Course Description and Purpose

This graduate level course will cover advanced computer graphics techniques. Students will also be introduced to state-of-the-art methods. The course will focus on techniques for real-time rendering and animation.

This course counts as an elective in the Scientific Computing and Visualization concentration track.

Prerequisites

1. Graduate Student in Computer Science Standing. Students who are not fully admitted into the MS Computer Science program can take this course if they
2. COSC 4328, 5327 or other introductory computer graphics course.

Student Learning Outcomes

- Gain experience with the OpenInventor API.
- Gain experience programming the GPU.
- Program real-time graphics applications.
- Learn to read research papers, and apply the described algorithms.
- Exposure to current computer graphics research and recent results.
- Prepare students to be able to conduct computer graphics research.

Format

This course will be a mixture of lectures and class discussions. The student is expected to actively participate in class discussions. The student is also expected to do outside work on assignments, some of which are not graded. The student will also complete a major software project.

Text and References

The following books would be very useful:

- Josie Wernecke, Open Inventor Architecture Group *The Inventor Mentor: Programming Object-Oriented 3D Graphics with Open Inventor, Release 2*, Addison-Wesley, 1993. [online Version](probably many more)
- Moller and Haines, *Real-time Rendering*, AK Peters,

Grading Plan

The majority of your grade will come from programming assignments. There will be several small programming assignments and one large semester project.

There will also be one exam near the end of the term.
Exam 20%                                                            90% A  
Presentation 10% 80% B  
Assignments 15% 70% C  
Project 45% 60% D  
Class Participation 10% 50% F  

Course Outline

- Scenegraphs, OpenInventor.
- OpenInventor API, extending OpenInventor.
- Programmable pipelines. Programming the GPU
- Advanced Topics.

Exams

- Midterm, Tuesday Mar 10, regular class time
- Final (Demos), Wed May 12, 2008 8:00AM-10:45AM

Assignments

There will be 8 programming assignments and one paper scheduled as follows (subject to change)

- Assignment 1, due midnight 22 Jan
- Assignment 2, due midnight 15 Feb
- Assignment 3, due midnight 29 Feb
- Assignment 4, due midnight 12 Mar

Course Policies

- No makeup exam without adequate doctor's excuse explaining your absence. Makeup exams will not be the same exam. If for any reason you have a conflict you must see me as soon as you know about the conflict!
- Incompletes only with documented reasons in accordance with the university policy.
- Late Assignments will be marked off at a rate of: 10% for 1 day, 25% for 2 days, 60% for 3 days, 100% thereafter.
- **All work must be your own, group work is CHEATING, and all group members will receive a zero.**
- Unless otherwise noted, the due time will be 11:59:59PM, 12:00:01AM is 10% off.
- Turn off cell phones and pagers before class.

Classroom/professional behavior Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor's ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

Disabilities Accommodations: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call or visit Disability Services at (361) 825-5816 in Driftwood 101.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

Academic Advising: The College of Science and Technology requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. The College's Academic Advising Center is located in Faculty Center 178, and can be reached at 825-6094.

Grade Appeals. As stated in University Rule 13.02.99.C2, Student Grade Appeals, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Rule 13.02.99.C2.
Student Grade Appeals, and University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules Web site at http://www.tamucc.edu/provost/university_rules/index.html. For assistance and/or guidance in the grade appeal process, students may contact the Office of Student Affairs.