



**Lakehead**  
UNIVERSITY

COURSE INFORMATION  
COMP-4475 Topics in Artificial Intelligence  
Winter 2024, Orillia

### **Calendar Description:**

Introduction to artificial intelligence (AI) and its applications. Topics include several of the following: logic and reasoning, AI languages, state-space search, heuristics, constraints-satisfaction problem, game-problem solving, planning, machine learning, agent and multi-agents programming, neural networks, genetic algorithms and reasoning about uncertainty.

### **Instructor Information:**

Instructor: Dr. Chris Brogly

Office Location: OA, 3<sup>rd</sup> floor, #13

E-mail: [cbrogly@lakeheadu.ca](mailto:cbrogly@lakeheadu.ca)

Office Hours: Location and hours to be posted on myCourseInfo

**TA(s): see myCourseInfo**

### **Course Identification:**

Course Delivery: Lectures, MyCourseLink/D2L

Room and Time: OA-2017, 2:30-3:50PM TTh

Final Date to Withdraw (Drop): Friday, March 8, 2024

Final Day of Classes: Tuesday, April 9, 2024

Winter Study Week: February 19, 2024 – February 23, 2024

### **Prerequisite(s):**

Computer Science 2412 Data Structures

### **Evaluation**

Final grades are calculated based on the following evaluation:

- 3-4 Assignments, 20%
- Midterm, 30%, TBD, in class
  - Format: Mixed

- Final Exam, 40%
  - Format: Mixed
  - Cumulative
  - Date: Will be posted on myCourseLink
- Research Paper Short Presentation or Paper Summary, 10%
  - The instructor will assign research papers in Artificial Intelligence for students to summarize. Presentations may be required at the instructor's discretion and done live in-class, or as recorded powerpoints to be submitted. This should not exceed 15 minutes.
  - If the instructor opts for the in-class presentation option, they will occur on part of TBA and on TBA. Otherwise, recorded powerpoints will be submitted by TBA via myCourseLink.

### Course Text and Online Resources:

- Artificial Intelligence: A Modern Approach. Stuart Russell and Peter Norvig, Pearson 2021.
- Artificial Intelligence: Foundations of computational agents, 3rd edition, Cambridge University Press, 2023. David L. Poole and Alan K. Mackworth.
- Research Articles and instructor provided documents will be posted on MyCourseLink. Recommended readings per week will be posted by the instructor on MyCourseLink.

Weeks	Topics to cover Note: While all listed topics will be covered – the instructor reserves the right to re-arrange some of the weekly topics as the course progresses.
Week 1	Course syllabus, Introduction (Russell & Norvig Ch. 1)
Week 2	Intelligent Agents (Russell & Norvig Ch. 2)
Week 3	Intelligent Agents (Russell and Norvig Ch. 7) OR Adversarial Search and Games (Russell & Norvig Ch. 5)
Week 4	Solving Problems by Searching (Russell and Norvig, Ch. 3)
Week 5	Constraint Satisfaction Problems (Russell and Norvig, Ch. 6)

Week 6	First-Order Logic (Russell and Norvig, Chapter 8)
Week 7	Winter Reading Week
Week 8	Learning from Examples (Russell and Norvig, Ch. 19)
Week 9	Natural Language Processing (Russell and Norvig, Ch. 23)
Week 10	Deep Learning for Natural Language Processing (Russell and Norvig, Ch. 21, 24)
Week 11	Philosophy, Ethics, and Safety of AI (Russell and Norvig, Ch. 27)
Week 12	Future Directions of AI & Conclusion (Russell and Norvig, Ch. 28)

### **Assignments and Evaluations:**

Students taking this course must understand and agree that:

- (1) Unless otherwise allowed by the course instructor, students must complete the assignments in this course without the assistance of anyone else.
- (2) Unless otherwise allowed by the course instructor, students must not access any sources or materials (in print, online, or in any other way) to complete any course exam.

### **Academic Integrity:**

Students must further understand and agree that, if they violate either of these two rules, or if they provide any false or misleading information about their completion of course assignments or exams, they may be prosecuted under the Lakehead University Student Code of Conduct – Academic Integrity, which requires students to act ethically and with integrity in academic matters and to demonstrate behaviors that support the University’s academic values.

**Assignments:** There is **Zero-Tolerance** for plagiarism cases. All such cases will be dealt with according to University prescribed rules. All assignments are individual. Students should understand that their assignments must go through a similarity check and if there is similarity detected then **ZERO** mark will be awarded to those students involved in copying.

**Late Assignments:** Late assignments will automatically receive a **ZERO** however they will be reviewed to provide formative evaluation feedback and must be submitted for course Completion.

**Course Policies:**

- Behavioral standards to follow: Student Code of Conduct - Academic Integrity
- Attendance and participation in class discussions is highly recommended.
- Students can communicate with the instructor through email.
- The course outline and schedule are not fixed and subject to change based on class flow.
- University's attendance policy is followed.
- There will be 4 assignments. There are late penalties for assignments determined by the course instructor. Extensions will be granted only by the course instructor. If you have medical or compassionate grounds for an extension, you should take supporting documentation to the office of the Dean of your faculty, who will contact the instructor.
- Assignments and time will be posted on MyCourseLink/D2L and announced via emails to all registered students.

**Copyright:**

Students should be aware that all instructional, reference, and administrative materials prepared for this course are protected in their entirety by copyright. Students are expected to comply with this copyright by only accessing and using the course materials for personal educational use related to the course, and that the materials cannot be shared in any way, without the written authorization of the course instructor. If this copyright is infringed in any way, students may be prosecuted under the Lakehead University Student Code of Conduct – Academic Integrity, which requires students to act ethically and with integrity in academic matters and to demonstrate behaviors that support the University's academic values.

**Regulations:**

It is the responsibility of each student registered at Lakehead University to be familiar with, and comply with all the terms, requirements, regulations, policies and conditions in the Lakehead University Academic Calendar. This includes, but is not limited to, Academic Program Requirements, Academic Schedule of Dates, University and Faculty/School Policies and Regulations and the Fees and Refund Policies and Schedules (Lakehead University Regulations webpage, 2023-24).

**Academic Integrity:**

A breach of Academic Integrity is a serious offense. The principle of Academic Integrity, particularly of doing one's own work, documenting properly (including use of quotation marks, appropriate paraphrasing and referencing/citation), collaborating appropriately, and avoiding misrepresentation, is a core principle in university study. Students should view the Student Code of Conduct - Academic Integrity for a full description of academic offenses, procedures when Academic Integrity breaches are suspected and sanctions for breaches of Academic Integrity.

**Support for Students:**

There are many resources available to support students. These include but are not limited to:

- [Health and Wellness](#)
- [Student Success Centre](#)
- [Student Accessibility Centre](#)
- [Library](#)
- [Lakehead International](#) ● [Indigenous Initiatives](#)

Lakehead University is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities and/or medical conditions to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a disability and think you may need accommodations, you are strongly encouraged to contact Student Accessibility Services (SAS) and register as early as possible. For more information, please contact Student Accessibility Services (SC0003, 343-8047 or [sas@lakeheadu.ca](mailto:sas@lakeheadu.ca))