CS 4973 Computer Game Development

Section 001, Spring 2011

General Information

Class Time: TR 10:30-11:45
Class Location: Carson 119
Prerequisites: CS 3113 Operating Systems and Math 3333 Linear Algebra and Phys 2514 Physics for Engineers
Instructor: Dr. Deborah A. Trytten
  Office: 234 Devon
  Office Phone: 325-4299 (voice mail available, but email is much better)
  Class home page: http://learn.ou.edu
  Personal URL: http://www.cs.ou.edu/~trytten
  Email: dtrytten@ou.edu

Required Materials:

- Working laptop computer with wireless network access, and at least 1.5 hours of battery life on a recharge.
- Agile Game Development with Scrum, Clinton Keith, Addison-Wesley, Upper Saddle River, NJ, 2010 (recommended).

Course Description

Introduction to the process of developing, maintaining, enhancing, adapting, or refactoring a computer based game. Students will work in project teams to develop a game engine either from scratch or continue development on an existing game engine. A disciplined software development process will be followed. Modern software development tools will be used. Students will practice oral and written communication skills. (Sp)

Topical Coverage

Topics will include: Game engine development with the SCRUM software development process, linear algebra, teamwork, and game engines. Additional topics will be selected based on the student projects chosen and are likely to include a subset of: game scripting languages, modeling, texturing, three dimensional graphics pipeline, collision detection, applications of artificial intelligence, asset creation,
terrain, quaternions, complex data structures for games, rigid body dynamics, meshes, threaded programming, client server programming and networked game play.

Students will not be permitted to select projects that overlap excessively with device programming. For example, porting an existing game to the iPhone would not be an acceptable project.

Software tools to be used include a code repository, a bug tracking system, an integrated development environment, and a SCRUM management tool. Other development tools, such as profilers, will be used as necessary.

**Course Policies**

**Organization of the Course:** The instructor will lecture on general game engine topics and assign assignments that are a blend of traditional homework and projects. During the second part of the semester, student teams will make a contribution to an existing open source game. The choice of game and contribution will be made by the students in consultation with the instructor. Teams will not be allowed to develop games or game engines from scratch. Students will not be permitted to work alone. When project work is being done, each class day will begin with 15 minutes for the daily scrum.

**Class Attendance:** Class attendance is important because we will work on projects in teams during class time and discuss information that is not contained in books. You are responsible for everything that is announced in class, independent of whether you chose to attend or not.

**Class Home Page:** This class will use Desire2Learn software for our home page. The URL for the home page is [http://learn.ou.edu](http://learn.ou.edu). Login with your 4+4. I update this web site several times a week. You should check the site daily. When I update the site, I will post an announcement telling you what has been added and where it is located. You are responsible for things posted on the site with a 24 hour delay.

**Class Email Alias:** Urgent announcements will be sent through email. It is your responsibility to:

- Have your university supplied email account forwarded to the location where you read email.
- Make sure that your email address on the course home page is correct, and forwards email to the place where you read it. I’ll send out a test message during the first week of class. If you do not receive this message, it is your responsibility to get the problem resolved.
- Have your email program set up so that replying to your email will work correctly. You can send email to yourself and reply to yourself to test this.

If you need assistance in accomplishing any of these tasks, contact 325-HELP. You are responsible for reading emails within 24 hours.

**Discussion Groups and Email:** The discussion group on the course home page should be the primary method of communication outside of class. This allows everyone in the class to benefit from the answer to your question, and provides students with more timely answers since the TA and I check the discussion group regularly. Matters of personal interest should be directed to email instead of to the newsgroup, e.g. informing me of an extended personal illness. Posting
guidelines for the newsgroup are linked on the home page. Each team will be provided with a private space in learn.

**Laptop Computers:** It is the responsibility of each student in this class to have a working laptop computer with ample battery and wireless internet connectivity available for every class. If your computer requires repair during the semester, it is your responsibility to make arrangements to have another computer available.

**Academic Misconduct:** Upon the first documented occurrence of academic misconduct, I will report the academic misconduct to the Campus Judicial Coordinator. The procedure to be followed is documented in the University of Oklahoma Academic Misconduct Code (http://www.ou.edu/studentcode). In the event that I elect to admonish the student, the appeals process is described in http://www.ou.edu/provost/integrity-rights/.

**Incompletes:** The grade of I is intended for the rare circumstance when a student who has been successful in a class has an unexpected event occur shortly before the end of the class. I will generally not consider giving a student a grade of I unless the following three conditions have been met.

1. It is within three weeks of the end of the semester.
2. The student has a grade of C or better in the class.
3. The reason that the student cannot complete the class is properly documented and compelling.

**Accommodation of Disabilities:** The University of Oklahoma is committed to providing reasonable accommodation for all students with disabilities. Students with disabilities who require accommodations in this course are requested to speak with the professor as early in the semester as possible. Students with disabilities must be registered with the Office of Disability Services prior to receiving accommodations in this course. The Office of Disability Services is located in Goddard Health Center, Suite 166, phone 405/325-3852 or TDD only 405/325-4173.

**Faculty Evaluation:** The College of Engineering utilizes student ratings as one of the bases for evaluating the teaching effectiveness of each of its faculty members. The results of these forms are important data used in the process of awarding tenure, making promotions, and giving salary increases. In addition, the faculty uses these forms to improve their own teaching effectiveness. The original request for the use of these forms came from students, and it is students who eventually benefit most from their use. Please take this task seriously and respond as honestly and precisely as possible, both to the machine-scored items and to the open-ended questions.

**Cancelled Classes:** Class is cancelled on the following days.

<table>
<thead>
<tr>
<th>Day</th>
<th>Date</th>
<th>Reason</th>
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<tbody>
<tr>
<td>Monday</td>
<td>January 17</td>
<td>Martin Luther King Jr. Day</td>
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<tr>
<td></td>
<td>March 12-20</td>
<td>Spring Break</td>
</tr>
</tbody>
</table>
University Deadlines: The table below summarizes important deadlines for students at the University of Oklahoma. It is the responsibility of the student to keep track of these deadlines if they may wish to withdraw from this class. Be warned that I follow university policy extremely literally. During the period when withdrawal can result in either a W or an F, I will give a W only if the student is receiving a D or better in the class.

<table>
<thead>
<tr>
<th>Event</th>
<th>Last Date</th>
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<tbody>
<tr>
<td>Last day to Add</td>
<td>January 21</td>
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<tr>
<td>Last day to Drop with refund</td>
<td>January 31</td>
</tr>
<tr>
<td>Last day to drop with automatic W</td>
<td>February 25</td>
</tr>
<tr>
<td>Last day to change to audit</td>
<td>April 1</td>
</tr>
<tr>
<td>Drop with grade of W/F without permission of the Dean</td>
<td>April 3</td>
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Classroom Conduct: Disruptions of class will not be permitted. Examples of disruptive behavior include:

- Allowing a cell phone or pager to repeatedly beep audibly.
- Playing music or computer games during class in such a way that they are visible or audible to other class members.
- Exhibiting erratic or irrational behavior.
- Behavior that distracts the class from the subject matter or discussion.
- Making physical or verbal threats to any member of our learning community.
- Refusal to comply with faculty direction.

In the case of disruptive behavior, I may ask that you leave the classroom and may charge you with a violation of the Student Code of Responsibilities and Conduct.

Projects

Software Tools: Using commercial software without proper licensing is illegal, unethical, and absolutely unacceptable in this class. All software tools used must be freely available, donated to the university (including a written agreement) or purchased.

Backup Copies of Projects: It is the student’s responsibility to backup their files appropriately using a source repository. No extensions to deadlines will be given as a result of lost files, unless there is a massive, network wide problem which affects the entire class.

Projects: Some assignments and projects will be done in pairs or teams. The size and composition of the teams will be determined by the instructor and students together.
**Sprints:** Team software development must use the SCRUM software development process. This process separates software development into cycles, called sprints. During each sprint, students will be required to select a set of features for development and deliver these features. There will be approximately three sprints.

**Evaluation**

**Grading:** There are four components to the course grade. They are weighted as follows.

<table>
<thead>
<tr>
<th>Component</th>
<th>Percent</th>
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<tbody>
<tr>
<td>Assignments</td>
<td>50</td>
</tr>
<tr>
<td>Examination</td>
<td>20</td>
</tr>
<tr>
<td>Scrum Progress on Class Project</td>
<td>25</td>
</tr>
<tr>
<td>Final Presentation</td>
<td>5</td>
</tr>
</tbody>
</table>

Peer evaluations will be given formatively at the end of each sprint. At the end of the semester, a final summative peer evaluation will be given. Results from the summative peer evaluation will be used to raise or lower individual team member's course grades by one grade from the team grade based on progress documented in Scrums artifacts and their team's evaluation of their contribution to the project. In extreme cases, for example a team member who failed to deliver any features during a sprint, grade penalties of more than one grade may be assigned.

The grading scale will be no higher than the following. It may be lower at the discretion of the instructor.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tr>
<td>A</td>
<td>90+</td>
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<tr>
<td>B</td>
<td>80-89</td>
</tr>
<tr>
<td>C</td>
<td>70-79</td>
</tr>
<tr>
<td>D</td>
<td>60-69</td>
</tr>
<tr>
<td>F</td>
<td>Otherwise</td>
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**Additional References**


More references are linked to the course home page.