#### New ImageCourse Syllabus

**Course Number:** GA3311

**Course Title:** Material & Lighting

**Class Meetings:** Thursdays from 8:00 am to 12:00 pm

**Session/Year:** Summer 2012

**Instructor Name:** Stephen Studyvin

**Email Address:** sstudyvin@aii.edu

**Phone:** 510-857-7450

**Instructor Availability Outside of Class:** To be discussed in class.

## **Material & Lighting**

**Course Description:**  
In this course students are introduced to materials, textures, and
lighting strategies to add detail and realism to objects without
adding complexity to the model. Students simulate real-world
surfaces containing reflection radiosity and other effects.

**Course Length:** 11 Weeks

**Contact Hours:** 44 Hours

**Lecture:** 22 Hours

**Lab:** 22 Hours

**Credit Values:** 3 Credits

**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 Competencies:**

* Apply traditional paint concepts, tools, and techniques for use
  in computer animation.
* Develop critical ideas for surface treatment, lighting, and
  motion of 3D models.
* Analyze and evaluate and apply texture-mapping strategies.

**Course Prerequisite:** MA1134 Principles of 3-D Modeling

**Recommended Text:** Advanced Maya Texturing and
Lighting (2nd Ed) by Lee Lanier, Sybex, ©2008, ISBN:
978-04702927

**Recommended Text:** Digital Lighting and
Rendering (2nd Ed) by Jeremy Birn, New Riders Press, ©2006, ISBN:
978-0321316318

**Recommended Text:** Mastering Autodesk Maya 2012
by Eric Keller, John Wiley and Sons, ©2011, ISBN:
978-0470919774

**Method of Instruction:** Lecture and Lab

**Materials and Supplies:** Storage Media (flash
drive, hard drive), drawing supplies.

**Estimated Homework Hours:** 3 to 4 Hours per
week

**Technology Required:** Computer Lab, Maya,
Photoshop, other design and image manipulation applications, access
to still 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:**

|  |  |
| --- | --- |
| Class Participation | 12% |
| Quizzes | 18% |
| Exercises | 35% |
| Midterm Assignment | 15% |
| Final Assignment | 20% |
| **Total** | **100%** |

**\*PLEASE NOTE: SHOWING UP TO CLASS AND DOING ALL ASSIGNMENTS, WITHOUT PROGRESS, DOES NOT CONSTITUTE A PASSING GRADE.**

**School Wide 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.
* Late work receives a grade of zero.
* On-time projects may be redone with instructor approval.
* ABSOLUTELY NO WORK WILL BE ACCEPTED AFTER THE FINAL CLASS MEETS
  WEEK 11.

**Additional Grading Policies:**

**Instructor's Expectations**

**Professionalism**

* This is a professional environment. It's not just a class; this
  is your introduction to a professional working environment. Be
  respectful of other students. During lectures, do not disrupt
  others by talking, unless you are involved with the class
  discussion.
* While I encourage discussions, because they are essential to
  learning, interruptions are counter-productive. If there are
  repeated disruptions, this will be noted, and participation for the
  day will be reduced, and can lead to further action.
* Do not hold side conversations with an individual or a small
  group during discussions. If you have something to contribute to
  the discussion, do so following the proper etiquette in the class.
  If this has nothing to do with the topic, then wait to have side
  conversations for break or during lab.
* Be prepared for class at the start of class time. Sometimes
  there will be a short amount of time at the beginning of class to
  prepare for critiques, but don't expect to come to class and finish
  an exercise that is due.
* If you have problems getting to class, if you're sick, have
  transportation issues, the cat ate your keys, whatever it is, turn
  assignments into the portal website. At least you will get credit
  for the assignment.
* Take notes in class, even though I place much of the material
  online, you should be keeping your own notes to have something to
  refer to. Quite often discussions in class will cover material not
  online.
* Keep track of due dates, and work in progress reviews.

**Assignments, Exercises and turning in files**

* Most of the assignments, exercises and projects will be turned
  into the dropbox drive in the lab (unless specifically noted in the
  requirements).
* Each lab has a specific dropbox. Since this is a fairly new
  system, and can be prone to some issues, you need to check with the
  instructor before you leave the class and confirm that the
  assignment or exercise is turned in.
* Do not use the student drive to turn in or permanently store
  your project files; files left on the student drive can be easily
  deleted by another student (even unintentionally). I cannot
  retrieve anything that has been deleted off the student drive.
* Pay close attention to assignment and exercise formats. The
  format of images, or movie files are requirements. If it is in a
  format that I cannot view, I will not be able to grade it.
* For all work where a project directory is required, make sure
  that you turn in the entire project directory, and not just a scene
  file.
* Turn in all your assignments on time, even if it is incomplete.
  Assignments not turned in on time will receive a score of Zero, but
  if you turn it in on time, later you can revise the assignment. I
  will re-grade the work, and if you show progress, the grade will
  improve. In a professional environment, you will be expected to
  show progress sometimes every day. Employees who cannot do this
  tend to be former employees.
* In previous quarters I have graded assignments on how well the
  directions of the assignment are followed, this included the naming
  convention, properly formatted project directories, and the
  location of files in the project directory. This will no longer be
  a graded component of exercises and assignments. However, if the
  specific directions for formatting are not followed, the assignment
  or exercise will not be accepted, and will be given a score of zero
  until the formatting of the project folder is corrected. Each
  assignment and exercise will have specific requirements listed,
  which will give the details of for the requirements. Play close
  attention to this requirement.

**Extra Credit and Resubmitted Work**

* Extra credit assignments may be offered, which will be due
  during the final week of class. Sometimes these will be projects
  outside of class, like challenges and competitions.
* Any exercise or assignment, except for the final assignment,
  may be turned in for an improved grade. The deadline to turn in
  resubmitted work is 2 weeks after the date the grade is posted. The
  work must show improvement to receive a higher grade. In the case
  that the quality of the work is not as good as the original (it
  happens), the original grade will not be changed.

**Project files and backups**

* Save all your work through the quarter. Even if you turn in
  assignments and exercises, do not delete projects after they are
  turned in. If you're running out of space on a portable hard drive,
  start burning things to DVD. Every time I finish with client work,
  I back up everything to some other media, sometimes multiple
  copies. You never know when you may have to go back to it.
* Make sure you have multiple backups of all your work. Do not
  rely on one location for all your files. I've lost things from
  crashed hard drives before. If possible setup automatic backups for
  important files and projects. I will not accept "my hard drive
  crashed" as an excuse for not having an assignment or exercise
  turned in. I will empathize with you, but I cannot grade what I
  cannot view.
* Similarly, even after the end of the quarter, you should backup
  your work. You might have a situation where files may be needed for
  work in another class. You have no proof that you did work once
  files are deleted from your personal drive.

**The Portal - myeclassonline.com**

* Log in to the Portal Website (myeclassonline) during the week,
  this is part of your homework every week. All the materials,
  assignments, demonstrations and quizzes are online. If there is a
  problem with the website, let me know as soon as possible. Do not
  wait until the day of class to log in to get information, post
  assignments, or take a quiz, it may be too late.
* I realize that I may use this resource more then any other
  instructor. I do this to assist you. All the due dates will be
  posted here, and if you use this resource, you can be better
  prepared for class.
* Grades and specific assignment and exercise feedback are posted
  in the gradebook on the portal. Check this regularly to get an idea
  of how you're doing in the class.

**Classroom Policy:**

* No food allowed in class or lab at any time. Drinks in
  recloseable 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.
* It is AI-Sacramento policy that cell phones may NOT be used in
  the classroom. If you have an emergency that requires you to take a
  call during class, you MUST inform the instructor before class
  begins, and step outside the room to take the call or text
  message.

**School-wide Attendance Policy:**

Students who do not attend any classes for fourteen (14)
consecutive calendar days and fail to notify the Academic Affairs
Department will be withdrawn from school.  In addition, the
student may be involuntarily withdrawn at the discretion of the
Academic Director, and with the approval of the Dean of Academic
Affairs, at any time.

**Withdraw from a Course:**

In order to withdraw from a course (that is, receive a grade of
"W"), a student must meet with his or her Academic Director before
noon on the Friday of week 9.

**Academic Dishonesty:**

Students are expected to maintain the highest standards of
academic honesty while pursuing their studies at The Art
Institutes. 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.

Students accused of academic dishonesty will be brought before a
Student Conduct Committee. If the committee determines that there
has been a violation of the Academic Dishonesty policy, the student
will automatically fail the class and, depending on the severity of
the infraction, may face further disciplinary action up to and
including suspension from classes or expulsion from school.

**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 see Steven
Franklin, Director of Student Affairs located on the 2nd
 floor or e-mail him at sfranklin@aii.edu. You must inform
your instructors and the Academic Affairs Office before the end of
week one of classes and preferably before the class start.

**Student Assistance Program:**

The college provides confidential short-term counseling, crisis
intervention, and community referral services through the AllOne
Health Student Assistance Program (SAP) for a wide range of
concerns, including relationship issues, family problems,
loneliness, depression, and alcohol or drug abuse. Services are
available 24 hours a day, 7 days a week, at 1.888-617-3362. The
Student Affairs office also offers programs on mental
health-related topics each quarter. If you have any questions
regarding counseling services, please contact the Student Affairs
office.

**Library Operation Hours:**

The library is open from 8 AM to 8 PM Monday ? Thursday, 8 AM to
5 PM on Friday and 9 AM to 2 PM on Saturday. The library is closed
on Sunday.  Computers are available during these hours for
students to work on classroom projects.

##### Course Outline

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| **Meeting #**1  Jul 12th, 2012 | |  |  | | --- | --- | | **Week 1 - Introduction, expectations and managing projects** | | | **Lecture:** | Introduction to class, expectations, homework, assignments critiques and conventions. Introduce lighting in Maya, 3-point lighting, light types (ambient, directional, point, spot, area, volume), lighting manipulators, how lighting affects the scene, using lighting references. Discuss midterm assignment, homework, challenges and exercises outside of class. | **Lab:** | Start week 1 exercise, basic scene setup in Maya; create a new project, reference character in a new scene. Set up basic lighting in the scene. | **Homework:** | Finish week 1 exercise, lighting setups. Start week 2 exercise by collecting a reference images (photographs). Log into the portal website, review week 1 material, and take the week 1 quiz and answer questions on personal profile. | |
| **Meeting #**2  Jul 19th, 2012 | |  |  | | --- | --- | | **Week 2 - Lighting** | | | **Lecture:** | Peer critique of week 1 exercise, lighting setups, and lighting reference images for the week 2 exercise. Introduce lighting concepts, lighting sources, motivation, practical lighting, lights in the real world, common light attributes (color, intensity, emit diffuse, emit specular). Demonstrate matching the lighting from the screenshots to scene. | **Lab:** | Continue with week 2 exercise; create a new project, create a new scene, and begin setup of the scene in Maya with basic objects and light scene to match screenshot. | **Homework:** | Finish week 2 exercise, match lighting of the reference images. Log into the portal website, review week 2 material, and take the week 2 quiz. | |
| **Meeting #**3  Jul 26th, 2012 | |  |  | | --- | --- | | **Week 3 - Lighting properties and effects** | | | **Lecture:** | Peer critique of week 2 exercise, match lighting of the reference image. Introduce lighting properties, linking and unlinking lights, shadows, light distances, light glow and optical effects, and optical caustics. Demonstrate the changes of properties for lights and their affect on objects in a scene. | **Lab:** | Work on week 3 exercise; adjust lighting attributes. Working from the previous scene (the match lighting scene), adjust properties of the lights to match. | **Homework:** | Finish week 3 exercise, lighting properties. Log into the portal website, review week 3 material, and take the week 3 quiz. | |
| **Meeting #**4  Aug 2nd, 2012 | |  |  | | --- | --- | | **Week 4 - Materials and material workflow** | | | **Lecture:** | Peer critique of week 3 exercise. Introduction to material types (Anisotropic, Lambert, Blinn, Phong), material type properties (color, transparency, ambience, incandescence, diffuse), material workflows and processes in Maya (Hypershade and connections). Demonstrate the application of materials and their properties to objects in a scene. | **Lab:** | Work on midterm assignment; Assign materials to objects and set material properties. Working from the previous scene (the match lighting scene), add materials to scene objects. | **Homework:** | Finish the scene for the midterm assignment. Log into the portal website, review week 4 material, and take the week 4 quiz. | |
| **Meeting #**5  Aug 9th, 2012 | |  |  | | --- | --- | | **Week 5 - Midterm** | | | **Lecture:** | Peer critique of midterm assignment turn in midterm. Introduction to UVs in Maya, the UV texture editor, tools available for UV layout, UV mapping coordinates, and object texture mapping types (Automatic, Planar, Cylindrical, Spherical mapping). Demonstrate UV layout on objects using different methods. | **Lab:** | Finish midterm assignment. Start on week 5 exercise; layout UVs on objects provided using different methods. | **Homework:** | Finish week 5 exercise, layout UVs. Log into the portal website, review week 5 material, and take the week 5 quiz. | |
| **Meeting #**6  Aug 16th, 2012 | |  |  | | --- | --- | | **Week 6 - UV layout** | | | **Lecture:** | Peer critique of week 5 exercise, UV layout. Introduce UV Layout strategies for various objects. Discuss UV layout strategies, and alternatives to Maya UV layout. Demonstrate methods for UV layout methods. Discuss final assignment. | **Lab:** | Start on week 6 exercise; layout UVs on objects provided using different methods. | **Homework:** | Finish week 6 exercise, layout UVs continued. Log into the portal website, review week 6 material, and take the week 6 quiz. Start collecting references and develop ideas for final assignment. | |
| **Meeting #**7  Aug 23rd, 2012 | |  |  | | --- | --- | | **Week 7 - Texture types** | | | **Lecture:** | Peer critique of week 6 exercise. Introduce texture creation using Photoshop, Illustrator, other design tools, 2D texture types (Normal, Projection, Stencil), procedural, 3D, and Layered Textures. Discuss file types, their use in textures and rendering, and texture map resolutions. Demonstrate texture design workflow, UV snapshot, using the snapshot in the creation of textures in design tools and working with other tools to create textures. | **Lab:** | Start on week 7 exercise; export UV snapshot, and create textures with Photoshop for layout. | **Homework:** | Finish week 7 exercise, texture creation. Log into the portal website, review week 7 material, and take the week 7 quiz. Refine ideas, and create sketches for the final assignment. | |
| **Meeting #**8  Aug 30th, 2012 | |  |  | | --- | --- | | **Week 8 - Textures and surfacing** | | | **Lecture:** | Peer critique of week 7 exercise, textures. Introduce surface detailing using bump mapping and normal mapping, applying textures to surfaces using multiple methods, using procedural textures as bump maps. Demonstrate bump map creation using Photoshop and other illustration and design tools, applying procedural textures as a bump maps. | **Lab:** | Start on week 8 exercise; add detail to objects with created textures, and bump mapping. | **Homework:** | Finish week 8 exercise, finish texture creation. Log into the portal website, review week 8 material, and take the week 8 quiz. Refine ideas, and create sketches for the final assignment. | |
| **Meeting #**9  Sep 6th, 2012 | |  |  | | --- | --- | | **Week 9 - Texture utilities** | | | **Lecture:** | Peer critique of week 8 exercise, textures and details. Introduce utility nodes (blend color, remap color, smear, stencil), and their various functions with textures and other nodes in Maya. Review lighting for the final assignment. Demonstrate connections with various utilities in combination with textures and shading. | **Lab:** | Work on final assignment, create objects and texturing. | **Homework:** | Continue working on final assignment. | |
| **Meeting #**10  Sep 13th, 2012 | |  |  | | --- | --- | | **Week 10 - Rendering** | | | **Lecture:** | Peer critique for final assignment progress. Discuss final rendering, render types (mental ray, software, hardware), rendering engines (scanline, rasterisation, raytracing). Discuss camera setup, attributes and placement. Demonstrate camera and render settings in Maya. | **Lab:** | Work on final assignment, setup camera and final rendering options. | **Homework:** | Finish final assignment and complete any other additional work for credit. | |
| **Meeting #**11  Sep 20th, 2012 | |  |  | | --- | --- | | **Week 11 - WeekDesc11** | | | **Lecture** | Final assignment critiques. | **Lab:** | Finish up work and turn in final assignment. | |