COMP 4242 - 6242: Introduction to Computer Graphics

General Information

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Course website: http://www.cs.memphis.edu/~qishiwu/courses/COMP4_6242/COMP4_6242_Fall14.html

Course Description

Characteristics of graphics I/O devices; 2D/3D transformation including scaling, translation, and rotation; graphics pipeline; data structures for graphics; geometry representation; OpenGL programming; vertex processing; lighting and shading; rasterization including line and polygon drawing; ray casting; ray tracing; computer graphics in games; visualization.

Prerequisite

COMP 3150 (C/C++ Programming), MATH 1910 (Calculus I), or permission of instructor.

Textbook

Fundamentals of Computer Graphics, by Peter Shirley, Michael Ashikhmin, and Steve Marschner; A K Peters/CRC Press; 3rd edition

Resources

OpenGL Programming Guide, 8th edition
Computer Graphics: Principles and Practice, 3rd edition

Evaluation

Grading components:

Attendance	10%
Homework	10%
Project	20%
Midterm	30%
Final	30%

Grading scale*:

Grade	COMP 4242	COMP 6242
A	85 – 100	90 – 100
B	75 – 84	80 – 89
C	65 – 74	70 – 79
D	55 – 64	60 – 69
F	54 and below	59 and below

*Final grades will not be curved unless necessary.

Late Policy:
Students are expected to complete work on schedule. Late work is not accepted unless prior arrangements are made with the instructor.

Academic Integrity and Student Conduct:
Plagiarism or cheating behavior in any form is unethical and detrimental to proper education and will not be tolerated. All work submitted by a student (projects, programming assignments, lab assignments, quizzes, tests, etc.) is expected to be a student's own work. The plagiarism is incurred when any part of anybody else's work is passed as your own (no proper credit is listed to the sources in your own work) so the reader is led to believe it is therefore your own effort. Students are allowed and encouraged to discuss with each other and look up resources in the literature (including the internet) on their assignments, but appropriate references must be included for the materials consulted, and appropriate citations made when the material is taken verbatim.

If plagiarism or cheating occurs, the student will receive a failing grade on the assignment and (at the instructor's discretion) a failing grade in the course. The course instructor may also decide to forward the incident to the Office of Student Conduct for further disciplinary action. For further information on U of M code of student conduct and academic discipline procedures, please refer to: http://www.memphis.edu/studentconduct/misconduct.htm.

Course Syllabus

Week	Topic
1	• Introduction, images, rasterization, and math preliminaries
2	• Ray tracing preliminaries
3	• Geometric objects
4 – 5	• 2D/3D transform
6	• OpenGL programming
7	• Lighting, shading, and viewing
8	• Vertex processing
9	• Review and midterm exam
10	• Visualization
11 – 12	• Ray casting and ray tracing
13	• Textures and color
14	• Image-based rendering
15	• Review