CPSC 585 - Video Game Programming

Instructors: Nigel Brooke, Stephen Ma, Marcin Chady, Ben Stephenson
Lectures: **Monday January 4 – Friday January 8, 2021, 9:00 – 17:00**
Location: **Online**

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%**
    - Basic Deliverables – **50%**
        - Milestone 1 - **10%** *(Monday, January 25th, 2021, 12:00 PST)*
            - High-concept design document
            - Feature list, task estimates and assignments, rough schedule
            - Game application framework
        - Milestone 2 – **15%** *(Friday, February 12th, 2021, 12:00 PST)*
            - "Red brick" level rendering
            - Player driving model
            - Some functional gameplay
        - Milestone 3 – **15%** *(Monday, March 8th, 2021, 12:00 PST)*
            - First playable
                - Most game rules implemented
                - Functional opponent driving AI
                - Working 3D, audio engine
                - Refined gameplay
        - Milestone 4 - **10%** *(Monday, March 29th, 2021, 12:00 PST)*
            - Feature complete
    - Final Product – **50%** *(Friday, April 16th, 2021, 12:00 PST)*
- 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@digitalscapes.ca (Questions about lecture material)
Stephen: phen@newworldinteractive.com (Questions about lecture material and assignments)
Ben: bdstephe@ucalgary.ca (Questions about course logistics, room access, registration, etc)

Lecture Outline (Tentative)

Day 1: Monday, January 4

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

Day 2: Tuesday, January 5

09:00-10:00	Gameplay
10:00-11:00	Game Engines
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: Wednesday, January 6

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

Day 4: Thursday, January 7

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: Friday, January 8

09:00-10:00	Memory and Game Content
10:00-11:00	Console Architecture
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