CSC 482 Course Syllabus

CSC 482 – Advanced Computer Game Projects

Section 001
SPRING 2014
3 Credit Hours

Course Description

This course will provide a focused exploration of the technologies and activities involved in the development of a stand-alone computer game. Topics will include technical, management and design issues involved in the production of a game. Course principles will be applied in a team-based semester-long project built on top of a commercial game engine. Student activities in the course will reflect the game production pipeline, including project pitches, definition of requirements, and design detail. Classes will primarily be student working group meetings involving project review with the instructor, but will also include a mix of lecture format, student presentations and guest presentations from game industry veterans. See the schedule for relevant structure and dates.

Rather than focusing on specific algorithms for programming for games and/or engines, the course deals with the overall production of a completed game using a 3D gaming engine. This semester (Spring 2014) students will use the Unity 3D engine. Programming for the course will involve using C#, the development language used in Unity. Students will form small teams early in the semester, collectively pitch a game idea to the instructor and to the class, then spend the rest of the time in the course working on the development of the game itself. The final for the course will be the presentation of a working version of your game at an evening session open to the public.

This semester, game specifics are already determined. We will form a number of sub-teams that will build components of one large project for a single game, with a number of specialized groups working to build the final product.

Learning Outcomes

By the end of the course, students should be able to accomplish the following:

1. Delineate issues in techniques for game development including NPC navigation, service-oriented architectures for game control, AI behavior, motion gaming, mobile game development and other technologies used to create a sophisticated computer game.

2. Discuss the concepts and apply the skills needed to formulate novel game concepts, scope game development milestones and implement a complete game built on top of an existing 3D gaming engine. This will involve:

   • Defining feature sets consistent with game engine capabilities that facilitate an overall user experience
• Preparing documentation indicating estimated timelines for project development and revising schedules (with faculty supervision) as projects progress
• Allocating responsibilities to team members and managing the interaction between dependent subsystems

3. Develop and present oral game proposals ("pitches") that involve team presentation and in-class peer and instructor critique.

4. Compose effective game design documents and manage a semester-long game development project working from those specifications

5. Contribute to a development team constructing a stand-alone interactive software artifact using a) code repositories and source code access control, scheduled reviews and graded milestones and in-class demonstrations.

6. Provide end-of-project overviews and hands-on demonstrations of stand-alone, playable games for each semester project, as well as access via the web for each game as downloaded, self-installing mod files for public access.

Course Structure

Class meets Mondays and Wednesdays from 9:35 to 10:25 in EB3 Room 2232. Class structure will vary. Most classes will involve design reviews and progress discussions, but may also range from seminar format, including lectures, discussion of readings, guest lectures, or presentations of relevant systems and demos. Class labs are held on Fridays from 12:50 to 2:40 in the CSC Multi-media Lab in EB2 1221. Attendance at labs is also required as indicated in the lab participation grading policy.

Course Policies

Late Assignments:
Late assignments will not be accepted. Completed assignments should be turned in by the beginning of the class period on the date they are due. For assignments for which email or other electronic submission is requested, the submission should be completed before the start of the class period on the date they are due. This policy counts for group submissions as well as for peer reviews.

Valid excuses as determined by the university's attendance policy (http://policies.ncsu.edu/regulation/reg-02-20-03) such as illnesses with a note from a doctor or a death in the family (with documentation) will be granted extensions to deadlines, provided the documentation is presented to the instructor in a timely manner. Other extensions may be granted for other scholarly activities provided arrangements are made with the instructor well in advance of the deadline.

Attendance:
Attendance at class and lab sessions is required. Documented medical excuses or other excused absences will not adversely affect grades. Conference travel or other
scholarly duties discussed well in advance of a missed session may be excused at the discretion of the instructor.

Roll will be called by the instructor at minimum of 8 lectures, scheduled at the instructor’s discretion. Missing more than two roll calls will result in the student’s class participation grade being reduced by 50%. Each additional unexcused absence will reduce class participation by an additional 10%.

Lab participation will be recorded via signing sheets that will need to be turned into the TA at the end of every lab session. Students must sign the attendance sheet for themselves in the lab. Students are allowed to miss up to 2 unexcused labs without grade penalty. However, missing the 3rd lab will result in the student's lab participation grade being reduced by 50% of the total possible lab points. Each subsequent lab day missed will reduce the lab participation grade by 20% of the total possible lab points. The team lead will be responsible for printing out, making available and turning in the attendance sheet. If he or she is unavailable for some reason, an alternate can be designated (with a priori notification sent to the instructor and TA).

An unexcused absence from the Game Development Showcase scheduled for Friday, 4/25/14, will result in a 0 for the student's final project grade (worth 25% of their final grade).

**Final Grades and Extra Credit:**
At the discretion of the instructor, extra credit opportunities may be offered throughout the semester. The number and value of those opportunities will be solely up to the instructor and will be available to everyone in the course. No individual extra credit opportunities or makeup work will be allowed.
Final grades will be determined by a weighted average of all assignments including late penalties and extra credit. Final grades will not be rounded up or down.

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**Instructors**

**Dr David L Roberts** (dlrober4) - *Instructor*
*Email:* robertsd@csc.ncsu.edu
*Phone:* 919-513-7182
*Office Location:* EB2 2278
*Office Hours:* Tuesdays 5-6pm, Wednesdays 4-5pm, and by appointment. Note, the hallway to my office is generally locked at 5pm, so please call for entry when coming to Tuesday office hours. You are welcome to stop by my office at any time, but my presence does not neces

**Matthew B Adams** (mbadams3) - *Teaching Assistant*
*Email:* mbadams3@ncsu.edu
*Phone:* 704-654-0256
*Office Location:* TBD
*Office Hours:* By appointment.

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**Course Meetings**

**Lecture**

**Days:** MW
**Time:** 9:35am - 10:25am
**Campus:** Centennial
**Location:** EB3 2232
*This meeting is required.*
Lab

<table>
<thead>
<tr>
<th>Days:</th>
<th>F</th>
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</thead>
<tbody>
<tr>
<td>Time:</td>
<td>12:50pm - 2:40pm</td>
</tr>
<tr>
<td>Campus:</td>
<td>Centennial</td>
</tr>
<tr>
<td>Location:</td>
<td>EB2 1221</td>
</tr>
</tbody>
</table>

This meeting is required.

Course Materials

Textbooks

None.

Expenses

None.

Materials

None.

Requisites and Restrictions

Prerequisites

CSC481. I also expect you to be familiar with Unity 3D and/or UDK. If you are not familiar with Unity3D or UDK, expect to learn on your own and with some help from the TA. There are many resources available online that will get you up to speed, which will be essential for your work in this course.

Co-requisites

None.

Restrictions

None.

General Education Program (GEP) Information

GEP Category

This course does not fulfill a General Education Program category.

GEP Co-requisites

This course does not fulfill a General Education Program co-requisite.

Transportation

This course will not require students to provide their own transportation. Non-scheduled class time for field trips or out-of-class activities is NOT required for this class.

Safety & Risk Assumptions

None.

Grading

Grade Components
<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
<th>Details</th>
</tr>
</thead>
</table>
| Class Participation | 10     | Your class participation grade depends on several factors, including attendance as well as participation in in-class activities. Half of this grade is based on contribution to weekly burn-up analytics. All of this grade is affected by peer review of team performance. Attendance is required for all classes. Roll will be called by the instructor at minimum of 8 lectures, scheduled at the instructor's discretion. Missing more than two roll calls will result in the student’s class participation grade being reduced by 50%. Each additional unexcused absence will reduce class participation by an additional 10%.

Lab participation will be recorded via signing sheets that will need to be turned into the TA at the end of every lab session. Students must sign the attendance sheet for themselves in the lab. Students are allowed to miss up to 2 unexcused labs without grade penalty. However, missing the 3rd lab will result in the student's lab participation grade being reduced by 50% of the total possible lab points. Each subsequent lab day missed will reduce the lab participation grade by 20% of the total possible lab points. The team lead will be responsible for printing out, making available and turning in the attendance sheet. If he or she is unavailable for some reason, an alternate can be designated (with a priori notification sent to the instructor and TA).

The goal of this assignment is to write a compelling document that describes and sells your video game concept. The very first stage of development of a new video game involves a development team pitching a game concept to a publisher. If the publisher is interested in the game concept, they will invite a more detailed game proposal, which is then used in deciding whether to fund development of the game. See the Game Design Document Template on the course resources page for an example.

As a result, the game concept document must concisely describe the idea for your game, doing so in a way that makes it clear what is compelling about the gameplay of the game, and giving a sense of the graphic elements of the game.

As part of your design document, make sure you concretely outline the deliverables for each of the milestones throughout the course of the semester. What will each development team accomplish for each milestone?

This is a group assignment, and we expect one game concept document for the entire team. In addition to the design document, the team must pitch their idea in an in-class presentation. You will also be asked to complete a peer evaluation at the time of submission.

The due date for this assignment is 1/20/14, but is subject to change. See the course schedule for updates.
Once you've pitched and received approval for your game, you'll quickly want to demonstrate some progress on it's development. In a few short weeks, you will need to have something approximating a playable experience, so your first big steps toward that end will be to demonstrate the level design and underlying technologies you will need to rely on. These should already have been described in your Game Design Document.

This is a group assignment, and we expect each team to submit and demonstrate their technology and designs. You will also be asked to complete a peer evaluation at the time of submission.

The **due date for this assignment is 1/29/14**, but is subject to change. See the course schedule for updates.

Your first big milestone will involve a more complete demonstration of your team's technology. This should be a playable experience, that is at this point still independent of other components of the game. It should demonstrate your team's specific functionality, and address the deliverables outlined in your Game Design Document.

This is a group assignment, and we expect each team to submit and demonstrate their technology and designs. You will also be asked to complete a peer evaluation at the time of submission.

The **due date for this assignment is 2/12/14**, but is subject to change. See the course schedule for updates.

This will be your biggest milestone to date. The focus of this effort is integration. As your task is to create the first playable experience, you will need to incorporate aspects from each of the teams. This isn't a completed game, but it should be a playable experience that approximates your completed game. Make sure to address the deliverables outlined in your Game Design Document.

This is a group assignment, and we expect each team to submit and demonstrate their technology and designs. You will also be asked to complete a peer evaluation at the time of submission.

The **due date for this assignment is 2/26/14**, but is subject to change. See the course schedule for updates.

Your alpha release should be your attempt at the complete gameplay experience. Alpha software is often buggy and unstable, but is feature-complete and ready for testing by developers. Alpha releases are not publicly available releases, so it isn't expected that a player would be able to use the game at this point. Over the two weeks subsequent to this alpha release, you will be finding and fixing bugs, as well as implementing the last few missing features.

This is a group assignment, and we expect each team to submit and demonstrate their technology and designs. You will also be asked to complete a peer evaluation at the time of submission.
Component | Weight | Details
---|---|---
Beta Release | 10 | Submission.
The **due date for this assignment is 3/27/14**, but is subject to change. See the course schedule for updates.
Your beta release should be the complete gameplay experience, ready for a more public release. It may still contain some bugs, but will be stable enough for a wider audience to play test.
This is a group assignment, and we expect each team to submit and demonstrate their technology and designs. You will also be asked to complete a peer evaluation at the time of submission.
The **due date for this assignment is 4/9/14**, but is subject to change. See the course schedule for updates.

Final Project | 25 | There are five components to the final project submission, which involve both a deliverable game and a presentation.
1) A dry run of the final presentation will occur in class on 4/14/14 (3%).
2) The presentation draft materials should be uploaded to Moodle by 4/14/14 (3%)
3) Your absolute final version of the game, the Gold Master will be previewed in class on 4/21/14 (3%)
4) Your Gold Master is due to be submitted by 4/25/14 (15%)
5) The entire team will make a large presentation and demonstration of the game, open to the public, at a session scheduled for Friday evening, 4/25/14 (6%)

Note that attendance is required at the 4/25/14 evening session for all students. Failure to attend without a documented excuse will result in a 0 for the Final Project portion of your grade.

**Letter Grades**

This Course uses Standard NCSU Letter Grading:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>97≤A+≤100</td>
</tr>
<tr>
<td>A</td>
<td>93≤A&lt;97</td>
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<tr>
<td>F</td>
<td>0≤F&lt;60</td>
</tr>
</tbody>
</table>
Requirements for Credit-Only (S/U) Grading

In order to receive a grade of S, students are required to take all exams and quizzes, complete all assignments, and earn a grade of C- or better. Conversion from letter grading to credit only (S/U) grading is subject to university deadlines. Refer to the Registration and Records calendar for deadlines related to grading. For more details refer to http://policies.ncsu.edu/regulation/reg-02-20-15.

Requirements for Auditors (AU)

Information about and requirements for auditing a course can be found at http://policies.ncsu.edu/regulation/reg-02-20-04.

Auding students will be required to participate fully in all course activities, contribute to all team assignments, and attend all course lectures and lab sections.

Policies on Incomplete Grades

If an extended deadline is not authorized by the instructor or department, an unfinished incomplete grade will automatically change to an F after either (a) the end of the next regular semester in which the student is enrolled (not including summer sessions), or (b) the end of 12 months if the student is not enrolled, whichever is shorter. Incompletes that change to F will count as an attempted course on transcripts. The burden of fulfilling an incomplete grade is the responsibility of the student. The university policy on incomplete grades is located at http://policies.ncsu.edu/regulation/reg-02-50-3.

Due to the team-based project nature of this course, makeup work after the completion of the semester is impossible. Therefore, incomplete grades will only be granted in exceptional cases and students will be expected to complete the course requirements as part of the team a year later.

Late Assignments

Late assignments will not be accepted. Completed assignments should be turned in by the beginning of the class period on the date they are due. For assignments for which email or other electronic submission is requested, the submission should be completed before the start of the class period on the date they are due. Because of the team-based nature of the course, there is no late submission policy.

Valid excuses as determined by the university's attendance policy (http://policies.ncsu.edu/regulation/reg-02-20-03) such as illnesses with a note from a doctor or a death in the family (with documentation) will be granted extensions to deadlines, provided the documentation is presented to the instructor in a timely manner. Other extensions may be granted for other scholarly activities provided arrangements are made with the instructor well in advance of the deadline.

Attendance Policy

For complete attendance and excused absence policies, please see http://policies.ncsu.edu/regulation/reg-02-20-03
Attendance at class sessions is required. Absences that are unexcused according to the university's excused absence policy (http://policies.ncsu.edu/regulation/reg-02-20-03) and that result in late assignments or missed announcements may negatively affect students' grades. Documented medical excuses or other excused absences will not adversely affect grades. Conference travel or other scholarly duties discussed well in advance of a missed session may be excused at the discretion of the instructor.

Attendance at the Game Development Showcase in the evening of 4/25/14 is required for all students. Undocumented absence will result in a 0 for the final project grade.

**Absences Policy**

The university's excused absence policy (http://policies.ncsu.edu/regulation/reg-02-20-03) will be used to determine when an absence is considered excused or not.

**Makeup Work Policy**

No makeup work will be given.

**Additional Excuses Policy**

None.

**Academic Integrity**

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Students are required to comply with the university policy on academic integrity found in the Code of Student Conduct found at http://policies.ncsu.edu/policy/pol-11-35-01

None.

**Academic Honesty**

See http://policies.ncsu.edu/policy/pol-11-35-01 for a detailed explanation of academic honesty.

None.

**Honor Pledge**

Your signature on any test or assignment indicates "I have neither given nor received unauthorized aid on this test or assignment." Additionally, by submitting an assignment via moodle you are certifying that you "have neither given nor received unauthorized aid on this test or assignment." It is your responsibility to safeguard your password and limit access to your moodle account.

**Electronically-Hosted Course Components**

Students may be required to disclose personally identifiable information to other students in the course, via electronic tools like email or web-postings, where relevant to the course. Examples include online discussions of class topics, and posting of student coursework. All students are expected to respect the privacy of each other by not sharing or using such information outside the course.

**Electronically-hosted Components**: Moodle will be used for supplementary course discussions and for assignment submissions.

**Accommodations for Disabilities**
Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, student must register with the Disability Services Office (http://www.ncsu.edu/dso), 919-515-7653. For more information on NC State's policy on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation at http://policies.ncsu.edu/regulation/reg-02-20-01.

Non-Discrimination Policy

NC State University provides equality of opportunity in education and employment for all students and employees. Accordingly, NC State affirms its commitment to maintain a work environment for all employees and an academic environment for all students that is free from all forms of discrimination. Discrimination based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation is a violation of state and federal law and/or NC State University policy and will not be tolerated. Harassment of any person (either in the form of quid pro quo or creation of a hostile environment) based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation also is a violation of state and federal law and/or NC State University policy and will not be tolerated. Retaliation against any person who complains about discrimination is also prohibited. NC State's policies and regulations covering discrimination, harassment, and retaliation may be accessed at http://policies.ncsu.edu/policy/pol-04-25-05 or http://www.ncsu.edu/equal_op/. Any person who feels that he or she has been the subject of prohibited discrimination, harassment, or retaliation should contact the Office for Equal Opportunity (OEO) at 919-515-3148.

Course Schedule

NOTE: The course schedule is subject to change.


The schedule is subject to change at the discretion of the instructor. The official schedule will be kept on the course webpage here: http://www.csc.ncsu.edu/faculty/robertsd/csc482s14/schedule.php. The official schedule will be updated periodically to reflect changes as the semester progresses. It is the student's responsibility to check the schedule regularly for changes. The instructor will communicate any changes in deadlines to students in a timely manner via email and/or announcements in class. Note, it is the student's responsibility to check their official NCSU email address at least once daily and to come to class. Failure to do so does not excuse missed deadlines.

Dates for which there is no explicit topic in the schedule will generally be used for impromptu presentations and updates on team progress, or small group interactions among team members and the instructor.

Weeks 1--3: Developing project and pitching the idea.
Weeks 3--4: Demonstrating baseline technologies and level design
Weeks 5--6: First milestones
Weeks 7--8: First playable version
Weeks 9--11: Alpha release
Weeks 11-12: Beta release
Weeks 13: Practice final presentation
Weeks 14: Gold master release, (possible) east coast games conference presentation, Game Development Showcase

**East Coast Games Conference — 04/23/2014 - 04/24/2014**

The annual East Coast Games Conference will be held at the Raleigh Convention Center. Depending on availability and/or readiness, game demos or presentations may be made at the conference.

**Game Development Showcase — 04/25/2014 - 04/25/2014**

Note, attendance is mandatory at this session. Failure to attend will result in a 0 for the final deliverable, which will reduce your course average by 25%. The showcase will take place on 4/25/14 in the evening. Exact time TBD.