Course Outline
Reinforcement Learning (9670/9671/9170)

1. Course Information

Course Information

Reinforcement Learning (9670/9671/9170), Winter 2023

2. Instructor Information

Instructors	Email	Office	Phone	Office Hours
Dr. Apurva Narayan	apurva.narayan@uwo.ca	MC 368	519 661-2111 x81138	

Students must use their Western (@uwo.ca) email addresses when contacting their instructors. Please start the subject as 'Reinforcement Learning'.

Office hours will be via Zoom and set up on a need basis via email.

3. Course Syllabus, Schedule, Delivery Mode

This course will provide a broad introduction to the foundational concepts and algorithms of reinforcement learning, one of the largest and most active areas in machine learning. The main focus will be on fundamental algorithms and their applications, and will end with an introduction to deep reinforcement learning. Knowledge of probability theory, logic, expectation, and basic machine learning principles (e.g., gradient descent) will be very helpful.

Upon successful completion of this course, students will be able to:

- Define the core features of reinforcement learning, and explain how RL differs from other artificial intelligence / machine learning approaches.
- Determine if a given problem should be approached as a reinforcement learning problem.
- Compare different algorithms to select the most appropriate for a particular application/problem space.
- Implement (in code) various common/classic reinforcement algorithms from scratch in Python.
- List and define the various crit7u(0.00000912 0 612 792 re00091W*n70 612 79/F6 12 Tf1 0 0 s/000912 0 61

13	Inverse RL		
14	Project Presentations		

Contingency plan for an in-person class pivoting to 100% online learning
In the event of a COVID-19 resurgence during the course that necessitates the course delivery moving away from face-to-face interaction, affected course content will be delivered entirely online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). The grading scheme will **not** change. Any remaining assessments will also be conducted online as determined by the course instructor.

4. Course Materials

Sutton, R. S., & Barto, A. G. (2011). Reinforcement learning: An introduction.
This is the text on reinforcement learning, written by Richard Sutton and Andrew Barto from the University of Alberta and made available for free online. It is roughly split into two parts: Part 1 covers the fundamentals of reinforcement learning, namely core concepts, multi-armed bandits, dynamic programming, temporal difference)4( )-119()4( )-119()4( )-1A1.0157 0.196 1 4i9s)91 Tm0 G[(the)-297(funda)7(r

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6. Student Absences

If you are unable to meet a course requirement due to illness or other serious circumstances, please follow the procedures below.

Late assessments without

The website for Registrarial Services is http://www.registrar.uwo.ca.

In accordance with policy,

https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf,

the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at their official university address is attended to in a timely manner.

Computers are allowed to be used during the exams.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (http://www.turnitin.com).

Tests and examinations in this course may be conducted using a remote proctoring service. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide **personal information** (including some biometric data) and the session will be **recorded**. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring website at:

https://remoteproctoring.uwo.ca.

8. Support Services

Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on adding/dropping courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: https://www.uwo.ca/sci/counselling/.

Students who are in emotional/mental distress should refer to Mental Health@Western (https://uwo.ca/health/) for a complete list of options about how to obtain help.

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at

https://www.uwo.ca/health/student_support/survivor_support/get-help.html.

To connect with a case manager or set up an appointment, please contact support@uwo.ca.