

CSC 631/831
Multiplayer Online Game Design and Development

Spring 2016
Instructor: Dr. Ilmi Yoon

Lec. Session	T Th 12:35 – 1:50 PM	Lec. Location	TH 210
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1. Course Overview

The whole class works together to build a working Multiplayer Online game, from design through development to launching. This requires teams of Game Concept Design, UI Design, Game Client Development, Game Server Development, Integration and Testing, Database Development, Game Contents Development, and Launching Preparation team. Each student has to belong to one or two teams and will work on his/her part of the MMORPG game throughout the whole semester. Throughout the course, basics of technologies to develop multiplayer game will be introduced and taught. Topics include real-time game engine (Unity3D) programming (Foundation of graphics and Game engine programming), network programming for multiplayer architecture (Game client & Game Server, Protocol Design), and Software Engineering related issues on game development and publishing of the game.

1.1. Specific Objective of Spring 2016 Course

We will be building a Science Discovery Game for Computational Ecology, specifically mini games within the World of Balance game (<http://smurf.sfsu.edu/~wob/>). This multiplayer game needs to be entertaining to ordinary public who don't have expert knowledge on the computational ecology while the game's objective is to lead the ordinary players to act, think and solve problems like computational ecologists. The objective of this semester is continuing the game developed by the last year team and porting the game to Android platform. This requires understanding complex code base of the previous team's work and redesign and restructure the PC-based game into Android phone which has limited screen size and memory while adding additional features utilizing phone-specific features.

During the first month, you will be required to complete simple client and simple server project to learn the basics of Unity engine and network programming. During the time, I will also introduce the work that was completed by last year (Spring 2015) teams. You (& your team) can decide to take one of the mini game and extend it from there or choose to create your own mini game. Three games from Spring 2015 are introduced here: http://smurf.sfsu.edu/~wob/guide/mini_games.php

During March and April, the whole class work together to build a working Multiplayer Game running on Android.

During May, the code will be tested and launched if the game is stable enough.

1.2. Pre-requisite A grade of C or better in CSC 413

1.3. Text No textbook is required.

1.4. Useful Information Unity3D (Client Engine)

1.5. Semester TimeLine

Week	Topic	Misc.
1 (starting from 1/28)	Course Overview, Understanding World of Balance Game Concept and Architecture, Introduction of Unity3D	Introduction of Project1
2 (starting from 2/2)	Understanding World of Balance Game Concept and Architecture, Unity3D, C#	Start to form a team
3 (starting from 2/9)	Basics of Graphics, Game Engine Unity3D, C# Understanding Team Responsibilities, First Project Help Session	Finalize the team Start mini Game Design for each team First Project Part I Due around 2/14
4 (starting from 2/16)	Game Server and Network Programming, Persistent Data and Database Systems, MySQL	
5 (starting from 2/23)	First Project Help Session Mini Game Design Discussion	First Project Part II Due around 2/28
6 (starting from 3/1)	Game Design Presentation Set Up Milestones, SE issues	Game Design Document Draft Due
7 (starting from 3/8)	Milestone Presentation Problem Solving and Team Discussion	Exam 1
8 (starting from 3/15)	Progress Presentations (every team)	(Peer Evaluation 1 by 3/18) Submit Final Game Design plus Requirement Specification plus Milestone Plan 3/14
9 starting from 3/22)	Spring Recess	
10 (starting from 3/29)	Problem Solving and Team Discussion	
11 (starting from 4/5)	Progress Presentations (every team)	Midterm Individual Documentations Due 4/4 11:55 pm (Peer Evaluation 2)
12 (starting from 4/12)	Problem Solving and Team Discussion Best Documentation Presentations	
13 (starting from 4/19)	Problem Solving and Team Discussion	Exam 2

14 (starting from 4/26)	Team Presentations (Each team has to complete their milestones except integration)	Project Submission Due on 4/27 Team Documentations Due 4/29 (Peer Evaluation 3)
15 (starting from 5/3)	Integration Problem Discussion (Inter Team Discussion)	
16 (starting from 5/10)	Integration Problem Discussion (Inter Team Discussion)	Integrated Project Submission Due on 5/11 Team Documentations Due 5/13 (Peer Evaluation 4)
17 (starting from 5/17)	Final Presentation	

1.6. Final Presentation and Lunch Party

May 19th (Thursday) 10:45 – 1:15

1.7. Grading

This semester, the work required to achieve the objective will be designed into a set of tasks (or modules) that will be designed to be completed by 2 – 3 weeks. According to the level of the challenge, different points will be assigned to each task.

First Project (& Documentation) & Exam 1	30 points
Mini Game Design Documentation	10 points
Midterm Individual Documentation	20 points
Complete Team Documentation Before Integration & Exam 2	20 points
Complete Team Documentation After Integration	10 points
4 Peer Evaluations (Participation & Contribution evaluated by team members through anonymous peer evaluation)	10 points (4x2.5)

Presentation Credit: Each presenter receive up to **3 points** for each (good) presentation.

1.8. Attendance & Extra Credit

Attendance is very important as we discuss the progress and trouble shooting at each class, therefore it is enforced by checking it every class. If you miss more than 5 classes, you will lose 10% of total grade. If you miss more than 10 classes, then you will lose 20 of total grade. If you miss more than 15 classes, I consider that you have no intention to pass this class.

Extra credit will be given for your help on class. Team leaders and Class Wiki Page manager both will receive an extra credit (10 points) and but will be replaced with penalty if they don't perform his/her responsibility.

2. Teams and their Responsibilities

Everyone will belong to one of technical team at the same time belong to a component team. Technical team grouping is secondary grouping. The primary grouping is component team which will be explained after the technical team grouping.

<Technical Team Groups>

Game Design (Concept) Team

UI Design Team

Client Team

Server Team

Integration and Test Team (develop test server and test client to support integration)

Content Team (Computational Ecology Contents)

DB Team: Consistency, Performance and Redundancy Control

3. Component Team and Tasks Organization

Each component team will have members like

- Client developers (a member of Client Team)

- Server developers (a member of Server Team)

- Protocol developer (+ test and integration responsibility) (a member of Protocol & Integration Team)

- DB developers (a member of DB Team) and/or

- Content developers (a member of Content Team) and/or

- Interface Design developer (a member of UI Team)

- Game (Concept) Designer

3.1. These are possible Component Groups (maybe added later as game concept gets cleared)

1. Lobby (Game World) – the virtual space where players meet other players, chat, create, invite and join the mini games. Each player should be able to see his/her inventory, money, level, play history, friends list etc. Players should be able to interact other players while browsing game histories etc. (Details should be clarified by Game Design Documentation)
Documentation and code from previous year will be given, so this team will have to extend functionality. This team will have to support one or more battle team for integration.
2. Mini Game 1 (Don't eat me game) -
http://smurf.sfsu.edu/~wob/guide/dont_eat_me.php
<https://www.youtube.com/watch?v=SjQeL-9cTIs>
3. Mini Game 2 (Cards of Wild) -
http://smurf.sfsu.edu/~wob/guide/cards_of_the_wild.php
<https://www.youtube.com/watch?v=co0bp6ng39A>
4. Mini Game 3 (Clash of Species) -
http://smurf.sfsu.edu/~wob/guide/clash_of_species.php
<https://www.youtube.com/watch?v=YIZ4lt69Llo>
5. Mini Game 4 (Running Rhino) -
<https://www.youtube.com/watch?v=Oa33bpgA8Pw>
6. Mini Game 5 (Converge Game) -
<https://www.youtube.com/watch?v=IMy5PIsJQsc>

4. CS Department cheating and plagiarism policies These will be strictly enforced. Our policy is here: <http://www.cs.sfsu.edu/plagiarism.html>