CSC 5450
Computer Graphics
Dr. Melissa Wiggins
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COURSE CREDIT: 3 hrs. credit   **PREREQUISITES:**   CSC 220

OFFICE HOURS: MWF 9-10, TR 8-9, TW 1-3, F 11-12, other hours by appointment

TEXT: *Interactive Computer Graphics: A Top-Down Approach with OpenGL™, 4th edition*
OpenGL™: A Primer, 2nd edition   Both by Edward Angel
Course web site: http://cosmo.mc.edu/moodle - Computer Science - CSC 5450

OTHER MATERIALS: An MCnet account and access to the Internet. You **MUST** check *this* email account (MCnet) *every* day. Failure to do so may result in missed assignments, etc. that may result in a lower grade in this course.
Access to a C/C++ compiler. NVIDIA or comparable graphics card a plus.

DESCRIPTION: An introduction to raster graphics technology. A study of the theory and practice necessary for comprehending the techniques for scientific visualization, interface design, and 2- and 3-dimensional data representation and manipulation.

RATIONALE: This course is an elective for all graduate students in Computer Science and Computer Science Education.

LEARNING OBJECTIVES: This is a senior/first year graduate level introduction to raster graphics technology. The goal is to provide. The theory and practice necessary for comprehending the techniques for scientific visualization, interface design, and 2- and 3-dimensional data representation and manipulation. The students will be provided experience with the OpenGL™, a widely used graphics library as well as Java3D APIs to create graphics routines illustrating the techniques necessary to support the theory and practice.

EVALUATION: *The instructor reserves the right to make adjustments as necessary.*

Tests: There will be a midterm examination worth 250 points.

Assignments: There will be 5-10 programming exercises and projects worth a total of 500 points. The student may be required to make an appointment with the instructor to demonstrate his/her project.

Final Exam: There will be a comprehensive final examination given at the time specified by the college. This examination will be worth 250 points. **Monday, December 10, 2007, 8:00 - 10:00 a.m.**

Project/Paper: Graduate students will be required to complete a research project and read and critique additional scholarly publications. This will be worth 200 points.

Grading Scale:

1080 - 1200 points	**A**	840-899 points	**C**
1056-1079 points	**B+**	720-839 points	**D**
960-1055 points	**B**	0-719 points	**F**
900-959 points	**C+**		

CLASS ATTENDANCE: The student is expected to attend classes. Regulations for class attendance are given in the Class Schedule. Remember in a MWF class 12 absences is an automatic **F**. **Three tardies counts as one absence in this class. (See the Mississippi College catalog).** "For lesser numbers of absences, the student should expect a lowered grade in the course, with the maximum penalty of one letter grade for each week of absences (in a semester) or the equivalent. The calculation of the semester grade, including any penalty for absences, is the responsibility of the professor and may vary according to the nature of the course and the grading scale used. In some classes points will be deducted from the semester grade for unexcused absences; in others, the penalty may be built into the grading scale by means of frequent pop quizzes, grades for class participation and the like." Mississippi College Policy 2.10 Students should expect a penalty for absences as stated above.

MAKE-UP WORK & TESTS: Students are expected to take tests on the day they are assigned. However, it is the student's responsibility to contact the instructor in case of an emergency illness or death in the family **before** the test. At that time the student and instructor will agree on a time for the make-up exam. This time should be within 2 days of the missed test.   Assignments are to be turned in on the day they are due!! All work is due at the beginning of the class period. Students will at various times be expected to make appointments with the instructor to demonstrate their projects/programs. Failure to keep an appointment will result in deductions for late work. Any work not turned in will lose 10% credit for each school day ***until the third day***. The due date at the beginning of class is day 1. No work will be accepted after the third day. Under no circumstances will work be accepted after the assignment has been graded and handed back in class.   Exceptions to this may be made at the instructor's discretion.

ACADEMIC INTEGRITY: This statement on academic honesty in computer science courses is an addendum to the Mississippi College Policy 2.19. In a computer science class individual effort is expected. Student misconduct not only includes cheating on tests, but also extends to copying or collaborating on programming assignments, projects, lab work or research unless otherwise specified by the instructor. Using other people's accounts to do your work or having others do your work is prohibited. Close proximity in lab does not mean collaboration is permitted. NOTE: Discussing logical solutions to problems is acceptable, exchange of code, pseudocode, designs, or procuring solutions from the Web, other texts, the Internet or other resources on or off campus is not acceptable and will be treated as cheating. **REMEMBER: Any work submitted by the student which is not the student's own will be considered cheating.**
First offense: grade of 0 for **all** parties involved unless the "guilty" party can be determined as well as any punishment deemed necessary under policy 2.19
Second offense: grade of F in the course as well as any punishment deemed necessary under policy 2.19

SPECIAL ACCOMMODATIONS: If you need special accommodations due to learning, physical, psychological, or other disabilities, please contact Dr. Buddy Wagner in the Counseling and Career Development Center. He may be reached by phone at (601) 925-3354 or by mail at P. O. Box 4016, Clinton, MS 39058.

DROPPING A COURSE: LAST DROP DATE - October 26
Students cannot withdraw after this date with a W (passing) unless the three following criteria are met:
- Extenuating circumstances (clearly outside the student's control)
- Passing the course at the time of withdrawal
- Does not have excessive absences at the time of withdrawal
NOTE: Dropping after the THIRD (3rd) WEEK will result in a grade of W appearing on your permanent record (transcripts). See http://www.mc.edu/publications/policies/213.html**.**

INCOMPLETE GRADES: An Incomplete may be given to a student who has been providentially hindered from completing work required in a course, provided that:
1. semester attendance requirements have been met;
2. most of the required work has been done;
3. the student is doing passing work; and
4. the student has made prior arrangements with the professor to complete the remaining work at a later date.
The grade of I must be removed promptly or it becomes an F; it cannot be removed by repeating the course.

TENTATIVE COURSE OUTLINE

Chapter 1 - Graphics Systems and Models
OpenGL™ primer
Chapter 2 - Graphics Programming
Chapter 3 - Input and Interaction
Chapter 4 - Geometric Objects and Transformations
Chapter 5 - Viewing
Mid-Term Exam
Chapter 6 - Shading
Chapter 7 - From Vertices to Fragments
Chapter 8 - Discrete Techniques
Chapter 9 - Programmable Shaders
Chapter 10 - Modeling
Chapter 11 - Curves and Surfaces
Java3D

Program Submission Guidelines

All programs should be submitted by e-mail as an attachment. Source code must be submitted as well as **all** files necessary for the programs execution. The e-mail message should contain the following information:

- Author's name
- Date completed
- Brief problem description
- Statement regarding whether the program works or not.
- If the program does not work, a brief but concise description of what is wrong and what it will take to "fix" it.

Other References

- *OpenGl™ Programming Guide*, Addison-Wesley, 2000
- *OpenGL™ Reference Manual*, Addison-Wesley, 2000
- Java3D API, Sun Microsystems
- Java3D Tutorial, Sun Microsystems
- *OpenGl™* Homepage
- GLUT 3D Graphics Library