Course Description:
The objective of the course is to go deeper into Maya and Mental Ray rendering techniques. We will explore both photorealistic and non-photorealistic rendering. We will explore lighting options and learn modern techniques including HDRi, Global Illumination, Final gathering and compositing. The class will consist of two major assignments, a few weekly assignments, in class tutorials and lectures.

Student Learning Outcomes
By the end of this course, the student will:
- Learn alternate render engines included in Maya
- Be familiar with alternate lighting techniques
- Have a better understanding of Shaders
- Learn advanced shading networks
- Advanced compositing techniques using After Effects or Autodesk Composite.
- Photorealistic and non-photorealistic rendering

Course Materials/Supplies:
- USB drive

Required Textbook/Resources:
- None

Recommended Textbooks/resources:

Grading Criteria/Student Evaluation:

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### TAMU Grading Scale

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### Texas A&M Policies on Class Assignments/Late Work:

Faculty members encourage accountability and punctuality for future career success. Students are encouraged to turn-in all work for instructor feedback.
- No late work accepted.

### Attendance Policy:

- You can be absent from class twice.
- On your first absence you will receive an e-mail warning from your instructor and it will be copied to Lee Whitmarsh and filed.
- On your second absence you will receive an e-mail from your instructor and a phone call or email from Lee Whitmarsh, both filed.
- On your third absence you will receive an F in the class. If you wish to drop the class you will receive a drop/fail.
- Two tardies of 30 minutes or more equals an absence.

### Classroom Standards

- **Tobacco Products, Eating, and Drinking:** No smoking or other tobacco products may be used in any part of the building. Food and drinks are not permitted in the computer lab under any circumstances.
- **Classroom Usage:** Students are asked to clean their workspaces at the end of each class. Rooms should be reset at the end of class for the next group of students.
- **Disruptive or Disorderly Conduct:** Engaging in behavior that substantially or repeatedly interrupts either the instructor’s ability to teach or fellow students’ ability to learn will result in a conduct referral to the Academic Director, Dean of Student Affairs, or University Center Security Personnel. The classroom extends to any setting or
communication where a student is engaged in work toward academic credit, satisfaction of program-based requirements, or related activities.

- **Personal Technologies:** All computers, entertainment and personal communication devices must be turned off during lectures unless otherwise specified. Students may, with permission, record lectures/demonstrations.

- **Dress Code:** Casual, reasonable, professional attire and clean appearance are recommended. Bare feet on the school grounds or in the building are not permitted as this is a health and safety regulation.

**Plagiarism/Acts of Dishonesty:**

Academic honesty is expected. Any infraction of the Texas A&M academic integrity policy will be referred to the Dean of Student Affairs and the Dean of Academic Affairs.

Each student should make sure all materials are documented carefully, to show the rightful designer, owner, proprietor, etc. for photos, drawings, book information, etc. in the development and display of their student work. Each student is responsible for reviewing the dishonesty act information found in the Student Handbook. Dishonesty in the classroom, including securing, passing, receiving a test prior to test date, or cheating on examinations is subject to a failing grade and possible suspension or termination from Texas A&M - Commerce. Attempted and completed acts of dishonesty or plagiarism will be dealt with according to TAMU - Commerce policies.

The same rule applies for detected plagiarism within the classroom. Plagiarism includes any unattributed use of materials from any source – including books, periodicals, CD-ROM’s, Videos, and the World Wide Web, as well as artwork/projects from other students or professionals. All quotations, paraphrases, or other adaptations of others work must be properly cited and documented.

All assignments are to be done individually and not jointly with other students, unless the instructor specifically designates the assignment as a group assignment in the handout. Copied or shared work will be reported for investigation to the Dean of Student Affairs and the Dean of Academic Affairs as cheating and a grade of zero will be recorded for the assignment.

If you are having trouble with a particular theory or assignment, ask your instructor for help immediately - office hours are set aside specifically for helping students. Be careful of consulting other students and using search engine results as both may provide misinformation and/or it may appear as though you are not doing your own work.

**Copyright Materials:**

Trademarks and Copyrights are the property of their owners. As such, students may not infringe upon those rights of ownership. Proper attribution must be made for all assets used by a student for class assignments. Students are reminded to credit the sources and display the copyright notice © and copyright ownership information if this is shown in the original source for all works incorporated as part of educational projects, including those prepared under fair use. Crediting the source must adequately identify the source of the work, giving a full bibliographic description where available, i.e., author, title,
publisher and place and date of publication. Additionally, the copyright ownership information includes the copyright notice, year of first publication and name of the copyright holder.

**Americans with Disabilities Act:**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services
Texas A&M University-Commerce
Gee Library, Room 132
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
StudentDisabilityServices@tamu-commerce.edu

**Statement on Student Behavior:**

All students enrolled at the University shall follow the tenet of common decency and acceptable behavior conducive to a positive learning environment. (See Student’s Guide Handbook, Policies and Procedures, Conduct)
All students must show respect toward the instructor and the instructor’s syllabus, presentations, assignments, and point of view. Students should respect each others’ differences. If the instructor determines that a student is not being respectful towards other students or the instructor, it is the instructor’s prerogative to ask the student to leave, to refer the student to the department head, and to consider referring the student to the Dean of Students who may consider requiring the student to drop the course. Please refer to pages 42 - 46 of the Texas A&M University-Commerce Student guidebook’s Codes of Conduct for details.
Maya 3
Projects Outline
(All renders are 864x486)

Project 1: Shader Experiment (1 render, simple shapes, abstract)
Due:

Project 2: Lighting Variations (Product) - Simple box/bottle render (4 views/lighting)
Due:

Project 3: Lighting Variations (Interior)- 3Drender Bedroom Scene (4 lighting examples)
Due:

Project 4: Mad Scientist Scene (Lighting, UV and Texturing - 1 Still render)
Due:

Project 5: Integration with Photo - (CG Vehicle element integrated with Photograph - 1 Still render)
Due:

Project 6: Integration with Footage -(CG element integrated with live footage using AE - 3-5 seconds)
Due:

Project 7: Vehicle render - (CG sequence sequence composited)
Due:

Final: Still Life - (Sequence of 3-5 seconds, artist choice)
Due: Final

Maya 3
Lecture Schedule

1-15 Mental Ray - Vector - Maya and other render engines and their shaders
1-22 Continue lecture on shaders, Camera nodes and utilities
1-29 Lighting Global Illumination / Final Gathering
2-5 Other light models such as Portal, Sun, etc.. Lighting tips (Gobos, settings)
2-12 Render Layers and Composite passes, Node vs Layer compositing
2-19
2-26
3-5 Working with background footage (lighting, tracking, integration)
3-12 Spring Break (I Think)
3-19 Enhancing renders (Using gobos, reflectors, reflections, optimizing)
3-26 Camera nodes and film stock (Lens distortion, noise, ect..)
4-2
4-9
4-16
4-23
4-30 TBA (Volumetrics)
Final Review

3D Lighting
What is a CG light?
Types of CG lights
Direct lighting
Indirect lighting
Cast Shadows
Decay rate
Previewing lighting and shadows
Creating depth map shadows
Troubleshooting depth map shadows
Shadow map overrides
Using the shadow map camera
Saving and reusing shadow maps
Creating raytraced shadows
Adding softness to raytraced shadows
Creating area light shadows
Sample: mental ray area light
Setting area light visibility
Creating soft shadows with spot lights
Indirect Lighting
Setting global illumination for interiors
Tuning global illumination
Global illumination photons
Activating caustic light effects
Tuning caustic settings
Setting caustic light effects on metal
Using final gathering for indirect lighting
Tuning final gathering
Reusing final gathering maps
Adding light with shaders
Creating final gathering maps for animation
Combining final gathering with global illumination
mental ray Light and Lens Shaders
Activating the Physical Sun and Sky network
Tuning the Physical Sun and Sky settings
Applying physical light shaders
Applying image-based lighting
Tone mapping
Applying portal light shaders
Creating light beams with participating media
Adding depth of field with the Bokeh lens shader

48:21 5. Render Layers
Introducing render layers
Creating render layers
Splitting a scene into render layers
Applying render layer presets
Setting render layer overrides
Creating render layer composites
Organizing renders with tokens
Render Passes
Introducing render passes
Comparing render passes and render layers
Editing render passes
Using appropriate materials
Batch-rendering passes
Compositing in After Effects
Rendering the EXR image format
Render Quality
Anti-Aliasing Quality
Setting color profiles
Diagnosing raytracing
Adjusting motion blur