

# Introduction to Artificial Intelligence Fall 2024

## CS 486 / CS 686

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### Class Schedule

Course	Meet Days	Meet Time	Location	Instructor(s)
<b>CS 486 / CS 686</b> 003 [LEC]	<b>Tue, Thu</b> <i>Sep 4 - Dec 3</i>	10:00AM - 11:20AM	MC 1085	J. Hoey <i>jesse.hoey@u...</i>
<b>CS 486</b> 001 [LEC]	<b>Tue, Thu</b> <i>Sep 4 - Dec 3</i>	04:00PM - 05:20PM	RCH 112	H. Shi <i>fhs@uwaterloo...</i>
<b>CS 486</b> 002 [LEC]	<b>Tue, Thu</b> <i>Sep 4 - Dec 3</i>	02:30PM - 03:50PM	RCH 112	H. Shi <i>fhs@uwaterloo...</i>
<b>CS 686</b> 001 [LEC]	<b>Tue, Thu</b> <i>Sep 4 - Dec 3</i>	04:00PM - 05:20PM	RCH 112	H. Shi <i>fhs@uwaterloo...</i>
<b>CS 686</b> 002 [LEC]	<b>Tue, Thu</b> <i>Sep 4 - Dec 3</i>	02:30PM - 03:50PM	RCH 112	H. Shi <i>fhs@uwaterloo...</i>

schedule data automatically refreshed daily

### Instructor & TA (Teaching Assistant) Information

Instructors:

Jesse Hoey: [jhoey@uwaterloo.ca](mailto:jhoey@uwaterloo.ca) Office Hours: W 2pm-3pm in DC2584

Freda Shi: [fhs@uwaterloo.ca](mailto:fhs@uwaterloo.ca) Office Hours: Friday 10am-11am in DC522

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Manveer Singh Tamber: [mtamber@uwaterloo.ca](mailto:mtamber@uwaterloo.ca)

Dake Zhang (2 units): [d346zhan@uwaterloo.ca](mailto:d346zhan@uwaterloo.ca)

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Dongfu Jiang: [d56jiang@uwaterloo.ca](mailto:d56jiang@uwaterloo.ca)

Hala Sheta: [hsheta@uwaterloo.ca](mailto:hsheta@uwaterloo.ca)

Office hours for all TAs are per assignment and will be announced as the course progresses

## Course Description

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### *Calendar Description for CS 486:*

Goals and methods of artificial intelligence. Methods of general problem solving. Knowledge representation and reasoning. Planning. Reasoning about uncertainty. Machine learning. Multi-agent systems. Natural language processing.

[View requirements for CS 486 \(https://acal.fast.uwaterloo.ca/course/1249/CS/486\)](https://acal.fast.uwaterloo.ca/course/1249/CS/486)

### *Calendar Description for CS 686:*

Goals and methods of artificial intelligence. Methods of general problem solving. Introduction to mathematical logic Mechanical theorem proving. Game playing. Natural language processing. Preference will be given to CS graduate students. All others require approval from the department. Department approval will be by Undergraduate Advisor.

[View requirements for CS 686 \(https://acal.fast.uwaterloo.ca/course/1249/CS/686\)](https://acal.fast.uwaterloo.ca/course/1249/CS/686)

## Learning Outcomes

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No explicit learning outcomes defined for this course.

## Tentative Course Schedule

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Week 1: What is AI?, Agents and Abstraction

Week 2: States and Searching

Week 3: Features and Constraints

Week 4: Propositions and Inference

Week 5: Reasoning under uncertainty

Week 6: Supervised Learning

Week 7: Planning under certainty

Week 8: Planning under uncertainty

Week 9: Machine Learning

Week 10: Neural Networks

Week 11: Deep Learning

Week 12 Other topics

## Texts / Materials

Title / Name	Notes / Comments	Required
David Poole and Alan Mackworth "Artificial Intelligence: foundations of computational agents". Cambridge University Press, 3rd edition, 2023.	Available free for download online at <a href="http://artint.info">artint.info</a>	Yes

## Student Assessment

Component	Value
4 Assignments	40% (CS486)/25% (CS686)
1 midterm	15% / 10%
final exam	45%/35%
Project	5% bonus (CS486)/30% required (CS686)

CS486 students must pass the final exam to pass the course

## Assignment Screening

No assignment screening will be used in this course.

## Administrative Policy

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### University Policy

**Academic integrity:** In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. [Check [the Office of Academic Integrity](https://uwaterloo.ca/academic-integrity/) (<https://uwaterloo.ca/academic-integrity/>) for more information.]

**Grievance:** A student who believes that a decision affecting some aspect of their university life has been unfair or unreasonable may have grounds for initiating a grievance. Read [Policy 70, Student Petitions and Grievances, Section 4](https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-70) (<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-70>). When in doubt, please be certain to contact the department's administrative assistant who will provide further assistance.

**Discipline:** A student is expected to know what constitutes academic integrity to avoid committing an academic offence, and to take responsibility for their actions. [Check [the Office of Academic Integrity](https://uwaterloo.ca/academic-integrity/) (<https://uwaterloo.ca/academic-integrity/>) for more information.] A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course instructor, academic advisor, or the undergraduate associate dean. For information on categories of offences and types of penalties, students should refer to [Policy 71, Student Discipline](https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-71) (<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-71>). For typical penalties, check [Guidelines for the Assessment of Penalties](https://uwaterloo.ca/secretariat/guidelines/guidelines-assessment-penalties) (<https://uwaterloo.ca/secretariat/guidelines/guidelines-assessment-penalties>).

**Appeals:** A decision made or penalty imposed under [Policy 70, Student Petitions and Grievances](https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-70) (<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-70>) (other than a petition) or [Policy 71, Student Discipline](https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-71) (<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-71>) may be appealed if there is a ground. A student who believes they have a ground for an appeal should refer to [Policy 72, Student Appeals](https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-72) (<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-72>).

**Note for students with disabilities:** [AccessAbility Services](https://uwaterloo.ca/accessability-services/) (<https://uwaterloo.ca/accessability-services/>), located in Needles Hall, Room 1401, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with AccessAbility Services at the beginning of each academic term.

**Turnitin.com:** Text matching software (Turnitin®) may be used to screen assignments in this course. Turnitin® is used to verify that all materials and sources in assignments are documented. Students' submissions are stored on a U.S. server, therefore students must be given an alternative (e.g., scaffolded assignment or annotated bibliography), if they are concerned about their privacy and/or security. Students will be given due notice, in the first week of the term and/or at the time assignment details are provided, about arrangements and alternatives for the use of Turnitin in this course.

It is the responsibility of the student to notify the instructor if they, in the first week of term or at the time assignment details are provided, wish to submit alternate assignment.

