

University of Guelph
School of Computer Science
College of Engineering and Physical Science

Winter 2021
CIS*6020
Artificial Intelligence

This course covers the core topics of Artificial Intelligence, namely: agents and environment, search, knowledge representation, reasoning, and learning.

Instructor Name: Stefan C. Kremer
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Office: Cyberspace
Office hours: By appointment, please e-mail.

Class Schedule: Tuesday, 8:30am-11:20am, Zoom

CourseLink: <https://courselink.uoguelph.ca/d21/home/674828>

Detailed Course Description:

Emphasis will be on the application of concepts and algorithms in AI to simple practical problems in the areas of planning, games and learning. Assignments will be very challenging, but students will be provided with lots of guidance to help them to succeed.

A typical assignment will consist of 3 parts. Part I will involve programming and Intelligent Systems. Part II will involve and analysis of the software from Part I applied to one or more specific problems (this includes running experiments, documenting results). Part III will involve a discussion of the observations from Part II and relating these observations back to theoretical and mathematical expectations related to the techniques used, and also a speculative component discussing what could be done next.

Topic List and Schedule:

Week 1: Introduction to Intelligent Systems
Week 2: Graphical (vertices and edges, not picture) Representation of Problems
Week 3: Graph Search Algorithms
Week 4: A, A*, Heuristic and other Algorithms
Week 5: Introduction to Games
Week 6: Graphical (vertices and edges, not picture) representations of games
Week 7: Mini-max Algorithms
Week 8: Pruning
Week 9: Formal Logic Systems
Week 10: Introduction to Machine Learning
Week 11: Topics in Computational Intelligence
Week 12: Review

Evaluation – Methods, Breakdown (% of grade) and specific due dates:

Assignments (x5)	(5x15% each)	– Jan. 29th, Feb. 12th, Mar. 5th, Mar. 19th, Apr. 1st. (Thursday)
Discussion	(10%)	– Weekly
Project	(15%)	– Apr. 16th

All assignments are due at 8:30am on the dates indicated. In the absence of Academic Consideration, https://www.uoguelph.ca/registrar/calendars/graduate/2020-2021/genreg/sec_d0e2225.shtml, late assignments receive a grade of zero (i.e. hand it what you've got when its due).

Standard Statements

E-mail Communication As per university regulations, all students are required to check their <uoguelph.ca> e-mail account regularly: e-mail is the official route of communication between the University and its students.

When You Cannot Meet a Course Requirement When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. See the undergraduate calendar for information on regulations and procedures for Academic Consideration: https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/sec_d0e2195.shtml

Drop Date The last date to drop one-semester courses, without academic penalty, is the last day of classes. For regulations and procedures for Dropping Courses, see the Undergraduate Calendar: <https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml>

Copies of out-of-class assignments Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

Accessibility The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact Student Accessibility Services as soon as possible.

For more information, contact SAS at 519-824-4120 ext. 56208 or email accessibility@uoguelph.ca or see the website: <https://wellness.uoguelph.ca/accessibility/>.

Academic Misconduct The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The Academic Misconduct Policy is detailed in the Graduate Calendar: https://www.uoguelph.ca/registrar/calendars/graduate/2020-2021/genreg/sec_d0e2678.shtml.

Recording of Materials Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

Resources The Academic Calendars are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs: <https://www.uoguelph.ca/academiccalendars/>