New Course Request

Indiana University

Indianapolis Campus

Check Appropriate Boxes: Undergraduate credit [✓] Graduate credit [ ] Professional credit [ ]

1. School/Division: Informatics
2. Academic Subject Code: NEWM-N
3. Course Number: 443 (must be cleared with University Enrollment Services)
4. Instructor: Clint Koch
5. Course Title: Advanced Lighting and Texturing
   Recommended Abbreviation (Optional): 
   (Limited to 32 Characters including spaces)
6. First time this course is to be offered (Semester/Year): Fall 2010
7. Credit Hours: Fixed at 3 or Variable from _______ to _______
8. Is this course to be graded S-F (only)? Yes [✓] No [ ]
9. Is variable title approval being requested? Yes [ ] No [✓]
10. Course description (not to exceed 50 words) for Bulletin publication: P: N243. Advanced course in creating 3D objects and environments with specialized texturing and lighting. Possible topics include an examination of state-of-the-art examples, reproduction of results, and production of individual portfolio-quality projects. Possible software includes use of Autodesk Maya, mental ray, Adobe Photoshop and Adobe AfterEffects.

11. Lecture Contact Hours: Fixed at 3 or Variable from _______ to _______
12. Non-Lecture Contact Hours: Fixed at 0 or Variable from _______ to _______
13. Estimated enrollment: 25 of which 0 percent are expected to be graduate students.
14. Frequency of scheduling: F/S Will this course be required for majors? _________
15. Justification for new course: Redesign of New Media Curriculum
16. Are the necessary reading materials currently available in the appropriate library? Yes
17. Please append a complete outline of the proposed course, and indicate instructor (if known), textbooks, and other materials.
18. If this course overlaps with existing courses, please explain with which courses it overlaps and whether this overlap is necessary, desirable, or unimportant.
19. A copy of every new course proposal must be submitted to departments, schools, or divisions in which there may be overlap of the new course with existing courses or areas of strong concern, with instructions that they send comments directly to the originating Curriculum Committee. Please append a list of departments, schools, or divisions thus consulted.

Submitted by:

[Signature] Date 6/30/2009

Deputy Chairman/Division Director

[Signature] Date

Dean of Graduate School (when required)

[Signature] Date

Chancellor/Vice-President

[Signature] Date

University Enrollment Services

Approved by:

[Signature] Date 7/1/2009

Department/Division Chair/Division Director

[Signature] Date

University Enrollment Services

After School/Division approval, forward the last copy (without attachments) to University Enrollment Services for initial processing, and the remaining four copies and attachments to the Campus Chancellor or Vice-President.
N443
Advanced Lighting and Texturing
3 Credit Hours

Instructor: Staff

COURSE DESCRIPTION
Advanced course in creating 3D objects and environments with specialized texturing and lighting. Possible topics include an examination of state-of-the-art examples, reproduction of results, and production of individual portfolio-quality projects. Possible software includes use of Autodesk Maya, mental ray, Adobe Photoshop and Adobe After Effects.

PREREQUISITE: N243

EXTENDED COURSE DESCRIPTION
This course will allow students to explore advanced lighting and texturing scenarios using Autodesk Maya, and the mental ray rendering engine. Professional demo examples will be explored for both texturing and lighting that involve the key cornerstones of unwrapping, 2D painting, and finalized with production lighting. This course will explore the use of mental ray, and real world lighting solutions as applied to potential projects including film, architectural, and product placement. Students will produce projects of their own for final projects. This is a specialization course that will have prebuilt models already supplied so students can get more breadth and depth of a specific area of 3D. Software used: Autodesk Maya, mental ray, Adobe Photoshop, Adobe After Effects.

REQUIRED TEXTBOOK
Literature for this course will be supplied by the instructor, including:
- Recorded lectures through camtasia videos
- DVD video tutorial for checkout from library
- 3D World/Cinefx/Siggraph Electronic Theatre DVD's for checkout from the library
- Understand the concept of polygons

COURSE OUTCOMES
Students will develop insight into the uses and meaning of realistic lighting concepts, theories, and digital techniques. Students will learn to apply that insight to “real-world” challenges and opportunities. Students will participate in the creation of projects that presents a hypothetical but plausible solution to real-world needs. These projects will be presented in formats and will demonstrate a familiarity with key components of any new media solution: content, technology, interface design, and usability. The course will also adhere to the university set guidelines that fulfill the PUL’s of education.

OTHER MATERIALS RELATED TO THE COURSE
Storage media: A portable HD is strongly recommended.
A flash drive will be very useful.
Writable media such as CDs or DVDs will also be required to turn in projects and are good for backup.
Students will be required to bring writing materials, whether electronic or traditional, to class. Note taking is expected and necessary.

SOFTWARE USED
Autodesk Maya and Mental Ray
Adobe Photoshop and After Effects
QuickTime

COURSE STRUCTURE OVERVIEW
The course structure is composed of these parts:
- Lectures / Lab
  - This activity will be the majority of class time. It will include critical review of contemporary media as appropriate to class. Use of software packages to implement concepts into practice.
- Projects:
  - Exercises will be assigned weekly. The instructor will review the online students’ work shortly after.
A final project will be assigned.

CORE COMPETENCIES
1. Students will have the ability to perform advanced texturing and lighting to a high quality.
2. Students will deliver production and portfolio quality simulations that deliver advanced aesthetics and 3D production workflow. High quality simulations will be expected.
3. Students will have the ability to deliver gaming and environmental projects, film and short story projects and scientific simulation productions.
4. Students will learn 3D concepts that work across all 3D software platforms. The conceptual and theoretical nature of the course is very important to the success of the student.
5. Students will have the ability to create realistic and stylistic texturing, shading, and lighting rigs for scenes.

DATE FOR EACH CLASS MEETING

Week 1  Intro, syllabus, concepts, examples
• View prior class projects and professional pieces
• Siggraph
• Projects Overview

Week 2  Review Maya Interface
• Discuss newest features in the software

Week 3  Review Texture Painting Principles
• Utilizing Photoshop or other 2D paint program we will review fundamental concepts
• Discuss Unwrapping Techniques

Week 4  Review Shading Techniques in Mental Ray
• Review concepts of surface detail, highlights, glossiness, reflectivity, refraction, etc.
• Review methodologies for chrome, wood, paint, glass, rubber, brushed metal, leather, etc.

Week 5  Review Lighting Setups for Exterior Environments
• HDRl globes, Sky and Sun systems, Portals, Irradiance, etc.

Week 6  Review Lighting Setups for Interior Environments
• Global Illumination, final gather, HDRl, Sky and Sun, etc.
• Discuss concepts of decaying of light, color bleed, and bouncing of light

Week 7  Begin Demo 1: Interior/Exterior Lighting, Texturing, and Shading a Pre Built Environment
• Begin with proportion and sizing information in Maya
• Discuss various techniques for lighting and texturing/shading rigs
• Begin Assignment #1: Interior/Exterior of your own from the selection of pre-made modeled environments available

Week 8  Continue Demo 1: Interior/Exterior Lighting, Texturing, and Shading a Pre Built Environment
• Begin creation of lighting rig using Sky and Sun system
• Begin developing shaders for the various models in the room
• We should only be testing at low levels of render resolutions

Week 9  Continue Demo 1: Interior/Exterior Lighting, Texturing, and Shading a Pre Built Environment
• Implement second level resolution anti aliasing and values
• Continue developing various shaders for objects of the environment

Week 10  Finish off Demo 1: Interior/Exterior Lighting, Texturing, and Shading a Pre Built Environment
• Implement third level resolution anti aliasing and values for production renders
• Finalize all shaders of the environment
• Discuss gamma correction lens shaders for realism
• Discuss ambient occlusion

Week 11 Begin Demo 2: Lighting and Texturing/Shading a pre built Character
  • Begin with proportion and sizing information in Maya
  • Discuss various techniques for lighting and texturing/shading rigs for characters
  • Assignment #1 due
  • Begin Assignment #2: Light, Texture, and Shade a Character from a selection of the pre-built models available

Week 12 Continue Demo 2: Lighting and Texturing/Shading a pre built Character
  • Begin creation of lighting rig using Area Lights
  • With pre done unwrap, begin painting or applying photos to character in Photoshop

Week 13 Continue Demo 2: Lighting and Texturing/Shading a pre built Character
  • Implement second level resolution anti aliasing and values
  • With pre done unwrap, begin painting or applying photos to character in Photoshop
  • Begin setup of SSS shader

Week 14 Continue Demo 2: Lighting and Texturing/Shading a pre built Character
  • Implement third level resolution anti aliasing and values for production renders
  • Finalize all shaders and textures of character
  • Discuss gamma correction lens shaders for realism
  • Discuss ambient occlusion

Week 15 In class work time for Final Project

Week 16 Final Project due

Assignments- All assignments must be turned in on CD (or data DVD) with name and assignment number. All assignments are due at the beginning of class. Late assignments will be reduced by 10% point value. Final project will not be accepted past due date.

Assignment 1- 4 week homework assignment of lighting, texturing, and shading an interior/exterior environment in Maya and Mental Ray (45 pts)

Assignment 2- 4 week homework assignment of lighting, texturing, and shading a character in Maya and Mental Ray (45 pts)

Attendance- (10 pts)

<table>
<thead>
<tr>
<th>Date</th>
<th>Assignment</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment #1</td>
<td>Interior/Exterior Lighting/Shading Project (critical thinking, application of knowledge)</td>
<td>45%</td>
</tr>
<tr>
<td>Assignment #2</td>
<td>Character Lighting/Shading Project (critical thinking, application of knowledge)</td>
<td>45%</td>
</tr>
<tr>
<td>Attendance</td>
<td></td>
<td>10%</td>
</tr>
</tbody>
</table>

Grading Information:
• These factors that will be evaluated in determining grades:
  o Technical competencies
  o Aesthetic appeal
  o Professional production
  o Participation in class discussion and class attendance
  o Lab assignments/ homework
  o Late assignments will be reduced by one letter grade
  o Work may be turned in any time prior to the due date. Work will be considered late if not turned in by the end of the class on the date expected. A 10% reduction in score will be assessed for any
assignment deemed late. Late work will be accepted for one week past the due date- assignments will be given a score of 0 (zero) points after this time. Final projects will not be accepted past the expected due date- a score of 0 (zero) points will be assessed on any final project not turned in on time.

Grading Standards

A – Outstanding, high quality work.
A fully completed project that demonstrates mastery of skills.
Projects that display creative and sometimes innovative work.
Combinations of color schemes, space, lighting, and layout were used effectively and chosen carefully.

B – Good to very good work.
The student completed the components of the project, but neglected to experiment with additional or more challenging technical approaches.
The work demonstrates good abilities in the respective new media applications, but may lack depth and level of skill.
The project could be lacking in areas of design, planning, or technical approach.

C – Average work.
The work demonstrates average skills in depth, design, and application.
No more than what was required of the course was completed.
The work is possibly incomplete in parts.
File formats had errors or were not compatible as expected

D – Below average work.
The work is largely incomplete and displays a lack of effort.
Very little time was put into the software and thusly resulted in poor quality work. The files handed in had errors or were not compatible as expected.

F – Failure to complete the objectives of the course.

Grade Scale
A+ 99 - 100
A  93 - 98.99
A- 90 - 92.99
B+ 87 - 89.99
B  83 - 86.99
B- 80 - 82.99
C+ 77 - 79.99
C  73 - 76.99
C- 70 - 72.99
D+ 67 - 69.99
D  63 - 66.99
D- 60 - 62.99
F  Below 60%

STATEMENT OF VALUES

The Mission of IUPUI is to provide for its constituents excellence in Teaching and Learning, Research, Scholarship, and Creative Activity, and Civic Engagement. With each of these core activities characterized by: 1) collaboration within and across disciplines and with the community, a commitment to ensuring diversity, and 3) pursuit of best practices. IUPUI’s mission is derived from and aligned with the principal components – Communities of Learning, Responsibilities of Excellence, Accountability and Best Practices – of Indiana University’s Strategic Directions Charter. IUPUI values the commitment of students to learning; of faculty to the highest standards of teaching, scholarship, and service; and of staff to the highest standards of service. IUPUI recognizes students as partners in learning.
• IUPUI values the opportunities afforded by its location in Indiana’s capital city and is committed to serving the needs of its community. Thus, IUPUI students, faculty, and staff are involved in the community; both to provide educational programs and patient care and to apply learning to community needs through service. As a leader in fostering collaborative relationships, IUPUI values collegiality, cooperation, creativity, innovation, and entrepreneurship, as well as honesty, integrity, and support for open inquiry and dissemination of findings. IUPUI is committed to the personal and professional development of its students, faculty, and staff and to continuous improvement of its programs and services.

POLICIES for ATTENDANCE & ASSIGNMENT/PROJECT DEADLINES

1. Missing class WILL impact your grade. (For in-class students only.) Students are allowed two (excused or unexcused) absences before their grade will be affected. In other words, whether you are sick or have personal problems or issues for missing class, it will amount to the same. Missing class means you do not show for the whole or majority of the session. The grade reduction policy works in this way.
   - On the third missed class time your final grade will drop 5 points (regardless of the reason).
   - On the fourth missed class your final grade will drop 10 points (regardless of the reason), and 5 additional points thereafter for each additional class missed.

2. Responsible for due dates and related materials: All weekly due assignments are each student’s responsibility. If class is missed, the student is still responsible for the assignment, as well as to find out what was covered in class, e.g., any new assignments or variations to an existing assignment. ALL assignment deadlines are outlined in the syllabus or syllabus supplemental documents provided on OnCourse. Ultimately, each student is responsible for the deadline. Also, weekly assignment deadlines should be adhered to, to ensure fairness to all students. For the purpose of maintaining an equal and fair evaluation of each student’s work, no student will receive special treatment. As a result, the following rules will apply to this course:
   - All assignments must be submitted through OnCourse at the designated time as stated on the assignment sheet, as communicated via email, or on the syllabus.
   - All assignments (projects) handed in late will be reduced 10 points for every day late (24 hrs. from the due date and time). For example, if the assignment is due at 6PM on the due date and it is post-marked 6:01PM, it will be reduced automatically by 10 points. If the class meets in the class room, students must be ready to hand the assignment in at the start of class time.
   - Incompletes will NOT be issued except under very extreme personal conditions that have been reviewed by the instructor and in some cases in consultation with the Dean’s Office.

UNIVERSITY POLICIES (* Does not apply to online students.)

1. University Attendance Policy:* Attendance is required. The University regulations state: “Students are expected to be present for every meeting of the classes in which they are enrolled.” IUPUI faculty are required to submit to the office of the Register a record of student attendance through the semester, on which they will take action if the record conveys a trend of absenteeism. As a result, ATTENDANCE WILL BE TAKEN IN ALL CLASSES. An Attendance sheet will be passed out in class for each student to sign their name. If you do not sign your name while in class you will be marked absent. The instructor is not expected to remember who attended when, so signing the sheet while in class is important. Signing the attendance sheet for another student is absolutely prohibited. Any student found doing so will be in violation of university policies on ethics and/or conduct.

2. Bringing your children to class: * University Policy states that: “Children are not permitted to attend class with parents, guardians, or childcare providers. This conduct has the effect of unreasonably interfering with an individual’s work or academic performance creating an offensive learning environment.” “A student must not violate course rules as contained in a course syllabus, which are rationally related to the content of the course or to the enhancement of the learning process in the course.” [Code of Student Rights, Responsibilities, and Conduct, page 28]

3. Academic Dishonesty / Integrity / Plagiarism: Using another student’s work on a project or assignment, cheating on a test, or any other form of dishonesty or plagiarism will result in a grade of zero on that assignment and possibly an “F” in the course, and will be referred to the Dean of Students. All students should aspire to high standards of academic honesty. This class encourages cooperation and the exchange of ideas. For further reference, students may see: http://life.iupui.edu/dos/code.htm

4. Values and ethics: Profanity or derogatory comments about or towards the instructor or any member of the class will NOT be tolerated. Violating this rule will result in a warning and if the offense continues, administrative action will be taken.

5. Code of Student Rights, Responsibilities and Conduct: All students are responsible for reading, understanding, and applying the Code of Student Rights, Responsibilities and Conduct of IUPUI. (students can access
www.iupui.edu/code for further information regarding the above points)

6. **Disabilities Policy:** In compliance with the Americans with Disabilities Act (ADA), all qualified students enrolled in this course are entitled to "reasonable accommodations." Please notify the instructor during the first week of class of any accommodations needed for the course. Students with learning disabilities must provide written verification for this policy to be recognized.