Course Description

This course focuses on the mathematics and algorithms necessary to create various types of computer games. Topics include 2D and 3D graphics, artificial intelligence, event-loop programming, tree representation, and user interfaces.

Goals

- Design and implement algorithms for AI in games
- Solve and implement physic problems for rigid bodies
- Create graphics using OpenGL
- Participate in a team on a large project

Required Texts

- AI for Game Developers by David M. Bourg and Glenn Seemann
- OpenGL – A Primer by Edward Angel

Responsibilities

Your timely attendance is expected at each class meeting. You are also responsible for the contents of reading assignments, handouts, lectures, class email, and the course web page.

If you have a disability that may affect your participation in this course, please contact me immediately to discuss academic accommodations.

Graded Material

- Homework assignments will be assigned regularly during the first two thirds of the semester. Some will be traditional pencil and paper work and others will be programming assignments. The homework will be graded in the traditional manner and have specific due dates.
Programming assignments will not be games themselves, but will require you to implement a feature or algorithm frequently used in a game. These programs will be graded on a pass/fail basis where pass is assigned only for perfect execution. When a program fails, you should re-submit for re-evaluation. These assignments will have a due date for the first submission, but subsequent submissions may be turned in at any time until the last Monday of the semester. You are strongly advised not to have multiple outstanding programming assignments.

- There will be two projects assigned during the semester. In the first, you will develop a real-time, interactive game and the second will be a turn-based strategy game. Your grade will be based on the number of successfully implemented features. You will earn a ‘B’ if you complete all specified items. To earn an ‘A,’ you must complete some additional feature for game AI or advanced graphics features. These features must be approved by me prior to your submission.

- The last third of the course will be dedicated to the development of a group project. We will all work together on a single game, and I hope to give a school-wide demo at the end of the semester. We will work in small teams to accomplish various tasks for this project. Team make-up will be determined both by abilities and interests.

  Fridays from April 1 until the end of the semester (except April 22, see below) will be used as project meeting times. During these periods, teams will give status reports and new assignments will be given. You must attend each of these meetings.

- One test will be given in class during the semester. The tentative date for this test is Monday, February 28.

- The final exam will be given in class during the final exam period.

Class Cancellations

- February 23 and 25 – Class canceled for SIGCSE conference
- April 22 – Class canceled for CCSC conference

Grade Determination

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>40%</td>
<td>A: 90 – 100%</td>
</tr>
<tr>
<td>Projects</td>
<td>30%</td>
<td>B: 80 – 89.9%</td>
</tr>
<tr>
<td>Midterm</td>
<td>15%</td>
<td>C: 70 – 79.9%</td>
</tr>
<tr>
<td>Final</td>
<td>15%</td>
<td>D: 60 – 69.9%</td>
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<tr>
<td></td>
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<td>F: &lt; 60%</td>
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