COURSE SYLLABUS

COURSE TITLE: Artificial Intelligence

CLASS SECTION: X01

TERM: F2023

COURSE CREDITS: 3

DELIVERY METHOD(S): Face to Face

For COVID-19 information please visit https://legacy.camosun.ca/covid19/index.html.

Camosun College requires mandatory attendance for the first class meeting of each course. If you do not attend, and do not provide your instructor with a reasonable explanation in advance, you will be removed from the course and the space offered to the next waitlisted student.

INSTRUCTOR DETAILS

NAME: Benjamin Leather

EMAIL: leatherb@camosun.bc.ca

OFFICE: TEC 234

HOURS: by appointment

As your course instructor, I endeavour to provide an inclusive learning environment. However, if you experience barriers to learning in this course, do not hesitate to discuss them with me. Camosun College is committed to identifying and removing institutional and social barriers that prevent access and impede success.

CALENDAR DESCRIPTION

Students will work through project milestones to create a game or story using their knowledge of UX/UI, 3D Modelling and simulation for the Virtual Reality (VR), Augmented Reality (AR) or Mixed Reality (MR) environment for their Extended Reality (XR) project.

PREREQUISITE(S):   One of:
                        COMP 146
                        COMP 139
                        ICS 124
        And one of:
                        C+ in MATH 156
                        C+ in MATH 155 and C+ in STAT 157 (if taken prior to Sep 2020)

PRE or CO-REQUISITE(S): All of:
                        C in ICS 212

COURSE DELIVERY

ACTIVITY	HOURS / WEEK	# OF WEEKS	ACTIVITY HOURS
Lecture / Learning Content	3	15	45
Seminar			0
Lab / Collaborative Learning	2	15	30
Supervised Field Practice			0
Workplace Integrated Learning			0
Online			0
		TOTAL HOURS	**75**

COURSE LEARNING OUTCOMES / OBJECTIVES

Upon successful completion of this course a student will be able to:
- Understand key artificial intelligence and machine learning concepts.
- Learn how artificial intelligence techniques are implemented into games
- Implement decision management that AI needs to make through finite state machines
- Add randomness to games to make the AI less predictable
- Implement AI sensors which make the AI character more aware of the world around them
- Implement a flocking algorithm
- Implement path following and steering behaviours in AI characters
- Create a navigation mesh in Unity to make pathfinding more efficient
- Create behaviour trees to provide a richer strategy in a game
- Understanding how to apply machine learning to game characters for games or simulations.

REQUIRED MATERIALS & RECOMMENDED PREPARATION / INFORMATION

None.

COURSE SCHEDULE, TOPICS, AND ASSOCIATED PREPARATION / ACTIVITY / EVALUATION

The following schedule and course components are subject to change with reasonable advance notice, as deemed appropriate by the instructor.

WEEK	WEEK OF	TUESDAY TOPIC	FRIDAY TOPIC
1	05-Sep	No Lab Course Overview Introduction to AI	Introduction to Lab Planning
2	12-Sep	Introduction to Final Project / Demo Graph Theory Finite State Machines	Lab 1 Demo (Move Sphere) / Prep
3	19-Sep	Lab Work Randomness & Probability Whack-A-Mole (Co-Build)	Lab 2 Demo (Randomness) / Prep
4	26-Sep	Lab Work Directions and Sensors Position Change (Co-Build)	Lab 3 Demo (Sensors) / Prep
5	03-Oct	Lab Work Flocking Lab 4 Starter Test 1 (Available All Week)	Lab 4 Demo (Flocking) / Prep
6	10-Oct	Lab Work Wayfinding Lab 5 Starter	Lab 5 Demo (Wayfinding) / Prep
7	17-Oct	Lab Work Navigation Mesh Lab 6 (Navigation Mesh) / Prep	A* (Co-Build)
8	24-Oct	Lab Work Utility AI (Co-Build) Week 1	A* (Co-Build)
9	31-Oct	Lab Work Utility AI (Co-Build) Week 2	Unity Machine Learning Week 1
10	07-Nov	Lab Work Final Project Review & Planning / Unity & GIT Test 2 (Available All Week)	Unity Machine Learning Week 2
11	14-Nov	Lab Work Project Work	Project Work
12	21-Nov	Lab Work Project Work	Project Work
13	05-Dec	Lab Work Project Work	Project Work
14	12-Dec	Final Project Evaluation	Final Project Evaluation

Students registered with the Centre for Accessible Learning (CAL) who complete quizzes, tests, and exams with academic accommodations have booking procedures and deadlines with CAL where advanced noticed is required. Deadlines scan be reviewed on the CAL exams page. http://camosun.ca/services/accessible-learning/exams.html

EVALUATION OF LEARNING

DESCRIPTION	WEIGHTING
Tests (2)	25%
Lab Preparation Documents	10%
Lab Skills Completion	40%
Project	25%
TOTAL	100%

If you have a concern about a grade you have received for an evaluation, please come and see me as soon as possible. Refer to the Grade Review and Appeals policy for more information.
http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf

COURSE GUIDELINES & EXPECTATIONS

Must complete all labs to pass the course.
Lab skills must be identified by the student and demonstrated.
Late Lab Preparation Documents can only receive 50% mark.
Tests are scheduled and posted in D2L.
Must achieve a minimum of 55% on all work to pass the course.

SCHOOL OR DEPARTMENTAL INFORMATION

Grade review: You have 7 days after marks are posted to review with your instructor.

Academic Integrity Violations:

1st violation: minus the weight of the deliverable and a note on your departmental file.
2nd violation: F in the course
3rd violation: Student Conduct Policy E-2.5 is applied

Missed Examinations/Quizzes: If a student misses a quiz/test or an exam, a mark of zero will be assigned unless there are extenuating circumstances. You must provide a note from a medical practitioner (Doctor, Nurse, Psychologist, Councilor, etc) In such cases, the proportion of grade assigned to the missed quiz or exam will be added to the proportion assigned to the final exam. The final exam will be held during exam week. NO consideration will be given to any student wishing to write the exam at any other time than that assigned.

Electronic Devices: The school's policy regarding electronic devices is that any student who has a cell phone or other unauthorized electronic device (ie. ipad, laptop, playbook, etc.) on their person or around their desk during an exam will be guilty of cheating and will a grade of "F" for the course.

STUDENT RESPONSIBILITY

Enrolment at Camosun assumes that the student will become a responsible member of the College community. As such, each student will display a positive work ethic, assist in the preservation of College property, and assume responsibility for their education by researching academic requirements and policies; demonstrating courtesy and respect toward others; and respecting expectations concerning attendance, assignments, deadlines, and appointments.

SUPPORTS AND SERVICES FOR STUDENTS

Camosun College offers a number of services to help you succeed in and out of the classroom. For a detailed overview of the supports and services visit http://camosun.ca/students/.

Support Service	Website
Academic Advising	http://camosun.ca/advising
Accessible Learning	http://camosun.ca/accessible-learning
Counselling	http://camosun.ca/counselling
Career Services	http://camosun.ca/coop
Financial Aid and Awards	http://camosun.ca/financialaid
Help Centres (Math/English/Science)	http://camosun.ca/help-centres
Indigenous Student Support	http://camosun.ca/indigenous
International Student Support	http://camosun.ca/international/
Learning Skills	http://camosun.ca/learningskills
Library	http://camosun.ca/services/library/
Office of Student Support	http://camosun.ca/oss
Ombudsperson	http://camosun.ca/ombuds
Registration	http://camosun.ca/registration
Technology Support	http://camosun.ca/its
Writing Centre	http://camosun.ca/writing-centre

If you have a mental health concern, please contact Counselling to arrange an appointment as soon as possible. Counselling sessions are available at both campuses during business hours. If you need urgent support after-hours, please contact the Vancouver Island Crisis Line at 1-888-494-3888 or call 911.

COLLEGE-WIDE POLICIES, PROCEDURES, REQUIREMENTS, AND STANDARDS

Academic Accommodations for Students with Disabilities

The College is committed to providing appropriate and reasonable academic accommodations to students with disabilities (i.e. physical, depression, learning, etc). If you have a disability, the Centre for Accessible Learning (CAL) can help you document your needs, and where disability-related barriers to access in your courses exist, create an accommodation plan. By making a plan through CAL, you can ensure you have the appropriate academic accommodations you need without disclosing your diagnosis or condition to course instructors. Please visit the CAL website for contacts and to learn how to get started:
http://camosun.ca/services/accessible-learning/

Academic Integrity

Please visit http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.13.pdf for policy regarding academic expectations and details for addressing and resolving matters of academic misconduct.

Academic Progress

Please visit http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.1.pdf for further details on how Camosun College monitors students' academic progress and what steps can be taken if a student is at risk of not meeting the College's academic progress standards.

Course Withdrawals Policy

Please visit http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.2.pdf for further details about course withdrawals. For deadline for fees, course drop dates, and tuition refund, please visit http://camosun.ca/learn/fees/#deadlines.

Grading Policy

Please visit http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.5.pdf for further details about grading.

Grade Review and Appeals

Please visit http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf for policy relating to requests for review and appeal of grades.

Mandatory Attendance for First Class Meeting of Each Course

Camosun College requires mandatory attendance for the first class meeting of each course. If you do not attend, and do not provide your instructor with a reasonable reason in advance, you will be removed from the course and the space offered to the next waitlisted student. For more information, please see the "Attendance" section under "Registration Policies and Procedures" (http://camosun.ca/learn/calendar/current/procedures.html) and the Grading Policy at http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.5.pdf.

Medical / Compassionate Withdrawals

Students who are incapacitated and unable to complete or succeed in their studies by virtue of serious and demonstrated exceptional circumstances may be eligible for a medical/compassionate withdrawal. Please visit http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.8.pdf to learn more about the process involved in a medical/compassionate withdrawal.

Sexual Violence and Misconduct

Camosun is committed to creating a campus culture of safety, respect, and consent. Camosun's Office of Student Support is responsible for offering support to students impacted by sexual violence. Regardless of when or where the sexual violence or misconduct occurred, students can access support at Camosun. The Office of Student Support will make sure students have a safe and private place to talk and will help them understand what supports are available and their options for next steps. The Office of Student Support respects a student's right to choose what is right for them. For more information see Camosun's Sexualized

Violence and Misconduct Policy: http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.9.pdf and camosun.ca/sexual-violence. To contact the Office of Student Support: oss@camosun.ca or by phone: 250-370-3046 or 250-3703841

Student Misconduct (Non-Academic)

Camosun College is committed to building the academic competency of all students, seeks to empower students to become agents of their own learning, and promotes academic belonging for everyone. Camosun also expects that all students to conduct themselves in a manner that contributes to a positive, supportive, and safe learning environment. Please review Camosun College's Student Misconduct Policy at http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.5.pdf to understand the College's expectations of academic integrity and student behavioural conduct.

Changes to this Syllabus: Every effort has been made to ensure that information in this syllabus is accurate at the time of publication. The College reserves the right to change courses if it becomes necessary so that course content remains relevant. In such cases, the instructor will give the students clear and timely notice of the changes.