MAT 494 — SpTp: Computer Graphics, Fall 2006

Instructor: Dr. Shaun D. Ramsey **Email:** sramsey2@washcoll.edu
Phone: (410) 810-7485 **Office:** Dunning Decker N102
Office Hours: MTW 11:30-12:20
Class meetings: TR 1:00pm-2:15pm DD N106
Text: *OpenGL Programming Guide: Fifth Edition*
    by OpenGL ARB, Shreiner, Woo, Neider and Davis

Overview: Computer graphics has revolutionized the computer industry. We can see computer graphics in movies, games, simulations, and mechanical designs. There are many types of graphics systems, but many use similar transformations, viewing, and modeling methods. While advanced graphics systems may use more complex methods (like perception and shading models), a foundation in basic computer graphics is necessary to completely understand those concepts. Many portions of graphics use a large foundation of computer science and mathematics. Data structures, memory coherence, machine-level programming languages, programming skills and more are used throughout the field to increase the efficiency and quality of computer graphics. As such, graphics is a great way to increase a students working knowledge of computer science as a whole.

Topics: In this course, we will cover the fundamentals of graphics pipelines and programming. Students will learn basic graphics concepts such as midpoint algorithms, z-buffers, double buffering, transformations and viewing, color, lighting and texturing. In this course, students will learn the complexities of coding a rasterizer with and without the OpenGL API. Students will gain a basic understanding of matrices and vectors, especially as they pertain to graphics and graphics hardware.

Advising: Strong programming skills are required to take this course. A knowledge of vectors and matrices is valuable, but not required. This course is not recommended for those weak in programming or mathematics.

Grading and Assignments: There will be two exams worth 20% each. There will be weekly assignments worth 40% of your final grade. Lastly, there will be a final project in lieu of a final exam, that will be the last 20% of your grade. The final project consists of three parts: a single written and oral pro-

posal, several demonstrations,and lastly a final demonstration/presentation with a written paper. For programming assignments, credit is given only for programs which compile and execute properly. Late homework receives no credit, but will be accepted, graded and marked for boundary cases. Each homework will be accompanied by technical documentation describing how to use the software, problems you've encountered, suggestions for future work, and what you got out of the assignment (more detail later). As always, while writing, be careful of plagiarism. For example, never forget to fully cite sources of information or ideas that are not your own.

Exams: Exam dates are scheduled for October 3rd and November 16th. An absence on the day of an exam will result in a grade of a 0. Except in cases of extreme emergency, exams must be taken on the day the exam is administered. Before a make-up test is scheduled, documentation of the extreme emergency must be given. Make-up exams for tests missed due to an extreme emergency will be arranged for a time that is mutually convenient for the student and Dr. Ramsey.

Attendance: Attendance will be taken at the beginning of every class. After two weeks of missed absences you fail the course. You fail the course on your fifth absence in a TTh course and on your seventh absence in a MWF course. There is no distinction between excused and unexcused absences. I will likely email you if you miss a class, but it is ultimately your duty to keep track of your absences. Note that missing a class may also result in missed classwork. It is your responsibility to obtain assigned homework, announcements and class notes from your fellow students. It is important that you attend every class. As a matter of courtesy, students are expected to inform Dr. Ramsey of the reason for any absence.

Academic Honesty: You are always subject to the Honor Code of Washington College. You may discuss concepts with others, but work is to be done on your own (unless otherwise designated). If you are unsure if something is considered *cheating*, simply ask. As always, if you have questions, feel free to email or stop by my office.

Accommodations: If you have a special accommodation/need that has been reported to the college, please let me know discretely during the first week, so that I can work to meet your accommodation.

Suggestions: To become a good programmer and problem solver, you must work on many problems. If you need help, please see me, peers or the math center for assistance. Don't forget your book! There are many resources, so there is no excuse for not using them.