

# Modern Computer Games COMP 521

McGill University, Winter 2013

## Course Details

**Time:** Monday, Wednesday, 14:35–15:55

**Place:** Trottier 1090

**Instructor:** Chris Dragert

**Office:** McConnell Eng. Bldg., Room 322

**Office hours:** Monday 11:30–1:00, Thurs 2:00–3:30, or by appointment.

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**Teaching Assistant:** John Tremblay

**Office:** McConnell Eng. Bldg., Room 231

**Office hours:** TBA, or by appointment.

**Email:** [jtremblay@cs.mcgill.ca](mailto:jtremblay@cs.mcgill.ca)

## Email, Website

Students are expected to monitor their McGill email account for course-related news and information. The course uses a McGill MyCourses website. Login in from: <https://mycourses2.mcgill.ca/>

## Pre-requisites

- COMP 303 (Programming Techniques) *or* COMP 361 (Systems Development Project)
- Ability to program in C++ (preferred) or Java.
- *co-requisite:* COMP 557 (Fundamentals of Computer Graphics)

Note: students registering without the pre-requisites may find the course removed from their transcript by their Faculty. Please consult the instructor if you do not have all the co- and pre-requisites.

## Textbook

There is *no* required text for this course. Lecture material will be supplemented by handouts and references to online resources.

The following supplemental texts are available on reserve in the Schulich/PSE library:

- Steve Rabin (ed). “Introduction to game development.”
- Ian Millington. “Artificial Intelligence for Computer Games.”
- Ernest Adams. “Fundamentals of Game Design.”
- Christer Ericson. “Real-time collision detection.”

## Description

This course will give students a good understanding of modern computer game design and implementation techniques. It covers a wide spectrum of game aspects, focussing on components essential to or common in popular computer game styles. Concepts are backed up by non-trivial programming tasks that allow students to gain practical experience in particular components of game implementation.

Note that computer graphics will not be covered in detail, and 3D graphics will not be covered at all. Knowledge of basic graphics methods and techniques will be presumed (see co-requisite requirement).

## Evaluation

4 Assignments/Projects: 60%

Midterm: 10%

Exam: 30%

Both the exam and midterm will be open-book.

In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded.

**Assignment and Exam Policy:** Assignments must be submitted on time. Late assignments will only be accepted in highly-exceptional circumstances and only with **written** permission of the instructor. No assignment submissions will be accepted after marked assignments have been returned, or after solutions have been discussed in class.

McGill University values academic integrity. Therefore all students must understand the meaning and consequences of cheating, plagiarism and other academic offenses under the Code of Student Conduct and Disciplinary Procedures (see <http://www.mcgill.ca/integrity/> for more information).

More specifically, **work submitted for this course must represent your own efforts.** Copying assignments or tests, or allowing others to copy your work, will not be tolerated. Note that introducing syntactic changes into a copied program or assignment is still considered plagiarism.

## Course Content

This page shows an approximate lecture plan. Note that lecture topics may shift dates.

### Jan 7–9

- Introduction to games.
- Game genres.
- Understanding game play: theories of fun.
- Player demographics and social requirements.
- Basic game design.

### Jan 9–16

- Storytelling and narratives.
- Narrative modelling and analysis.

### Jan 16–23

- Game engines.
- Terrains and virtual environments.

### Jan 28–Feb 6

- Real-time design.
- Game physics: physical simulation, approximation techniques.
- Collision detection and response.

### Feb 11–Feb 25

- Path-finding.
- Group behaviour.

**Midterm: Wed, Feb 27 (in class, open-book)**

### March 11–18

- NPCs
- Opponents and strategy.

### March 18–23

- Dynamic content.
- Game balance.

### March 25–30

- Multiplayer games.
- Networking and distributed game design.

### March 30–April 8

- Consistency, dead-reckoning, timing.
- Massively multiplayer games: persistence, scalability.

### April 10–16

- Cheating.
- Concurrency.
- Review.