

CPSC 585 - Video Game Programming

Instructors: Nigel Brooke, Marcin Chady, Ben Stephenson

Lectures: Monday January 5 - Friday January 9, 2026, 09:00 - 17:00

Location: ICT 516

Objectives

This course provides an introduction to video game development. Its main objective is to expose the students to the processes and techniques of creating video games. Teams of students will experience a condensed version of the entire video game development process, designing and developing a game from scratch.

Assignments and Grading

- Project 100%
 - Milestone 1 - 10% (*January 26, 2026, 1pm MST*)
 - High-concept design document
 - Feature list, task estimates and assignments, rough schedule
 - Game application framework
 - Private GitHub repo created
 - Milestone 2 - 15% (*February 13, 2026, 1pm MST*)
 - “Red brick” level rendering
 - Player driving model
 - Ability to load a model into the game
 - Some functional gameplay
 - Adequate camera functionality
 - Private GitHub repo main branch updated
 - Milestone 3 - 15% (*March 9, 2026, 1pm MST*)
 - First playable - “alpha”
 - Most game rules implemented
 - Functional opponent driving AI
 - Working 3D, audio engine
 - Refined gameplay
 - Private GitHub repo main branch updated
 - Milestone 4 - 10% (*March 30, 2026, 1pm MST*)
 - Feature complete - “beta”
 - Private GitHub repo main branch updated
 - Milestone 5 - “Final” Product - 50% (*April 14, 2026, 1pm MST*)
 - *Source code as well as release mode binaries (for Windows 11) should be included.*
 - Private GitHub repo main branch updated - could make public at this point
 - Wow Factor - up to 10% bonus

Late Policy

10% per day that an assignment is late.

Contact

Nigel: nigel@steamclock.com (Questions about lecture material and assignments)

Marcin: marcin.chady@cdprojektred.com (Questions about lecture material)

Ben: bdstephe@ucalgary.ca (Questions about course logistics, room access, registration, etc.)

Lecture Outline (Still subject to change)

Day 1: Monday, January 5

09:00-10:00 Introductions & Course Overview
10:00-10:45 Gaming Industry
10:45-11:30 Fun
11:30-12:00 Game Architecture 1
12:00-13:00 LUNCH
13:00-14:00 Game Architecture 2
14:00-15:00 Gameplay
15:00-17:00 *Workshop: Game design brainstorm, pitches*

Day 2: Tuesday, January 6

09:00-10:00 Development Languages
10:00-11:00 Memory and Game Content
11:00-12:00 Graphics 1
12:00-13:00 LUNCH
13:00-14:00 Graphics 2
14:00-15:00 *Workshop: Examining Assassins Creed Shadows*
15:00-17:00 *Workshop: Game design continued*

Day 3: Wednesday, January 7

09:00-10:00 Physics
10:00-11:00 Driving Simulation
11:00-12:00 *Workshop: Examining Rocket League*
12:00-13:00 LUNCH
13:00-14:00 Console Architecture
14:00-15:00 Driving AI
15:00-16:00 *TBD*
16:00-17:00 *Workshop: Technical design*

Day 4: Thursday, January 8

09:00-11:00 Real-time Programming
11:00-12:00 C++ Pitfalls
12:00-13:00 LUNCH
13:00-14:00 Networking
14:00-15:00 *Workshop: Examining Uncharted 4*
15:00-16:00 Sound
16:00-17:00 *Workshop: Debugging Roundtable (+Project workshop if time permits)*

Day 5: Friday, January 9

09:00-10:00 Generative AI in Games
10:00-11:00 Game Engines
11:00-12:00 The Future of the Games Industry
12:00-13:00 LUNCH
13:00-14:00 *Workshop: Getting a job*
14:00-15:00 Project Management
15:00-16:00 *Guest lecture*
16:00-17:00 Wrap up