CSCI 4670/5670: Game Development

Fall 2014, Tuesday and Thursday from 2:00 PM to 3:15 PM in Math 121

About the Class

This is the first class specifically focused on video game development. It covers basic principles of game design, game history, the games industry, and technical topics specifically related to games. The projects in this class are designed to increase your awareness of and familiarity with game design tools and to help you establish a very modest portfolio.

Topics covered in this class include:

- The definitions of concepts like game, toy, sport, play, flow, and engagement
- History of video games
- Game genres
- Core game mechanics
- Level design
- Game physics
- Narrative
- Procedural Content Generation
- Simple Artificial Intelligence
- Basic marketing
- The nature of the video games industry
- Current game development tools and game engines
- Game design documents and pitches

This class will be most effective if you later take CSCI 4675/5675: Advanced Game Development.

Instructor

Dr. Stephen G. Ware
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Office: Math 337
Office Hours: Tuesday, Wednesday, and Thursday from 3:30 PM to 4:30 PM

Prerequisites

It is assumed that:

- You have basic Object-Oriented programming skills.
- You are familiar with the Java programming language.
- You have passed CSCI 2125: Data Structures or equivalent.

Texts

The text book for this class is:

- *Rule of Play: Game Design Fundamentals* by Katie Salen and Eric Zimmerman.

The book will primarily be used in the first half of the class and will be a major source of information for the written midterm exam.

Two other books are recommended reading, and will help you with the class projects:

- *The Game Maker's Apprentice: Game Development for Beginners* by Jacob Habgood and Mark Overmars.
- *Beginning 3D Game Development with Unity 4: All-In-One, Multi-Platform Game Development* by Sue Blackman, Second Edition.

Grading

Your grade will be determined by the following elements. The weight of each element depends on whether you are enrolled in CSCI 4670 (undergraduate) or CSCI 5670 (graduate).

Assignment	Percentage of Final Grade	
	CSCI 4670	CSCI 5670
1 Written Midterm Exam	15%	15%
3 Game Development Projects	15% each	10% each
3 Game Play Journals	5% each	5% each
1 Game Marketing Project	10%	10%
1 Final Game Pitch Project	15%	15%
1 Research Paper	0%	15%

Projects

Game Development Projects

If you plan to apply for a job in the games industry, you will need a portfolio. To that end, this class requires 3 small game design projects which are meant to demonstrate what you have learned, build your portfolio, and introduce you to current game development tools.

Choose 3 of the 5 projects listed below. You may do them in any order, but they are listed in a recommended order. You should use one or more of the development tools listed for that project, and you may not use the same development tools for more than one project. For example, if you use Unity to create a Puzzle Game, you may not also use Unity to create a First Person 3D Game. Other development tools not listed below must be approved by the instructor at least a week in advance of the project due date.

- **Board or Card Game** using card stock, markers, clay, 3D printing, etc.
- **Adventure Game** (e.g. Text Adventure or 2D Point-and-Click) using Inform, Twine, or Adventure Game Studio
- **Arcade Game** using Game Maker, Torque, Unity, HTML5, PyGame, or HTML5
- **Puzzle Game** using Game Maker, Unity, HTML5, Java, or Objective C
- **First-Person 3D Game** (e.g. Exploration, Stealth, Shooter, Flight Simulator) using Unity or Unreal (Note: Up to 5% bonus can be earned for completing this project.)

These projects are *not* intended to be large undertakings, but simply to introduce you to new technology. Rather than creating a game entirely from scratch, I highly recommend that you take an existing game or game tutorial and modify it in some way. Some examples of good projects would be:

- A simple “escape the room” adventure in Inform.
- Single player Tic-Tac-Toe Android app that is played on a 4x4 grid rather than a 3x3 grid.
- Complete the Unity stealth game tutorial, but modify the layout of the level.

Game Play Journals

One key skill taught in this class is the ability to critically evaluate a game. You will complete 3 Game Play Journals, during which you play a game (new or one you have played before) and write about your experience. These should be short--between 2 and 5 pages. These journals are meant to exercise your ability to analyse game design and provide constructive criticism to other designers.

Game Marketing Project

For one of your 3 Game Development Projects, you will need to make a simple (one page) website for the game or produce a teaser video. This simple Game Marketing Project will introduce you to the process of promoting your games to others.

Game Pitch Project

In place of the final exam, the last assignment of the semester will be to pitch a game concept to the instructor and your classmates. You do not need to actually make this game, only imagine it. You will create a pitch document that follows a specific template and give a short presentation in class to convince a fictional publisher to fund your idea.

Research Paper

If you are enrolled in CSCI 5670, you must complete a research paper on a topic of your choice. The paper will be written in LaTeX using a common conference paper template. The topic of this paper must be approved shortly after the mid-term exam, and it must cite recent scholarly research from reputable international conferences and journals.

Policies

These policies are in place to maintain professionalism and mutual respect:

- **Attendance:** Attendance is only required on the day of the midterm exam and final project presentations, but it is always strongly encouraged. One of the essential skills that you will learn in this class is the ability to critically discuss a game, and this is done primarily through the in-class lectures.
- **Laptops and Phones:** I try to respect your time by making lectures interesting and helpful, so I ask that you show me the same respect by being an attentive audience when you come to class. This mean that you may not use any computers or mobile devices during the lecture unless it is during a designated in-class assignment. In summary: you don't have to come, but if you do, you have to give this class your full attention.
- **Grading:** I try to make grading a transparent and objective process, but unfortunately this class involves a lot of subjective evaluation. To the greatest extent possible, I will try to give you detailed grading rubrics before you start an assignment.
- **Due Dates:** All assignments are due promptly at midnight on the day they are due; however the submit lockers will not close until 3 AM the next day. Consider those three hours an unofficial grace period. At 3:01 AM, you assignment is not 1 minute late; it is 3 hours and 1 minute late, and it will not be accepted.
- **Late Work:** Late assignments will not be accepted, except in the case of a serious, documented excuse.
- **Missed Exams/Presentation:** If you need to miss the midterm exam or final project presentation, notify me at least a week in advance of the absence to schedule a makeup. Missed exams cannot be retaken without a serious, documented excuse.
- **Phones:** If your phone rings during class, you must answer it while the rest of us listen in.
- **Food:** Please do not bring food to class.
- **E-mail Response Time:** Please allow at least 24 hours for responses to e-mail.

Academic Dishonesty

Please don't cheat. Getting a good grade in this class without learning the skills it teaches is a waste of your time and money. If you are caught cheating you will be removed from the class and given a failing grade.

There is a fine line between giving and receiving help from your classmates and cheating. As a general guideline, cheating means copying answers on an exam or copy/pasting code. You can discuss your work with your classmates, but do not share code.

Please also be respectful of copyright law. Use of copyrighted assets (images, music, etc.) in your projects must conform to fair use, and you must cite your sources.

Students with Disabilities

It is University policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities that may affect their ability to participate in course activities or to meet course requirements. Students with physical or learning disabilities should contact the instructor and the Office of Disability Services. Arrangements will be made on an individual basis.

Tentative Calendar

This schedule is subject to change. An up-to-date calendar, reading assignments, suggested play, and class notes will be posted on the class

webpage and updated after each lecture.

- First Day: Syllabus and Game Design Tools
- Week 1: Games, Meaningful Play, The Magic Circle
- Week 2: History of Games
- Week 3: Rules and Mechanics
- Week 4: Play (First Game Journal due)
- Week 5: Culture (First Game Design Project Due)
- Week 6: Misc. Topics in Design
- Week 7: Mid-Term (Research Paper Proposal due)
- Week 8: Game Physics (Second Game Journal Due)
- Week 9: Game Graphics (Second Game Design Project Due)
- Week 10: Artificial Intelligence
- Week 11: Procedural Content Generation
- Week 12: The Games Industry and Gamer Culture (Third Game Journal Due)
- Week 13: Guest Lectures (Third Game Design Project Due)
- Week 14: Game Pitch Workshops
- Week 15: Game Pitches (Research Paper Due)