spring 2012

Instructor Name: Andrew Klein

Email Address: amklein@aii.edu

Phone: not available

Website: www.kleinmakelearngood.com (has most of the course notes)

Instructor Availability Outside of Class:

-1 tutoring hour per week, first come first serve: Mon.5-6pm, room 015

-1 office hour per week, GAD Portfolio students first: Wed. 5-6pm, room 015

Advanced Lighting & Texture

Course Description:

In this course, students will continue to develop lighting and texturing skills. Procedural texturing and lighting will also be covered.

Course Length: 11 Weeks

Contact Hours: 44 Hours

Lecture: 22 Hours

Lab: 22 Hours

Credit Values: 3 Credits

Course Competencies:

Upon successful completion of this course, the student should be able to:

- Apply traditional paint concepts, tools, and techniques for use in computer animation
- Develop critical ideas for surface treatment and lighting
- Demonstrate the layering of light in space to create mood, emotion and theme.
- Demonstrate an understanding of global illumination.

Course Prerequisite(s): GA3311 Material & Lighting

Text(s) REQUIRED:

Advanced Maya Texturing and Lighting, by Lee Lanier, SYBEX, Wiley Publishing;
ISBN-13: 978-0-471-79404-2, ISBN-10: 0-471-79404X

→from here on out referred to as **Lanier**

3d Game Textures, Create Professional Game Art Using Photoshop, by Luke Ahearn,
Focal Press, ISBN: 0240807685

→from here on out referred to as **Ahearn**

Materials and Supplies: Note taking supplies and an External USB or Firewire hard drive for routine weekly backups and transfers, Wacom tablet (Intuous 3 or 4 preferred).

Estimated Homework Hours: 5 per week

Technology Needed: PC or Mac, Maya, After Effects, Photoshop, Zbrush, xNormal, Crazybump, Mudbox, nDo2, Digital Camera

Grading Scale:

All assignments must have clear criteria and objectives to meet. All students shall be treated equitably. It will be that student's right to know his/her grade at any reasonable point that information is requested by that student. The criteria for determining a student's grade shall be as follows (on a percentage of total points basis):

A	100-93
A-	92-90
B+	89-87
B	86-83
B-	82-80
C+	79-77
C	76-73
C-	72-70
D+	69-67
D	66-65
F	64 or below

Process for Evaluation:

Based on an accumulated 140 point scale via the provided rubrics you will receive with this syllabus.

PDF of References for quarter long project	5 points
Modeling for quarter long project	10 points
UVing for quarter long project	11 points
Texturing for quarter long project	30 points
Shaders/Materials for quarter long project	10 points
Lighting for quarter long project	24 points
Render Passes / Compositing for project	12 points
Weekly Quizzes	27 points
Attendance and Participation	11 points

Please see attached Grading Breakdown at the end of this syllabus for more detail

Student Evaluation/Grading Policies:

- Class time will be spent in a productive manner.
- Grading will be done on a point system.
- Points for individual activities will be announced.
- All work must be received by the set deadlines.
- ABSOLUTELY NO WORK WILL BE ACCEPTED AFTER THE FINAL CLASS MEETS WEEK 11.

Classroom Policy:

- No food allowed in class or lab at any time. Drinks in sealable bottles allowed in classroom.
- Edible items brought to class or lab must be thrown out.
- If student elects to eat/drink outside class or lab door, missed time is recorded as absent.
- Attendance is taken hourly. Tardiness or absence is recorded in 15-minute increments.
- Break times are scheduled by the instructor at appropriate intervals.
- No private software is to be brought to lab or loaded onto school computers.
- No software games are allowed in lab (unless in course curriculum).
- Headphones are required if listening to music during lab. No headphones are allowed in lecture.
- Any student who has special needs that may affect his or her performance in this class is asked to identify his/her needs to the instructor in private by the end of the first day of class. Any resulting class performance problems that may arise for those who do not identify their needs will not receive any special grading considerations.

Disability Policy Statement:

It is our policy not to discriminate against qualified students with documented disabilities in its educational programs, activities, or services. If you have a disability-related need for adjustments or other accommodations in this class, contact the Disabilities Services Coordinator at 415-276-1060.

Academic Honesty Policy:

Students are expected to maintain the highest standards of academic honesty while pursuing their studies at AiCA-SF. 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.

Student work that appears to violate AiCA-SF's standards of academic honesty will be reviewed by the Committee on Academic Honesty. If the work is judged to have violated standards of academic honesty, appropriate sanctions will be given. Sanctions include but are not limited to course failure and academic termination.

Quarter Credit Hour Definition:

A quarter credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally established equivalency that reasonably approximates not less than:

- (1) One hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for 10-12 weeks, or the equivalent amount of work over a different amount of time; or
- (2) At least an equivalent amount of work as required in paragraph (1) of this definition for other academic activities as established by the institution including laboratory work, internships, practica, studio work, and other academic work leading to the award of credit hours.

Course Outline

NOTE: ALL WORK IS DUE ON DAY SPECIFIED. NO LATE WORK OR REVISIONS ACCEPTED (UVING AND TEXTURES ARE EXCEPTIONS, SEE BELOW)

Week 1: Course Introduction. UVing Discussion

Lecture: We will discuss the difference between stacked and unique UV/texture arrangements. Using my demo model, we will examine tiling vs. stacked/unique texture arrangements, we will look at the unfold tools and elements of the UV texture editor, transferring UVs, packing UVs (“TETRISing”), and will pay close attention to texel density. Introduction to sites such as cgtextures.com and mayang.com/textures. Introduction to the texture grid.

Lab: Stacking UV shells work-along. Using provided checker texture and demonstrated techniques, students will practice unwrapping demo model.

Homework: Create a PDF compiling references for your quarter-long final project. Photos for texture references must be taken as part of this. NOT JUST from web. See Grading Breakdown included in this syllabus. Start modeling.

Reading: AHEARN 4-15, 18-28, 37-45, 50-67, 96, 137-151 and 180

Week 2: Materials Introduction

Lecture: We will examine various properties of Maya and Mental Ray materials such as Color, Specularity, Reflectivity, Refractivity, Incandescence, Transparency, etc... Introduction to Ambient Occlusion, Shadow Shaders, Sub-Surface Scattering, the Sampler Info and Surface luminance nodes.

Lab: Using test lighting environment, work-along to create various shader examples.

Due: PDF reference guide to final project.

Homework: Continue Modeling environment, which is due next week. See Grading Breakdown included in this syllabus.

Reading: AHEARN 70-84, 215-216, 390-396, 104-114

Week 3: Creating Color Maps

Lecture: The course will look at using photo source and hand painted textures to start the creation of color maps for the final project. Comparing photo sources for usage in texture creation. We will take a look at techniques for tiling textures. A discussion of Hue, Saturation, and Value will be important to remember, and we will look at how to define and use brushes and patterns in Photoshop.

Due: Completed Model for final project

Lab: Create example tiling color maps for your project.

Homework: Continue UVing, which is due next week. See Grading Breakdown included in this syllabus.

Reading: NONE for the week... JUST UV!!!

Week 4: UVing Review, Lab Time

Lecture: You will meet with your instructor who will examine your UV layouts and your texture grid while in class. All UVing must be done by this date. You will have 1 week to make revisions after this point, at which time UV maps will be graded.

Due: Completed UVing for final project. Will be graded next week. Layers in your Maya scene should have names that match EXACTLY with your texture grid-plan. Screenshots of your scene with the UV checker grid applied will be submitted as well.

Homework: Begin Texturing, Due in week 6, graded after revision in week 7. See Grading Breakdown included in this syllabus.

Reading: AHEARN 98-109, 117-121, 152-158

Week 5: Specular, Alpha, Normal, and Bump Maps

Lecture: We shall examine techniques for breaking out the color map into component parts for building the full shader network from both a texture first, and model first approach.

Lab: Create example maps using Photoshop, Crazybump, xNormal and Maya.

Due: UVs are due. Layers in your Maya scene should have names that match EXACTLY with your texture grid-plan. Screenshots of your scene with the UV checker grid applied will be submitted as well.

Homework: Continue Texturing, Due in week 6, graded after revision in week 7. See Grading Breakdown included in this syllabus.

Reading: AHEARN 158-179, 374-385

Week 6: Texture Review, Lab Time

Lecture: You will meet with your instructor who will examine your textures with you in class. While textures are due on this date, you will be given 1 week after meeting to make revisions based on recommendations from your critique. In the meantime, you will be working on your project.

Lab: Open lab while 1-on-1 reviews take place

Due: All Texturing due this week, will be graded the following week based on revision from this critique.

Homework: Continue Texturing, revisions due in week 7. See Grading Breakdown included in this syllabus.

Reading: AHEARN 252-255, 366-373.

LANIER 170-175, 182-184, 234-235

Week 7: Blending Textures

Lecture: We shall examine techniques for blending textures through complex shading networks. This will include Layered Shaders/Textures, vertex blending, UV sets, 2d+3d procedural mixers, and utility nodes such as multiply, blend, and reverse.

Lab: Will take existing textures and practice blending them using various techniques mentioned above.

Due: All texturing must be done by this point and submitted. Grading will be done at this point.

Homework: Start assembling shader networks which will be graded upon final submission of project in week 11.

Reading: AHEARN 344-352

LANIER 2-22, 37-52

Week 8: Lighting, week 1

Lecture: Direct Illumination settings, Types of lights (spot, point, directional) and their uses (key, fill, accent, rim). Shadow Settings for Dmap and Raytrace. Global Illumination introduction.

Lab: We will take your existing scene file and start lighting the space to your needs, with the intent of creating two sets of lights to match both illumination designs from your project proposal.

Homework: Continue Working on Lighting

Reading: LANIER 53-60, 62-65, 69-73, 87-89, 376-385

Week 9: Lighting, week 2

Lecture: We will work on continuing our lighting, recap Global Illumination and examine advanced lighting further with Final Gathering, and Caustics. We will look at specialized techniques such as Portal lights, Physical Sun/Sky, Lens Shaders, and Fog volumes.

Lab: We will continue working on the lighting in your scene file.

Homework: Lighting design should be completed by next week, although will not be graded until the final.

Reading: AHEARN 29-36, 331-333
LANIER 338-340, 385-388, 402-405

Week 10: Render Settings and Render Passes

Lecture: First we will optimize our render settings (Aliasing, Filtering and BSP), then we will take a cursory look into render passes and layers. We will use your own scene files to generate AO, Depth, Indirect, Direct, Reflections, Shadow, and other instrumental passes. Finally we will examine how to composite these render passes using a variety of tools.

Lab: Will create, render, and composite example render passes for your final.

Due: Everything is due in week 11 at the start of class, no exceptions. Students later than 30 minutes, without a valid excuse will fail the course.

Homework: Finish Rendering 6 shots from 3 camera angles for the final project which must be composited from multiple render passes.

Reading: LANIER 301-312, 349-353, 438-444

Week 11: Final Quiz and Final Critique

Lecture: Students will take a final quiz and participate in a final critique.

Due: At the start of class you will submit 1 master Maya file, all textures, and 6 composited renders, plus the un-composited passes (or a PSD containing all layers), your reference PDF (again) and your texture allocation grid.