

## COURSE SYLLABUS

### CMPT 306: GAME MECHANICS

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#### Catalogue Description:

This course will cover aspects of game graphics, physics, sound, input, AI and networking at an introductory level. This course is intended to provide a broad basis in computer game related fields, serving as a primer and providing context for specialized courses in fourth year.

**Prerequisite(s):** CMPT 270 required, Math 264 or 266 recommended or Permission of the Instructor

**Class Time & Location:** Lecture Tuesday, Thursday 11:30-12:50 Arts 202  
 Tutorial, Tuesday 1:00-2:20 Spinks 311  
 Or Tutorial, Wednesday 5:00-6:20 Spinks 311

**Website:** moodle.cs.usask.ca

#### Instructor Information

**Instructor:** Kevin Stanley  
**Contact:** Email: kevin.stanley@usask.ca  
 Phone: 306-966-6747  
**Office Hours:** Location: Thorvaldson 281.5  
 Hours: Friday 2:00-4:00

#### Course Objectives

- Students will learn the fundamental concepts underlying computer game development including aspects of graphics, physics, artificial intelligence and networking, to the point where they can apply this knowledge meaningfully in an industrial setting.
- Students will learn how to use the Unity development environment and engine to build robust games.
- Students will learn how to effectively work in teams towards a significant shared project goal.

#### Student Evaluation

##### Grading Scheme

[Insert weighting for tests, exams, assignments, projects, quizzes, etc. Add or delete rows as necessary.]

Assignments	12%
Project	40%
Midterm Exam	15%
Final Exam	33%
<b>Total</b>	<b>100%</b>

Assignments are tentatively scheduled for the following dates: 9/15, 9/22, 10/6, 10/27.



Project deliverables are tentatively scheduled for the following dates: 9/16, 9/30, 10/21, 11/6, 11/20, 11/27, 12/4.

The midterm is tentatively scheduled for 10/14.

### **Criteria that must be met to Pass**

Student must demonstrate minimum acceptable performance on the project and final exam to pass the course.

### **Attendance Expectation**

Students are expected to attend demonstration sessions associated with project deliverables, as scheduled with the professor

### **Final Exam Scheduling:**

The Registrar schedules all final examinations, including deferred and supplemental examinations. Students are advised not to make travel arrangements for the exam period until the official exam schedule has been posted.

**Note: All students must be properly registered in order to attend lectures and receive credit for this course.**

## **Textbook Information**

### **Required Text**

- None

### **Recommended Texts**

- James M. Van Verth, Lars M. Bishop Essential mathematics for games and interactive applications, CRC Press, 2008.
- Ian Millington and John Funge, Artificial Intelligence for Games, Morgan Kaufman, 2009

## **Tentative Lecture Schedule**

- Week 0: Course Intro
- Week 1: Game Design
- Week 2: Game Programming Basics
- Week 3: Game Math
- Week 4: Game Physics
- Week 5: Game AI
- Week 6: Midterm
- Week 7: Path Planning
- Week 8: Strategic AI
- Week 9: Procedural Generation
- Week 10: Game Networking and Multiplayer
- Week 11: Game and Playtesting
- Week 12: Advanced Topics
- Week 13: Demos

## **Course Overview**

- This course will use the Unity Development Engine and IDE, and industry standard development environment for indie and cross-platform games. Lectures will address core concepts, while the IDE and associated language constructs will be covered in tutorial.
- Because Computer Graphics is not a pre-requisite, this course will only address aspects of the 2D.
- Lectures will not be recorded. Students with DSS requirements may record the class.



## Policies

### Late/Missed Assignments

In general, late assignments are not accepted, except with legitimate excuses (e.g. illness, bereavement)

### Missed Examinations

1. "Students who have missed an exam or assignment must contact their instructor as soon as possible. Arrangements to make up the exam may be arranged with the instructor. Missed exams throughout the year are left up to the discretion of the instructor if a student may make up the exam or write at a different time. If a student knows prior to the exam that she/he will not be able to attend, they should let the instructor know before the exam."
2. "Final exams - a student who is absent from a final examination through no fault of his or her own, for medical or other valid reasons, may apply to the College of Arts and Science Dean's office. The application must be made within three days of the missed examination along with supporting documentary evidence. Deferred exams are written during the February mid-term break for Term 1 courses and in early June for Term 2 and full year courses." (2007/08. <http://www.arts.usask.ca/students/transition/tips.php>)

### Incomplete Course Work and Final Grades

"When a student has not completed the required course work, which includes any assignment or examination including the final examination, by the time of submission of the final grades, they may be granted an extension to permit completion of an assignment, or granted a deferred examination in the case of absence from a final examination. Extensions for the completion of assignments must be approved by the Department Head, or Dean in non-departmentalized Colleges, and may exceed thirty days only in unusual circumstances. The student must apply to the instructor for such an extension and furnish satisfactory reasons for the deficiency. Deferred final examinations are granted as per College policy.

**In the interim, the instructor will submit a computed percentile grade for the course which factors in the incomplete course work as a zero, along with a grade comment of INF (Incomplete Failure) if a failing grade. In the case where the instructor has indicated in the course outline that failure to complete the required course work will result in failure in the course, and the student has a computed passing percentile grade, a final grade of 49% will be submitted along with a grade comment of INF (Incomplete Failure).**

If an extension is granted and the required assignment is submitted within the allotted time, or if a deferred examination is granted and written in the case of absence from the final examination, the instructor will submit a revised computed final percentage grade. The grade change will replace the previous grade and any grade comment of INF (Incomplete Failure) will be removed.

For provisions governing examinations and grading, students are referred to the University Council Regulations on Examinations section of the Calendar. (2011 University of Saskatchewan Calendar/Academic Courses Policy)

### Academic Honesty

The University of Saskatchewan is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Student Conduct & Appeals section of the University Secretary Website and avoid any behavior that could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

All students should read and be familiar with the Regulations on Academic Student Misconduct (<http://www.usask.ca/secretariat/student-conduct-appeals/StudentAcademicMisconduct.pdf>) as well as the



Standard of Student Conduct in Non-Academic Matters and Procedures for Resolution of Complaints and Appeals (<http://www.usask.ca/secretariat/student-conduct-appeals/StudentNon-AcademicMisconduct.pdf>)  
For more information on what academic integrity means for students see the Student Conduct & Appeals section of the University Secretary Website at: <http://www.usask.ca/secretariat/student-conduct-appeals/forms/IntegrityDefined.pdf>

### **Examinations with Disability Services for Students (DSS)**

Students who have disabilities (learning, medical, physical, or mental health) are strongly encouraged to register with Disability Services for Students (DSS) if they have not already done so. Students who suspect they may have disabilities should contact DSS for advice and referrals. In order to access DSS programs and supports, students must follow DSS policy and procedures. For more information, check <http://www.students.usask.ca/disability/>, or contact DSS at 966-7273 or [dss@usask.ca](mailto:dss@usask.ca).

Students registered with DSS may request alternative arrangements for mid-term and final examinations. Students must arrange such accommodations through DSS by the stated deadlines. Instructors shall provide the examinations for students who are being accommodated by the deadlines established by DSS.