

CPSC 585 - Video Game Programming (Winter 2024)

Instructors: Nigel Brooke, Alexei Pepers, Richard Zhao

Guest Speakers: Séamus Epp, Matthew McConnell

Teaching Assistant: Matthew McConnell

Lectures: Tuesday January 2 - Saturday January 6, 2024, 9am - 5pm

Location: ICT 516

Lecture is in-person only and not recorded.

Weekly TA meeting: Fridays 11am-12:50pm in MS 139. January 19 - April 5, 2024

Contact

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

Alexei: alexeipepers@gmail.com (Questions about lecture material)

Richard: richard.zhao1@ucalgary.ca (Questions about course logistics, room access, registration, etc.)

Prerequisite:

CPSC 453 - Computer Graphics.

Students must apply for permission to enroll in the course through the course instructor.

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, including its underlying game engine.

Assignments and Grading

- Project 100%
 - Milestone 1 - 10% (*Monday January 22, 2024, 1pm MST*)
 - High-concept design document
 - Feature list, task estimates and assignments, rough schedule
 - Game application framework
 - Private GitHub repo created
 - Milestone 2 - 15% (*Monday, February 12, 2024, 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%** (*Monday, March 4, 2024, 1pm MST*)
 - First playable - “alpha” version
 - Most game rules implemented
 - Functional opponent driving AI
 - Working 3D, audio engine
 - Refined gameplay
 - Private GitHub repo main branch updated
- Milestone 4 - **10%** (*Monday, March 25, 2024, 1pm MST*)
 - Feature complete - “beta” version
 - Private GitHub repo main branch updated
- Milestone 5 - “Final” Product - **50%** (*Monday, April 15, 2024, 1pm MST*)
 - *Source code as well as release mode binaries (for Windows 10) should be included.*
 - Private GitHub repo main branch updated
- Wow Factor - up to **10%** bonus

Students must attend all 5 days of the block week lectures to receive a passing grade (D or higher) in the course.

Late Policy

10% of total grade deduction per day for the entire group that a submission is late.

Tentative Schedule

Day 1: Tuesday, January 2

09:00-10:00 Introductions & Course Overview
 10:00-10:45 Gaming Industry
 10:45-11:30 Fun
 11:30-12:00 Gameplay
 12:00-13:00 LUNCH
 13:00-13:30 Game Architecture 1
 13:30-14:30 Game Architecture 2
 14:30-15:00 Experiences with CPSC585
 15:00-17:00 *Workshop: Game design brainstorm, pitches*

Day 2: Wednesday, January 3

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 Odyssey*
 15:00-17:00 *Workshop: Game design continued*

Day 3: Thursday, January 4

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 Driving AI
14:00-15:00 *Workshop: Cyberpunk 2077 Driving*
15:00-16:00 Console Architecture
16:00-17:00 *Workshop: Technical design*

Day 4: Friday, January 5

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: Uncharted 4 or The Last of Us 2*
15:00-16:00 Sound
16:00-17:00 *Workshop: Debugging Roundtable (+Project workshop if time permits)*

Day 5: Saturday, January 6

09:00-10:00 Procedural Content Generation
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
15:00-17:00 Wrap up and next steps