**Course Description (from Course Catalog)**


**Course Goals**

The primary goal of the course is to give the students a thorough understanding of the fundamentals of computer graphics, with major emphasis on geometry of image formation, and models of light-object interaction, including local and global shading models. This will be in part through extensive hands-on experience through the implementation of elements of a graphics pipeline in the form of programming assignments.

**Course Outcomes**

1. Understanding of the elements of a typical computer graphics pipeline
2. Understanding of geometry of image formation
3. Understanding of models of light-object interaction and local shading
4. Understanding of global shading models

**Course Prerequisites**

EECS 233

Recommended: C or C++ Programming Experience, and Elementary Linear Algebra
Tentative Course Schedule:

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<td>Introduction</td>
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<td>Raster concepts: scan conversion of points, lines and filled polygons</td>
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<td>Anti-aliasing</td>
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<td>Homogeneous coordinates, transformations, perspective projection</td>
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<td>2D and 4D line and polygon clipping algorithms</td>
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<td>Introduction to shading concepts, local versus global illumination models, BRDF</td>
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<td>Texture mapping</td>
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<td>Environment mapping, bump mapping, geometric shadow algorithms</td>
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Grading (tentative):
EECS366: 65% Homeworks, 35% Midterm Exam
EECS466: 40% Homeworks, 20% Midterm Exam, 40% Project

Textbook

Donald Hearn, M. Pauline Baker, Warren Carithers

Recommended Reading and Other References

1. 3D Computer Graphics (3rd Edition)
   by Alan H. Watt

   James D. Foley, Andries van Dam, Steven K. Feiner, John F. Hughes

   Edward Angel

   Tomas Akenine-Moller, Eric Haines, Naty Hoffman

5. Advanced Animation and Rendering Techniques: Theory and Practice
   Alan H. Watt, Mark Watt
   Dave Shreiner (Editor), OpenGL Architecture Review Board  

   Dave Shreiner, Mason Woo, Jackie Neider, Tom Davis, OpenGL Architecture Review Board  

   Randi J. Rost, Bill Licea-Kane, *et al.*  

   F.S. Hill, Jr.  
   ISBN 0-02-354856-8

**Course Policies**

Homework will be assigned on a weekly basis. You can turn in one programming assignment 72 hours late without any penalty. Otherwise, your grade will be reduced by 15% every calendar day it is late. Policies and due dates of the individual homework assignments will be posted on the blackboard website.

In class exams are closed book and closed notes. You must work alone on all exams. Calculators may not be used during exams. Discussion and/or communication with anyone, except the instructor, during exams are forbidden. Any student who willingly provides information to another student during a quiz or exam is as guilty as the student that receives the information is.

466 students will be required to complete a substantial project. **Project proposals are due October 18th, 2013.** You should discuss your project ideas with me before finalizing your proposals. There will be an oral project presentation scheduled during the finals week. **All the students will be required to attend to the project presentation (including those registered to EECS 366).** Each group also need to prepare and submit a ready-to-print 30 inches by 24 inches poster prepared in MS Powerpoint that describes their project, methodology, and results. The written report requirement of your project will be in the form of a web page. You need to set-up a web page which describes your project, including methodology, and results (including images or a movie). You need to email me a link to the project web page together with your poster, both due before the project presentations. I will put links to your project web pages from the class homepage.