CISC 3665 [54.2] Game Design
3 hours; 3 credits

Introduction to designing computer games for a variety of hardware platforms. Fundamentals of designing, programming and troubleshooting simple games. Porting game software between multiple game consoles. Documenting and critiquing design. Multi-week small-group projects in game design.

Objectives

At the end of this course, students should have demonstrated the ability to:

1. Present the basic history and genres of games

2. Describe the overall game design process

3. Explain the design tradeoffs in game design for a variety of game consoles

4. Explain the issues involved in software portability

5. Design and implement a three-dimensional video game

6. Work effectively on a team or in a working group.

7. Describe and explain technical topics to others orally and in writing.

Syllabus:

The course is organized around 7 curricular units, each focusing on a different game design topic. An important feature of the course is the practical work.

The material covered in the course will include:

unit	weeks	Topic
1	1	History and genres of games
		• Introduction to game consoles
2	2 -3	Designing the game
		• Creating good game design documents
		• Begin working with the first game console, e.g.Nintendo Wii Remote

3	4—5	Interface design

3 4—5 Interface design
- User-centered design process
- Analysis of user needs
- Create prototype
- Informal feedback

4 6—7 Character design
- Creating interesting characters
- Character bible
- Begin working with the second console,   e.g. Nintendo DS or Sony PSP

5 8—9 Behavior and AI
- Simple steering, Flocking
- Production rules
- Finite State Machines, Probabilistic FSMs
- Path Planning, Search
- Formations

6 10—12 Designing the game environment
- "look and feel"
- Graphic design principles
- Auto-generated content

7 13—14 Multi-player game technology
- Handling time
- Gathering player input
- Networking

This course incorporates lectures, readings and seminar-type discussions. Individual class assignments lead students through the basic elements of game design for a variety of game consoles and platform, such as the Nintendo Wii, Sony PSP, and Xbox360. Games   will be implemented in teams of 3-4 students. The course will also include practical classes that will involve students programming games in-class, illustrating the principles introduced in the lectures.

Bibliography:

- C. Crawford, Chris Crawford on Game Design, New Riders, 2003.

- Ralph Koster, A Theory of Fun for Game Design, Paraglyph Press, paraglyphpress.com, 2005.

- Richard Rouse and Mark Louis Rybczyk, Game Design: Theory and Practice. Wordware Publishing, 2001.

- Rabin, Introduction to Game Development , Charles River Media, Hingham, MA, 2005.

- R. Bartle, Designing Virtual Worlds, New Riders, 2003.

- S. Rabin (ed), AI Game Programming Wisdom, Charles River Media, 2002

- Michael Zyda "Educating the Next Generation of Game Developers," IEEE Computer, June 2006, pp. 30-34

- Fullerton, Tracy, "Play-Centric Games Education," IEEE Computer, vol. 39, no. 6, pp. 36-42, Jun., 2006.