

CS3346A / CS3121A / CS9146A Course Outline

Introduction to Artificial Intelligence - Fall 2026

1. Course Information

Course Information

Introduction to Artificial Intelligence (CS3346A / CS3121A / CS9146A), Fall 2026. Lectures are delivered in person on Tuesdays from 2:30-3:30 p.m. and Thursdays from 1:30-3:30 p.m. Lecture rooms will be posted on the official Western timetable and OWL Brightspace.

This course examines the computational foundations and sociotechnical design of intelligent agents. Topics include rational agents; cognitive off-loading and intelligence augmentation; uninformed, informed, constraint, adversarial, and stochastic search; Markov decision processes; reinforcement learning; evolutionary algorithms; probabilistic reasoning and Bayesian networks; supervised machine learning, optimization, neural networks, and decision trees; and modern agentic systems, tool use, and container orchestration with Kubernetes.

List of Prerequisites

Either (Computer Science 2210A/B and Computer Science 2211A/B) or (Software Engineering 2203A/B, Software Engineering 2205A/B, and Software Engineering 2250A/B); Computer Science 2209A/B; or registration in a BESC program in Computer Engineering, Mechatronic Systems Engineering, or Software Engineering.

Unless students have either the prerequisites for this course or written special permission from the Department of Computer Science to enroll in it, they may be removed and withdrawn from this course in accordance with university policy. This may be done after the add/drop deadline of the academic term, and the course will be marked as withdrawn (WDN) on their academic record. This decision may not be appealed.

2. Instructor Information

Instructional role	Email	Office	Phone	Office hours
Dr. Brent Davis Course Coordinator		TBD	TBD	TBD
Teaching Assistants Names TBD	TBD	TBD	TBD	Times TBD on Brightspace

Students must use their Western (@uwo.ca) email address when contacting the instructional team. Email is monitored Monday through Friday during normal business hours. A response will usually be provided within two business days. Questions requiring detailed discussion may be redirected to office hours.

3. Course Syllabus, Schedule, and Delivery Mode

Course-level Learning Outcomes

- Formulate an AI problem as an appropriate state-space, constraint, game, probabilistic, learning, or sequential-decision model.
- Select, apply, and compare search and optimization algorithms using correctness, completeness, optimality, computational cost, and representation assumptions.
- Compute and interpret probabilistic inference in joint distributions and Bayesian networks, and explain how independence assumptions affect tractability and validity.
- Implement and evaluate representative supervised-learning, reinforcement-learning, and evolutionary algorithms using appropriate baselines and metrics.
- Explain cognitive off-loading and intelligence augmentation, and design human-AI interactions that account for uncertainty, calibration, verification, and appropriate reliance.
- Describe the architecture of a tool-using AI agent and explain how containers and Kubernetes support deployment, scaling, isolation, monitoring, and recovery.
- Identify limitations and risks in AI systems, including data leakage, bias, robustness failures, privacy and security concerns, and misleading evaluation.
- Plan, document, and communicate an AI project through reproducible experiments and responsible teamwork; graduate students will additionally synthesize research evidence and defend design decisions orally.

Delivery Mode and Weekly Meetings

Lectures are in person. Weekly meeting times are Tuesday 2:30-3:30 p.m. and Thursday 1:30-3:30 p.m. [REDACTED]. Course materials, announcements, approved uses of generative AI, and any necessary schedule adjustments will be posted to OWL Brightspace.

Key Sessional Dates

Academic event	Date
Classes begin	September 9, 2026
National Day for Truth and Reconciliation	September 30, 2026 - no classes
Fall Reading Week	October 10-18, 2026
Classes end	December 9, 2026
Study Day	December 10, 2026
December examination period	December 11-22, 2026

Official date source: [Western Office of the Registrar - Important Dates and Deadlines](#)

Tentative Topic Schedule

Week	Dates	Topics	Course work
1	Sept. 9-11	Course orientation; rational agents; problem characteristics; limits of AI	Project framing begins
2	Sept. 14-18	Cognitive off-loading; intelligence augmentation; mixed-initiative systems; uninformed search	Human-AI design activity
3	Sept. 21-25	Uniform-cost, greedy, and A* search; heuristics; graph search	Assignment 1 work

Week	Dates	Topics	Course work
4	Sept. 28-Oct. 2	Constraint satisfaction; backtracking; propagation; local search and simulated annealing	Assignment 1 work
5	Oct. 5-9	Adversarial search; minimax; alpha-beta pruning; expectimax; utility	Assignment 1 due Oct. 9
-	Oct. 10-18	Fall Reading Week	No classes
6	Oct. 19-23	Markov decision processes; Bellman equations; value and policy iteration	Group project proposal due Oct. 19
7	Oct. 26-30	Reinforcement learning; temporal-difference learning; Q-learning; exploration	Assignment 2 work
8	Nov. 2-6	Evolutionary algorithms; representation; selection; variation; fitness; multi-objective search	Baseline and evaluation-plan checkpoint
9	Nov. 9-13	Probability; conditional independence; Bayesian-network representation	Assignment 2 due Nov. 16
10	Nov. 16-20	Bayesian-network inference; variable elimination; supervised learning and evaluation	Midpoint-evidence checkpoint
11	Nov. 23-27	Linear models; perceptron; logistic regression; optimization; neural networks	Assignment 3 work
12	Nov. 30-Dec. 4	Decision trees and ensembles; model evaluation, robustness, and responsible AI	Assignment 3 due Nov. 30
13	Dec. 7-9	Tool-using agents; orchestration; containers and Kubernetes; synthesis and project presentations	Final project due Dec. 7

The schedule is tentative. Topic pacing may change in response to student learning needs, while the published assessment deadlines will change only when permitted by University and Faculty policy.

4. Course Materials

Textbook and Learning-material Costs

Required purchases: None. The required learning-material cost for this course is approximately CAD \$0.

Recommended textbook: Stuart Russell and Peter Norvig, *Artificial Intelligence: A Modern Approach*, 3rd or 4th edition. Purchase is optional; earlier editions, used copies, and library access are acceptable. Optional purchase cost is approximately CAD \$80-\$250 depending on format and condition.

Course software: The course will use free or institutionally provided tools. No paid cloud account is required. When containers or Kubernetes are demonstrated, free local or course-provided alternatives will be used.

OWL Brightspace

All course material will be posted to [OWL Brightspace](#). Students are responsible for checking the site regularly for announcements, schedule updates, assessment instructions, and written confirmation of any activity for which generative AI is permitted.

For OWL support, consult the [OWL Brightspace Help page](#) or contact the Western Technology Services Helpdesk at [REDACTED] or [REDACTED].

Technical Requirements

- Reliable access to a computer and internet connection for Brightspace, programming work, and project collaboration.
- Ability to run course-provided Python notebooks or equivalent programming environments. Free campus alternatives will be identified where local installation is not practical.

- No production Kubernetes cluster is required. The orchestration module emphasizes concepts, architecture, reliability, and a small instructor-supported demonstration.

5. Methods of Evaluation

Grading Scheme

Assessment	CS3346A / CS3121A	CS9146A	Timing
Assignments 1-3	15% (5% each)	15% (5% each)	See deadline table
Group project proposal	5%	5%	October 19, 2026
Final project report and technical artifact	30%	25%	December 7, 2026
Group project presentation	Included in final-project expectations	5%	Final scheduled classes
Cumulative final examination	50%	50%	Registrar-scheduled exam period
Total	100%	100%	

Assessment Deadlines and Firm Cutoffs

All online submissions are due at 11:55 p.m. Eastern Time. Consistent with the Faculty of Science policy, each stated deadline includes one automatic 48-hour no-late-penalty period. The firm cutoff is exactly 48 hours after the stated deadline. No submission is accepted after the firm cutoff unless the essential group-project procedure below applies.

Assessment	Stated deadline - 11:55 p.m.	Firm cutoff - 11:55 p.m.
Assignment 1	Friday, October 9, 2026	Sunday, October 11, 2026
Group project proposal	Monday, October 19, 2026	Wednesday, October 21, 2026
Assignment 2	Monday, November 16, 2026	Wednesday, November 18, 2026
Assignment 3	Monday, November 30, 2026	Wednesday, December 2, 2026
Final project submission	Monday, December 7, 2026	Wednesday, December 9, 2026

Assignment Flexible Completion

All three assignments are expected and, when completed, each counts equally at 5%. The two-of-three threshold applies only when work is missed; it is not a best-of calculation, and no completed assignment is dropped. If one assignment is not submitted by its firm cutoff, its 5% weight is redistributed equally to the other two assignments. No Academic Consideration request is required.

If fewer than two assignments are submitted, missing assignments are recorded as zero when the assignment-component average is calculated. If the student's final-examination grade is higher than that assignment-component average, the 15% assignment-component weight will shift to the cumulative final examination. Students are encouraged to submit incomplete work before the cutoff because partial credit is preferable to a zero.

Group Project

The group-project component is worth 35% of the final course grade. Projects are completed in teams of two to three graduate students or two to four undergraduate students. Students whose research problems are suitable for

an AI or machine-learning solution are encouraged to propose a related project; other teams should consult the instructor about an appropriate problem. Detailed rubrics and submission instructions will be posted on Brightspace.

Project Milestones and Deliverables

The following milestones are required. Together they create an evidentiary trail of the team's problem formulation, technical decisions, experiments, and individual contributions:

- Group project proposal - due Monday, October 19, 2026, at 11:55 p.m.; worth 5 percentage points of the final course grade and included within the existing 35% project component. The proposal must define the problem, motivation, scope, team roles, intended data or inputs, a preliminary baseline, an initial evaluation plan, and material risks or resource constraints.
- Baseline and evaluation-plan checkpoint - a required formative or low-stakes submission. It must identify the comparison baseline, success and failure metrics, validation strategy, and planned analyses. The exact submission date will be posted on Brightspace.
- Midpoint-evidence checkpoint - a required formative or low-stakes submission showing an implemented pipeline or prototype, preliminary results, encountered failures, and the team's revised plan. The exact submission date will be posted on Brightspace.
- Final report and technical artifact - due Monday, December 7, 2026, at 11:55 p.m.; worth the remaining 30 percentage points for undergraduate students and 25 percentage points for graduate students. Graduate presentations account for the remaining 5 percentage points of the graduate project component.

The final report must include a reproducibility appendix documenting the computing environment and dependency versions, data provenance, random seeds where meaningful, metrics and evaluation procedures, known limitations, and division of labour.

Undergraduate teams submit the proposal, final report, technical artifact, and reproducibility appendix. Graduate teams submit the same materials and deliver a 10-minute presentation during the final course meetings, with the exact order posted on Brightspace. Graduate work must also include a short literature synthesis and at least one serious comparison baseline or ablation. Every graduate team member must answer at least one oral-defense question about the project's methods, evidence, limitations, or design tradeoffs.

Each student must demonstrate active participation by meeting all of the following requirements:

- Earn at least 40% on the team's confidential peer evaluation of the student's contribution.
- Make a documented contribution to every project milestone, as evidenced by version-control, issue-tracking, edit, experimental, or equivalent records.
- Attend at least half of the team's recorded project meetings and participate meaningfully in project decisions.

A student who does not satisfy these participation requirements has not completed the essential teamwork component. Their maximum final course grade will normally be capped at 45%, subject to approved Academic Consideration and the Essential Learning Requirements below.

Individual Project Check or Viva

If enrolment and scheduling permit, the instructor may conduct a brief individual project check or viva to verify authorship, technical understanding, and contribution. If used, its format, rubric, and relationship to the existing project grade will be posted on Brightspace before the group project proposal deadline and applied consistently to the affected cohort.

Final Examination

The final examination is cumulative and is scheduled by the Office of the Registrar. Students may bring one double-sided 8.5 x 11 inch reference sheet, written or printed, unless the final examination instructions state otherwise. The examination is closed book and completed individually. No electronic device is permitted unless

expressly authorized in advance. The examination will not assess memorization of kubectl commands or Kubernetes YAML syntax; it may assess architectural reasoning, failure handling, reliability, security boundaries, observability, and orchestration tradeoffs.

Use of Generative AI by Students

Generative AI tools are prohibited on the final examination and on every assignment, project task, or other assessed activity unless the instructor explicitly approves a specific example, question, activity, or project use. Every exception will be announced in class and confirmed in writing on Brightspace before the work is due; verbal-only permission is not valid. Permission for one example or task does not imply permission elsewhere.

When generative AI is permitted, students must follow the stated scope, verify all outputs, protect confidential and personal information, and submit any required AI-use statement. Unless alternative instructions are given, the statement must identify the tool, date, purpose, material influenced, and the student's verification process. AI output is not an authoritative source and does not replace citation of primary evidence. Use outside the approved scope will be treated as a scholastic offence.

Essential Learning Requirements

The final examination and group project assess essential course learning outcomes. To pass the course, undergraduate students must earn an overall grade of at least 50%, complete the group project, write the final examination, and earn at least 50% on each of the group project and final examination. Graduate students must earn an overall grade of at least 60%, submit the project report, deliver the presentation, write the final examination, and earn at least 50% on each of those components.

When a student has not demonstrated proficiency in an essential learning requirement and the shortfall results from granted Academic Consideration, the student will be withdrawn (WDN) from the course. The student may request relief from the Associate Dean (Academic) for reinstatement with an Incomplete (INC) standing. Where an INC is granted, the student's maximum course load may be reduced during the term in which the outstanding requirement is completed.

Information about Missed Coursework

Students must review the [University Policy on Academic Consideration - Undergraduate Students in First Entry Programs](#) and the Registrar's [Academic Considerations procedures](#). Requests must normally be made within 48 hours after the assessment date or deadline.

Assignment deadlines are handled through Flexible Completion and the automatic 48-hour period described above; students do not submit Academic Consideration requests for missed assignments.

Essential Group-project Accommodation

The group project and its sustained participation requirements are essential. A student whose extenuating circumstances prevent completion must submit an Academic Consideration request through the Student Absence Portal. This is the one course assessment designated as always requiring supporting documentation. If the request is granted, the instructor will define an equivalent individual or rescheduled completion path that assesses the same learning outcomes without increasing the burden on teammates.

Special Examination

Academic Consideration requests with supporting documentation are required for final examinations scheduled during official examination periods. If Academic Advising approves a Special Examination (SPC) and the final examination is the student's only outstanding component, an SPC will be assigned and scheduled under university policy.

If a student misses the SPC and Academic Consideration is approved, the default outcome is withdrawal without academic penalty. In extenuating circumstances, the student may request relief from the Associate Dean (Academic) for an opportunity to write the final examination the next time the course is offered. If Academic Consideration is not approved or not requested, the SPC grade is zero.

6. Additional Statements

6.1 Religious Accommodation

When a recognized religious holiday requires absence or prohibits an activity needed to complete an academic requirement, students are entitled to accommodation in accordance with Western's [Accommodation for Religious Holidays policy](#). Requests should be submitted through the Student Absence Portal.

For a test, notice is required no later than one week before the scheduled sitting; for a final examination, notice is required no later than two weeks before the examination. Students are responsible for determining what was covered in any missed class and keeping up with the course.

6.2 Academic Accommodation Policies

Students with disabilities are encouraged to contact [Accessible Education](#), which provides recommendations based on appropriate documentation and assessment. Course materials can be provided in alternate formats where required.

6.3 General Academic Policies

Registrar Services: [Western Office of the Registrar website](#)

The centrally administered @uwo.ca account is each student's official university email address. Students are responsible for attending to messages sent to that account in a timely manner.

Requests for Relief (formerly known as appeals)

- [Policy on Request for Relief from Academic Decision](#)
- [Undergraduate Procedures](#)
- [Graduate Procedures](#)

6.4 Scholastic Offences

Students are responsible for reviewing the [Policy on Scholastic Offences](#) and the applicable undergraduate or graduate procedures.

Unauthorized Electronic Devices during Assessments

In Faculty of Science courses, possession of an unauthorized electronic device during an in-person assessment is strictly prohibited. This includes mobile phones, smart watches, smart glasses, hidden cameras, wireless earbuds, and similar devices. Unless explicitly authorized in advance, a device at a student's desk, on their person, or within reach will be treated as a scholastic offence even if it is not in use. Effective September 2026, the typical penalty is a failing grade in the course and a 12-month prohibition on retaking the course.

Generative AI and Code-similarity Review

The assessment-specific generative-AI rules in Section 5 apply. Code, reports, and other submitted work may be reviewed using similarity-detection methods appropriate to Computer Science. Students remain responsible for authorship, attribution, and compliance with all assignment instructions.

6.5 Support Services

- [Science and Basic Medical Sciences Academic Advising](#): course registration, academic considerations, requests for relief, and exam conflicts.
- [Mental Health at Western](#): mental-health and wellness support.
- [Gender-based and Sexual Violence Support](#): confidential support and emergency contacts.
- [Learning Development and Success](#): learning skills, time management, studying, and individual support.
- [University Students' Council](#): student-run services and supports.
- [Science Students' Council](#): student-run services for Science students.

Students requiring course material in an alternate format or another arrangement that would improve accessibility are encouraged to contact the instructor and Accessible Education.