



# THE UNIVERSITY OF WINNIPEG

## Applied Computer Science

**Course Number:** ACS-3922-001  
**Course Name:** Introduction to Game Development  
**Course Webpage:** <https://nexus.uwinnipeg.ca/d2l/home/67597>

### Instructor Information

**Instructor:** Bradley Rey  
**E-mail:** [b.rey@uwinnipeg.ca](mailto:b.rey@uwinnipeg.ca)  
**Office Hours:** Tuesdays 3:30 – 4:30 pm 2Ax26  
Or by appointment

**Class meeting time:** Tuesdays and Thursdays 11:30 am – 12:45 pm 3D03

### Important Dates

- First Class: Tuesday, January 7, 2025
- Reading week (no classes): February 16 – 22, 2025
- Midterm Test: Thursday, February 27, 2025
- Final Withdrawal Date without academic penalty\*: Friday, March 14, 2025
- Last Class: Thursday, April 3, 2025
- Final Exam: TBD
- Final Exam Period: April 9 – 23, 2025
- University closures: Louis Riel Day Monday, February 17, 2025  
Good Friday Friday, April 18, 2025

\*A minimum of 20% of the work on which the final grade is based will be evaluated and available to the student before the voluntary withdrawal date.

### Course Objectives / Learning Outcomes

This course is an introduction to game design and development, with a focus on the development of 2D and 3D interactive video games. Topics include the iterative process of game design: analysis, design, prototyping, development, and playtesting; game architecture and mechanics, working with art assets (sprites and 3D models), animation, collision detection, basic artificial intelligence, game management, game user interface, development, and deployment for different platforms. Through the exploration of classic video game designs and

the use of industry-standard game development tools, students gain hands-on practical experience and a thorough understanding of the basics of game design and development.

## **Evaluation Criteria**

### 1. Assignments (40%)

4 assignments, varying weights:

- Assignment 1: 5% of your final grade
- Assignment 2: 10% of your final grade
- Assignment 3: 10% of your final grade
- Assignment 4: 15% of your final grade

Course Software:

Unity and Visual Studio will be used during classes. Students are required to download and install Unity and Unity Hub: <https://unity3d.com/get-unity/download>

IDE Recommendations:

Visual Studio: <https://visualstudio.microsoft.com/downloads/>

VS Code: <https://code.visualstudio.com/download>

JetBrains Rider: <https://www.jetbrains.com/rider/>

All work is to be submitted electronically via GitHub Classroom. Further details, due dates, and submission procedures will be stated in each assignment shared on Nexus and in class. Students are responsible for backing up and protecting their work.

All assignments are to be done individually. Assignments will be accepted up to 1 day late with a 20% penalty.

### 2. Midterm Test (20%)

- During the regular class time (see Important Dates).
- 75 minutes in duration.

### 3. Final Exam (40%)

- Cumulative (the final exam covers all material discussed in the course).
- 2 hours (120 minutes) in duration.
- Time and location to be determined later.

***Note: You must earn a passing grade (50%) on the final exam to pass the course.***

*Students should contact the instructor as soon as possible* if extenuating circumstances require missing an assignment, test, or examination. A medical certificate from a practicing physician, and/or other forms of reasonable documentation, may be required before any adjustments are considered.

The course will have you use Git, GitHub, and GitHub Classrooms to work with and submit your assignments. While these topics will not be explicitly covered, resources and an optional assignment will give you the chance to practice using these tools.

Over the course of the semester two *'life happens'* days are given to all students to use as they see fit, to submit an assignment later than the posted due date. Use this extension wisely as no additional extensions will be given, unless in extreme documented situations (e.g., admission to hospital, death in family, etc.). Please note:

- This policy only applies to the individual assignments.
- *You do not have to ask for permission to use the life happens extension. You must, however, inform your instructor via email prior to the assignment deadline that you wish to use your life happens day.*
- You can use one day for two separate assignments, or both days on a single assignment.

### **Test / Exam Requirements**

More details on exam content will be shared prior to each exam.

Exams will be held in-person and written on-paper (i.e., you will not be using a computer). The midterm will be held in the same classroom used for the lectures, during the scheduled lecture time. Location and time for the final exam will be announced later. Students are required to bring their student ID card to exams.

The use of computers, calculators, smartphones, smartwatches, or other electronic devices is not permitted during exams. Use of these devices will constitute Academic Misconduct.

The exams in this course are all closed book. As such, you are NOT permitted to access any of the course materials, including your notes, during the exam. You are also NOT to communicate with anyone about the exam during the scheduled write time – you are to work independently. Communication with other students during the exam (written, text, verbal, etc.) is not permitted and will constitute Academic Misconduct.

Students with documented disabilities, temporary or chronic medical conditions, requiring academic accommodations for tests/exams (e.g., private space) or during lectures/laboratories (e.g., note-takers) are encouraged to contact Accessibility Services (AS) at 204-786-9771 or [accessibilityservices@uwinnipeg.ca](mailto:accessibilityservices@uwinnipeg.ca) to discuss appropriate options. All information about a student's disability or medical condition remains confidential.

<https://www.uwinnipeg.ca/accessibility-services>

Students may choose not to attend classes or write examinations on holy days of their religion, but they must notify their instructors at least two weeks in advance. Instructors will then provide opportunity for students to make up work examinations without penalty. A list of religious holidays can be found in the 2024-2025 Undergraduate Academic Calendar online at <http://uwinnipeg.ca/academics/calendar/docs/important-notes.pdf>

## **Final Letter Grade Assignment**

Historically, numerical percentages have been converted to letter grades using the following scale. However, instructors can deviate from these values based on pedagogical nuances of a particular class, and final grades are subject to approval by the Department Review Committee.

A+	90 – 100%	B+	75 – 79%	C	60 – 64%
A	85 – 89 %	B	70 – 74%	D	50 – 59%
A-	80 – 84%	C+	65 – 69%	F	below 50%

## **Required Textbook/Reading List**

- There is no required textbook for this course; optional readings will be provided by the instructor on Nexus.
- Class notes and tutorial documents will be available on Nexus as PDFs. Annotated class notes done within lectures (i.e., additional notes, ideas, and discussion points brought forward in class), will not be shared on Nexus.
- Tutorial solutions, done in class, will not be posted on Nexus.

## **Prerequisite Information**

- Prerequisites: A grade of at least C in ACS-2947 (3)

## **Regulations, Policies, and Academic Integrity**

Students are encouraged to familiarize themselves with the Academic Regulations and Policies found in the University Academic Calendar at:

<https://uwinnipeg.ca/academics/calendar/docs/regulationsandpolicies.pdf>

Particular attention should be given to subsections 8 (Student Discipline), 9 (Senate Appeals) and 10 (Grade Appeals).

***Avoiding Academic Misconduct:*** Academic dishonesty is a very serious offense and will be dealt in accordance with the University's policies.

Detailed information can be found at the following:

- Academic Misconduct Policy and Procedures:  
<https://www.uwinnipeg.ca/policies/docs/policies/academic-misconduct-policy.pdf> and  
<https://www.uwinnipeg.ca/policies/docs/procedures/academic-misconduct-procedures.pdf>
- About Academic Integrity and Misconduct, Resources and FAQs:  
<https://library.uwinnipeg.ca/use-the-library/help-with-research/academic-integrity.html>

Uploading essays and other assignments to essay vendor or trader sites (filesharing sites that are known providers of essays for use by others who submit them to instructors as their own work) involves “aiding and abetting” plagiarism. Students who do this can be charged with Academic Misconduct.

**Academic Integrity and AI Tools:** Students must follow principles of academic integrity (e.g., honesty, respect, fairness, and responsibility) in their use of material obtained through AI text-generating tools (e.g., ChatGPT, Bing, Notion AI). **Use of AI Tools is prohibited in this course. Students may face an allegation of academic misconduct if using them for any deliverable.**

**Non-academic misconduct:** Students are expected to conduct themselves in a respectful manner on campus and in the learning environment irrespective of platform being used. Behaviour, communication, or acts that are inconsistent with a number of UW policies could be considered “non-academic” misconduct. More detailed information can be found here:

- Respectful Working and Learning Environment Policy: <https://www.uwinnipeg.ca/respect/respect-policy.html>,
- Acceptable Use of Information Technology Policy: <https://www.uwinnipeg.ca/policies/docs/policies/acceptable-use-of-information-technology-policy.pdf>
- Non-Academic Misconduct Policy and Procedures: <https://www.uwinnipeg.ca/policies/docs/policies/student-non-academic-misconduct-policy.pdf> and <https://www.uwinnipeg.ca/policies/docs/procedures/student-non-academic-misconduct-procedures.pdf>.

**Copyright and Intellectual Property:** Course materials are the property of the instructor who developed them. Examples of such materials are course outlines, assignment descriptions, lecture notes, test questions, and presentation slides—irrespective of format. Students who upload these materials to filesharing sites, or in any other way share these materials with others outside the class without prior permission of the instructor/presenter, are in violation of copyright law and University policy. Students must also seek prior permission of the instructor/presenter before, for example, photographing, recording, or taking screenshots of slides, presentations, lectures, and notes on the board. Students found to be in violation of an instructor’s intellectual property rights could face serious consequences pursuant to the Academic Misconduct or Non-Academic Misconduct Policy; such consequences could possibly involve legal sanction under the Copyright Policy:

<https://copyright.uwinnipeg.ca/basics/copyright-policy.html>

## **Privacy**

Students have rights in relation of the collecting of personal data the University of Winnipeg

- Student Privacy: <https://www.uwinnipeg.ca/privacy/admissions-privacy-notice.html>
- Zoom Privacy: <https://www.uwinnipeg.ca/privacy/zoom-privacy-notice.html>

## **Class Cancellation, Correspondence with Students and Withdrawing from Course**

When it is necessary to cancel a class due to exceptional circumstances, the course instructor will make every effort to inform students via uwinnipeg email and Nexus.

Students are reminded that they have a responsibility to regularly check their uwinnipeg e-mail addresses to ensure timely receipt of correspondence from the University and/or the course instructor.

When emailing the instructor, you should use your **UofW email address** to communicate with the instructor. **Do not** use the Nexus email system, i.e., mail.nexus.uwinnipeg.ca, Nexus mailbox are not monitored on a regular basis. As well, **Do not** use an external email address (e.g., Gmail, Hotmail, Shaw, etc.) as the email may be filtered out by the anti-spam system.

Please let course instructor know if you plan on withdrawing from the course. Note that withdrawing before the VW date does not necessarily result in a fee refund.

## **Student Wellness**

The University of Winnipeg affirms the importance of student mental health and our commitment to providing accessible, culturally appropriate, and effective services for students. Students who are seeking mental health supports are encouraged to reach out to the Wellness Centre at studentwellness@uwinnipeg.ca or 204-258-3809. For community-based mental health resources and supports, students are encouraged to dial 2-1-1. This program of United Way is available 24/7 in 150 languages. Other resources and contact information can be found at the following link: <https://www.uwinnipeg.ca/student-wellness/contact-us.html>.

## **Topics to be Covered (tentative)**

1. History of Video Games
2. General Game Design and Design Goals
3. Game Analysis Frameworks
4. Prototyping and Testing
5. C# Programming and the Unity Game Engine
6. Asset Creation, Prefabs
7. 2D Sprites, 3D Models, Sound
8. Player Movement and Control
9. Animation
10. Physics, Collision Detection
11. Enemy Spawning, Basic AI
12. Menus and UI Elements
13. Deployment
14. Principles of Gamification

*A permitted or necessary change in mode of delivery may require adjustments to important aspects of course outlines, like class schedule and the number, nature, and weighting of assignments and/or exams.*