

## **COMP 3106A – Fall 2021**

Introduction to Artificial Intelligence

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### **Course Information**

Class times: Mondays & Wednesdays, 2:30pm – 4:00pm

Classroom: Online via Zoom (link on Brightspace)

Course Website: <https://brightspace.carleton.ca/d2l/home/61838>

### **Instructor**

Matthew Holden ([matthew.holden@carleton.ca](mailto:matthew.holden@carleton.ca))

Office Hours Time: Mondays & Wednesdays immediately following class (or by appointment)

Office Hours Location: Online via Zoom (link on Brightspace)

### **Teaching Assistants**

TBD

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### **Course Calendar Description**

Several areas in knowledge-based systems are covered, including recent approaches to machine learning and data mining, inference methods, knowledge-based and fuzzy systems, heuristic search, and natural language processing.

### **Topics Covered**

- Agents and agent-based systems
- Heuristic search
- Bayes theorem and Bayesian inference
- Rule-based systems
- Reinforcement learning
- Artificial Life
- Natural language processing
- Artificial neural networks

### **Prerequisites**

Prerequisite(s): (COMP 2402 or SYSC 2100) and (COMP 2404 or SYSC 3010 or SYSC 3110) and COMP 2804.

### **Course Format**

This course will use a blended online format for delivery. Course content will be delivered primarily through pre-recorded videos. Scheduled class times may be used for supplementary materials and assessments. It is expected that students have watched the video(s) prior to the corresponding class. Live classes will be accessible through Brightspace and will be recorded.

## Communication

All announcements for the course will be made through Brightspace. You are responsible for regularly monitoring these announcements. Live classes may also be used to elaborate on announcements.

Students are requested to ask questions or have discussions about the course or course material during the live classes, during instructor or TA office hours, or on Brightspace. This way, other students may benefit from the discussion. You may not, however, post solutions to the assessments during the live classes or Brightspace. Questions or discussion about your individual situation may be asked by email.

## Textbook(s) and Other Resources

Recommended textbook:

Stuart Russell & Peter Norvig. Artificial Intelligence: A Modern Approach, 4th Edition. Pearson (2020). ISBN-13: 9780134610993.

The course may also use supplementary online resources available publicly or through the Carleton Library. Information on accessing these resources will be provided in class or posted on Brightspace.

This course will use Poll Everywhere, Carleton University's tool for in-class polling. See here for details: <https://carleton.ca/edc/pollev/>.

## Assessment Scheme

Students will be evaluated in this course according to the following scheme. Details, dates, and submission procedures for each component will be posted on Brightspace.

<i>Component</i>	<i>Weight</i>
Assignments (3) & Quizzes (3)	65%
Project	35%

### *Assignments & Quizzes*

There will be three assignments. Each assignment will contain an implementation and an associated technical document. Implementations must be written in Python 3. Assignments may be completed individually or in small groups of up to three students.

There will be three quizzes. Each quiz will be 80 minutes in length and take place during regularly scheduled class time. Quizzes are open-book, and you may consult your notes and the textbook during quizzes. You may not consult other people during quizzes. Quizzes must be completed individually.

Each assignment and each quiz will be worth 13% of the total grade. The lowest assignment grade or the lowest quiz grade (not both) will be excluded from the total grade.

### *Project*

Students will complete a project that solves a problem using techniques from artificial intelligence. The project will comprise: (1) a project proposal outlining the problem, (2) a project report detailing the work completed, and (3) a live demonstration of the work. Projects may be completed individually or in small groups of up to three students.

### **Important Considerations**

If you are unsure of the expectations regarding academic integrity (e.g. how to use and cite references, how much collaboration with classmates is appropriate), ask your instructor beforehand. Sharing assignment or quiz specifications or posting them online (to sites like Chegg, CourseHero, OneClass, etc.) is considered academic misconduct. You are never permitted to post, share, or upload course materials without explicit permission from your instructor. Academic integrity offences are reported to the office of the Dean of Science. Penalties for such offences can be found on the ODS webpage: <https://science.carleton.ca/academic-integrity/>.

For each assignment and the project, you will be given a 48-hour grace period. Assignments or projects submitted within this 48-hour grace period will be accepted without penalty. Late submissions beyond the grace period will be penalized at 20% per day late beyond the grace period (including weekend days). This will be strictly enforced. “Last-minute” requests for extensions or exceptions to these rules will not be granted (except for accommodations provided by university policy). Technical problems do not exempt you from this requirement. Consequently, you are advised to: (1) periodically upload your progress (e.g. upload your progress at least daily) and (2) attempt to submit your final submission well in advance of the due date and time.

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### **Undergraduate Academic Advisor**

The Undergraduate Advisor for the School of Computer Science is available in Room 5302C HP; by telephone at 520-2600, ext. 4364; or by email at [undergraduate\\_advisor@scs.carleton.ca](mailto:undergraduate_advisor@scs.carleton.ca). The undergraduate advisor can assist with information about prerequisites and preclusions, course substitutions/equivalencies, understanding your academic audit and the remaining requirements for graduation. The undergraduate advisor will also refer students to appropriate resources such as the Science Student Success Centre, Learning Support Services and Writing Tutorial Services.

### **SCS Computer Laboratory**

SCS students can access one of the designated labs for your course. The lab schedule can be found at: <https://carleton.ca/scs/tech-support/computer-laboratories/>. All SCS computer lab and technical support information can be found at: <https://carleton.ca/scs/technical-support/>. Technical support is available in room HP5161 Monday to Friday from 9:00 until 17:00 or by emailing [support@scs.carleton.ca](mailto:support@scs.carleton.ca).

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## University Policies

For information about Carleton's academic year, including registration and withdrawal dates, see [Carleton's Academic Calendar](#).

**Pregnancy Obligation.** Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit [Equity Services](#).

**Religious Obligation.** Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit [Equity Services](#).

**Academic Accommodations for Students with Disabilities** If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or [pmc@carleton.ca](mailto:pmc@carleton.ca) for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. For more details, visit the [Paul Menton Centre](#) website.

**Survivors of Sexual Violence.** As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: [carleton.ca/sexual-violence-support](http://carleton.ca/sexual-violence-support)

**Accommodation for Student Activities.** Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, see [the policy](#).

**Student Academic Integrity Policy.** Every student should be familiar with the Carleton University student academic integrity policy. A student found in violation of academic integrity standards may be awarded penalties which range from a reprimand to receiving a grade of *F* in the course or even being expelled from the program or University. Examples of punishable offences include: plagiarism and unauthorized co-operation or collaboration. Information on this policy may be found [here](#).

**Plagiarism.** As defined by Senate, "plagiarism is presenting, whether intentional or not, the ideas, expression of ideas or work of others as one's own". Such reported offences will be reviewed by the office of the Dean of Science.

**Unauthorized Co-operation or Collaboration.** Senate policy states that "to ensure fairness and equity in assessment of term work, students shall not co-operate or collaborate in the completion of an academic assignment, in whole or in part, when the instructor has indicated that the assignment is to be completed on an individual basis". Please refer to the course outline statement or the instructor concerning this issue.