Add Course Request

Submitted on: 2012-12-03 15:39:35

1. **COURSE SUBJECT**	DMD
2. **COURSE NUMBER** (OR PROPOSED NUMBER)	2320
3. **COURSE TITLE**	3D Lighting and Rendering 1
4. **INITIATING DEPARTMENT or UNIT**	Digital Media & Design
5. **NAME OF SUBMITTER**	Eva Gorbants
6. **PHONE of SUBMITTER**	Phone: +1 860 486 3016
7. **EMAIL of SUBMITTER**	Email: eva.gorbants@uconn.edu
8. **CONTACT PERSON**	Tim Hunter
9.**UNIT NUMBER of CONTACT PERSON** (U-BOX)	1041
10. **PHONE of contact person**	Phone: 6-2281/6-6765
11. **EMAIL of of contact person**	Email: tim.hunter@uconn.edu
12. Departmental Approval Date	11/05/2012
13. School/College Approval Date	12/03/2012
14. Names and Dates of additional Department and School/College approvals	
15. Proposed Implementation Date	Term: Fall, Year: 2013
16.Offered before next printed catalog is distributed?	No
17. **General Education Content Area**	
18. **General Education Skill Code (W/Q).** Any non-W section?	None
19. Terms Offered	Semester: Fall Spring Year: Every_Year
20. Sections	Sections Taught: 1-2
21. Student Number	Students/Sections: 16/section
22. Clarification: 1-2 sections per year, 16 students per section	
23. **Number of Credits**	03 if VAR Min: Max: credits each term
24. **INSTRUCTIONAL PATTERN** Two 3 hour studios each week	
25. Will this course be taught in a language other than	No

English?	If yes, then name the language:

26. Please list any prerequisites, recommended preparation or suggested preparation: Prerequisites: 1000 DIGITAL FOUNDATION 1030 ANIMATION LAB 2300 3D ANIMATION I

27. Is Instructor, Dept. Head or Unit **Consent Required**?	No

28. Permissions and Exclusions: Students should take this course in the 3rd or 4th semester of study term

29. Is this course **repeatable for credit**?	No If yes, total credits allowed: Allow multiple enrollments in same term?
30. **Grading Basis**	Graded

31. If satisfactory/unsatisfactory grading is proposed, please provide **rationale**:

32. Will the course or any sections of the course be taught as Honors? AsHonors

33. Additional Details: Other (specify): offered at the Storrs Campus

34. Special Attributes:

35. **REGIONAL CAMPUS AVAILABILITY**: The Storrs Campus currently has the digital media faculty and studio/lab facilities available to offer this course. Expansion to Stamford is possible.

36. PROVIDE THE PROPOSED TITLE AND COMPLETE CATALOG COPY: 2320 3D Lighting & Rendering 1 Three credits. Two 3-hour studio sessions. Prerequisites: DMD1000, DMD1030 & DMD2300. Introduction to dramatic lighting, 3 point lighting, texturing, bump maps, displacement maps, ambient occlusion, final gathering, raytracing, shadows.

37. **RATIONALE** FOR ACTION REQUESTED This course will provide instruction in the technique and critical understanding of lighting and rendering in animation specific to a 3D environment. This course is also central to the curriculum of the new Department of Digital Media and Design and essential to creating the major and minor in this field why the course is appropriate for the 1000 or 2000 level This is an introductory course which teaches foundational elements of lighting and rendering which will be used in more advanced courses throughout the 3D concentration justification for enrollment restrictions The enrollment CAP of 16 is based on available studio/lab space.

effects on the regional campuses

Currently not offered at the regional campuses. Expansion to the Stamford Campus is planned for the near future.

38. **SYLLABUS:** Online URL: (https://web2.uconn.edu/senateform/request/course_uploads/evg02003-1354312339-Syllabus DMD 2320 LightingAndRendering1.docx)
39. **Course Information: ALL General Education courses, including W and Q courses, MUST answer this question**
40. **Goals of General Education: All Courses Proposed for a Gen Ed Content Area MUST answer this question**

41. **Content Area and/or Competency Criteria: ALL General Education courses, including W and Q courses, MUST answer this question.:** Specific Criteria
 	
  a. **Arts and Humanities:**
  b. **Social Sciences:**
  c. **Science and Technology:**
    i. **Laboratory:**
  d. **Diversity and Multiculturalism:**
    43. **International:**
  e. **Q course:**
  f. **W course:**

42. **RESOURCES:** Does the department/school/program currently have resources to offer the course as proposed YES If NO, please explain why and what resources are required to offer the course.
43. **SUPPLEMENTARY INFORMATION**:
ADMIN COMMENT: Senate approved new course 12/10/12

UNIVERSITY OF CONNECTICUT
DEPARTMENT OF DIGITAL MEDIA AND DESIGN

3D LIGHTING AND RENDERING I

Course Number: DMD2320
Location: Bishop PC Lab

Course Instructor: Perry Harovas
Office Location: 802 Bolton Road

Office Hours: xxxx
Direct Phone: 860-486-6636
Email: perry.harovas@uconn.edu

REQUIRED TEXTS:

None

COURSE DESCRIPTION:

3D Lighting & Rendering I is a comprehensive course designed to illuminate the connection between the audience and the image on screen. Students learn how lighting creates mood in a scene and the technical ways in which CG lighting is achieved. Students will learn what types of lights to use and how and when to use them. They will also acquire techniques for achieving realistic lighting while being resource savvy. Lighting in theater as well as in traditional film will be studied to give students a solid understanding of why certain lighting choices are made and why they work, whether in live action or CG applications.

LEARNING GOALS AND OBJECTIVES:

Upon completion of this course the student will:
- [1] identify the theory of willing suspension of disbelief.3D
- [2] identify the physical, emotional, and intellectual characteristics of lighting.
- [3] demonstrate intermediate-level proficiency with CG lighting tools.
- [4] demonstrate an understanding of motion picture lighting concepts.
- [5] demonstrate an understanding of the rendering software to cut render times.
- [6] demonstrate an understanding of controlling mood and atmosphere through CG lighting.

COURSEWORK:

During this course students will:
- [1] listen to lecture and participate in class discussion.
- [2] complete lab exercises in copying lighting from real images and studio lighting.
- [3] complete a finished lighting example image and animation for their portfolio.
- [4] research lighting theory and add to personal handbook.

[5] be tested on all material.

INSTRUCTIONAL METHODS:
Instructional methods include: instructor-directed discussion, demonstration, hands on lab practice, individual and team-based projects, assigned text readings, media presentations and critiques, as well as written assignments (e.g. essays, research papers, reflection papers, technical reports).

ASSESSMENT:
Grading is based on participation and professional behavior, coursework evaluation, and written testing on all material; it occurs at specific times throughout the course and is designated as such in the course calendar.

PARTICIPATION STATEMENT:
Class participation is mandatory. Failure to attend class means you are not fulfilling your obligation to participate in discussion and thus, contribute to the overall learning experience of all. Students are expected to be present at the start of class and remain throughout the entire class period.

ACADEMIC INTEGRITY:
All students are responsible for insuring that original work is correctly attributed. Students must give clear and complete attributions for the work of others in their own productions. Plagiarism will not be tolerated and will result in failure of the course.

GRADES:
Breakdown is as follows:
[1] Participation, professional behavior, and class participation = 10 points
[2] Lab exercises = 25 points
[3] Visual effects shot and client assessment = 40 points
[4] Written test = 25 points

Grading is based on a 100 point scale and is as follows:
[A]   94-100
[A-]   90-93
[B-]   80-83
[B]   84-86
[B+]   87-89
[C-]   70-73
[C]   74-76
[C+]   77-79
[D]   60-69
[F]   less than 60 points

Letter grading explanation:
[A]   Excellent. Student exhibits mastery of the material; demonstrates the ability to express and apply the material in a creative way, i.e., not simply what's been covered in class or the texts. Strong articulation of personal voice, both in the work completed and in the presentation of material to the class.

[B]   Good. Student exhibits an advanced understanding of material covered in class; has some consistency in performance on tests and assignments; presents the material in a clear, organized fashion. Still needs work on clear expression of ideas.

[C]   Fair. Basic understanding of material covered in class. Concepts and facts correct and covered in adequate depth; inconsistency [some areas covered well, others poorly, indicating some confusion over the material]; or inability to express your understanding

clearly.

[D] Poor. Perfunctory coverage of the material; inconsistency of performance on tests and assignments; much misunderstanding of the material; incomprehensive use of skills; excessive absences or lateness.

[F] Failure to do the assignments as stated; failure to hand in an assignment; complete or near complete misunderstanding of the material; plagiarism; illiteracy; excessive absences or lateness.

COURSE CALENDAR

| **Class 1** | *Lecture* | Understanding the Rendertree in Softimage and how it compares to Maya |
| | *Lab* | Students will be asked to get familiar with the tools and start to move around the Rendertree and try the controls for themselves. |

| **Class 2** | *Lecture* | The way a real camera works compared to your eyes, and how they are all similar to how computers draw images on screen. |
| | *Lab* | Students will operate a real camera, learning about lenses and lighting in the real world. |

| **Class 3** | *Lecture* | Textures and lighting in the real world. |
| | *Lab* | Students are taken outdoors and shown how to "see" textures and lighting.. |

Class 4	*Lecture*	Basic 3 point lighting. What it is and how virtual lights differ from real lights. Activating shadows. Pros and cons of soft shadows. Shadow maps vs. Area lights vs. Raytraced soft shadows. Which to use for differing levels of realism.
	Lab	Students taken to lighting stage and shown basic 3 point lighting setup.
	Assignment:	Using the "Little Dude at the Table" scene, create 3 different lighting looks. Render 3 frames to turn in and show class.

| **Class 5** | *Lecture* | Basic materials.
 How materials influence the look of 3d objects and interact with the lighting. Phong, Blinn, Lambert shading models to start with. |

	Lab	Students practice applying basic materials to objects and practice with all the variables of each shading model.

Class 6	*Lecture*	Textures and texture projections. What they are and how to apply them. The different types of texture projections. Why can't I see my textures? Where's the bumps?
	Lab	Practice applying different types of textures (2d vs. 3d) and using different types of projections.
	Assignment due: Turn in the 3 point lighting looks assignment	
Class 7	*Lecture*	Little dude at the table scene. How to create a photo-realistic glass look for the wine glass. Creating a rendertree shading network for this.
	Lab	Students work to create realistic glass using techniques from the lecture.

Class 8	*Lecture*	How to apply textures to objects using multiple shading models and alpha channels in the render-tree. Putting a label on the wine bottle.
	Lab	Students apply a label to the wine bottle based on information given during lecture.

Class 9	*Lecture*	Using Photoshop to manipulate alpha channels for 3D texture use.
Class 10	*Lecture*	Final Gather rendering technique. How to create photo-realistic indirect lighting looks. How to set up the environment and the renderer to utilize this technique.
	Lab	Start to work with final gather in their scenes based on information from the lecture.
Class 11	*Lecture*	Continuing the discussion of the final gather technique and how to manipulate different visibility properties of 3d objects to aid in an accurate final gather rendering.
	Written exam: Short essay exam covering the reading material assigned	
	Lab	Work on scenes using the information from today's lecture.

Class 12	*Lecture*	Raytraced reflections vs. environment maps. How and when to use both.
	Lab	Setup environment mapped reflections both locally and globally based on today's lecture information.

Class 13	*Lecture*	High Dynamic Range Images (HDRI). What they are, why they are important and how to use them to aid in creating photo-realistic results. Why they work better for reflection mapping. Contrast and compare HDR images to 16 bit and 8 bit images for the same purpose.
	Lab	Students work with supplied hdr images in their Little dude scene.

Class 14	*Lecture*	HDR image usage continued. Using these images for actual scene lighting.
	Lab	Finish working on hdr usage in their scenes. Hand in final scenes.