

**FYSM 1607-C Thinking and Knowing**

**Prerequisites:** normally restricted to students entering the first year of a B.A., B.Cog.Sc., B.Co.M.S, B.Econ. or B.G.In.S. program.

**Lecture Time:** 10:05 a.m. to 11:25 a.m. on Tuesdays and Thursdays

**Lecture Room (Fall Term):** Canal Building 2400

**Lecture Room (Winter Term):** Patterson Hall 115

**Course Discord Server:** <https://discord.gg/umRjSAZTnz>

**Course Home Page:** <https://brightspace.carleton.ca/d2l/home/144993>

**Instructor:** Mary Alex Kelly, Ph.D. (she/they; [alex.kelly@carleton.ca](mailto:alex.kelly@carleton.ca))

**Prof. Kelly's Office:** 2209 Dunton Tower; <https://carleton-ca.zoom.us/j/97622879308>

**Prof. Kelly's Office Hours:** By appointment.

**Teaching Assistant:** Taeko Bourque (she/her; [TaeBourque@cmail.carleton.ca](mailto:TaeBourque@cmail.carleton.ca))

**T.A. Office Hours:** By appointment.

- I. **Official Course description:** Interdisciplinary examination of discoveries in linguistics, psychology, philosophy, and computer science concerning the question “What is cognition”? Specific issues may include the mind-brain controversy, the role of language in thought, and artificial versus natural intelligence.

- II. **Course Theme:**

FYSM 1607 is a course intended for researchers in cognitive science to bring their passions to the classroom. As a researcher in artificial intelligence and computational models of the mind, and as a queer/trans researcher, I intend to centre the course around two themes I am passionate about:

- a. **How can we understanding the mind/brain as a computer?**
- b. **How is cognitive science biased by who does the science?**

- III. **By the end, you will be able to:**

- a. Author an academic paper
- b. Critique scientific research
- c. Question both pop cultural and dodgy scientific claims about the mind
- d. Interpret scientific papers
- e. Discuss major debates in cognitive science

- IV. **Email:** I will try to respond to e-mails, and the TA will respond to messages over Discord, within 48 hours (excluding weekends and holidays).

V. **Textbook:** No textbook is required for the course. Suggested textbooks are available on Brightspace. Readings, slides, and recorded lectures are provided on Brightspace.

VI. **Evaluation:** All course materials will be available through Brightspace and all assignments and quizzes can be submitted through the Brightspace course page.

| <i>Evaluation</i>   | <i>Value</i> | <i>Date</i>                          |
|---------------------|--------------|--------------------------------------|
| End Term Quizzes    | 10% (5%/ea.) | Dec. 9, April 12                     |
| Reflections (x4)    | 20% (5%/ea.) | Sept. 29, Nov. 10, Jan. 17, March 23 |
| Article Summary     | 10%          | Oct. 21                              |
| Thought Experiment  | 5%           | Dec. 2                               |
| Book review         | 10%          | Dec. 8                               |
| Blog Post           | 10%          | Jan. 24 (draft); Jan. 31 (final)     |
| Final paper outline | 5%           | Feb. 16                              |
| In The Media        | 5%           | March 2                              |
| Final paper draft   | 10%          | March 14                             |
| Final paper         | 15%          | April 11                             |

VII. **Grading System:**

Letter grades assigned in this course have the following percentage equivalents:

|             |            |            |  |
|-------------|------------|------------|--|
| A+ = 90-100 | B = 73-76  | C- = 60-62 | F Failure. No academic credit.         |
| A = 85-89   | B- = 70-72 | D+ = 57-59 | ABS Absent from the final examination. |
| A- = 80-84  | C+ = 67-69 | D = 53-56  | DEF Official deferral.                 |
| B+ = 77-79  | C = 63-66  | D- = 50-52 | FND Failed, no deferral.               |

Standing in a course is determined by the course instructor subject to the approval of the Faculty Dean. This means that grades submitted by the instructor may be subject to revision. No grades are final until they have been approved by the Dean.

VIII. **Lectures:** In the interest of accommodating sick, immunocompromised students, or COVID-cautious students, all lectures will be recorded and made available on Brightspace. In-person attendance is neither taken nor required.

IX. **Writing Assignments (40%)**

There are five writing assignments: an article summary (10%), an explanation of a thought experiment (5%), a book review (10%), cognitive science in the media (5%), and a blog post (10%). Rubrics and details for each will be on Brightspace.

**All assignments (including reflections and the final paper) are due by 11:59pm.**

**Late policy:** Assignments will be accepted late if an extension has been requested **before** the deadline for submitting the assignment. If an extension has been granted, the assignment must be handed in before the assignments are graded and returned, otherwise the assignment will be graded as a zero.

**Collaboration policy:** You may collaborate on the assignments with **one other person**—if you do, you must indicate the name of the person you worked with on the assignment (and in that case, your assignments can be the same). Group collaboration with more than 2 people is not permitted, except for the book review.

**Citation:** If you use **any** external sources, like papers, dictionaries, Wikipedia, or Stack Exchange, ***cite these sources***. If unsure, check with us. **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.**

X. **Reflections: (20%)**

Four times over the year, you will be asked to do reflective writing in response to the prompt: “What is something you’ve changed your mind about?” (max. 500 words).

XI. **Quizzes: (10%)**

There will be a quiz at the end of the Fall Term and a quiz at the end of the Winter Term. Each quiz will be worth 5% and will be on the lecture content for that semester. Quizzes will be available online through Brightspace over a period of several days and will be open book with no time limit..

XII. **Final Paper Outline (5%)**

You are required to write a final paper for this course. In order to assist with the process, you will work on an outline and receive feedback on it.

**XIII. Final Paper Draft (10%)**

After receiving feedback on your outline, you will write a draft of your final paper in order to assist with your final version. Details will be provided in class and online.

**XIV. Final Paper (15%)**

Papers must be submitted via Brightspace on or before the due date. Late submissions will not be accepted for this evaluation. Papers should be roughly 5-7 pages, double-spaced, Times New Roman 12 point or a similar font (1250-1750 words). Further details will be provided in class and on Brightspace.

**XV. Copyright:** Classroom teaching and learning activities, including lectures, discussions, presentations, etc., by both instructors and students, are copyright protected and remain the intellectual property of their respective author(s). All course materials, including presentations, outlines, and other materials, are also protected by copyright and remain the intellectual property of their respective author(s).

Students registered in the course may take notes and make copies of course materials for their own educational use only. Students are not permitted to reproduce or distribute lecture notes and course materials publicly for commercial or non-commercial purposes without express written consent from the copyright holder(s).

**XVI. Addressing Human Rights Concerns:** The University and all members of the University community share responsibility for ensuring that the University's educational, work and living environments are free from discrimination and harassment. Should you have concerns about harassment or discrimination relating to your age, ancestry, citizenship, colour, creed (religion), disability, ethnic origin, family status, gender expression, gender identity, marital status, place of origin, race, sex (including pregnancy), or sexual orientation, please contact the Department of Equity and Inclusive Communities at [equity@carleton.ca](mailto:equity@carleton.ca).

**XVII. Course Schedule** *This schedule is tentative and is subject to change.*

|            |   |
|------------|---|
| Sept. 8    | Introduction and AI Art   |
| Sept. 13   | Cognition & Computation   |
| Sept. 15   | <b>Online:</b> Skills to Survive University (Taeko Bourque)                   |
| Sept. 20   | Turing Machines and the Turing Test   |
| Sept. 22   | Computations in the Brain   |
| Sept. 27   | Digitizing Neurons  |
| Sept. 29   | AI Ethics (Guest: Maria Vorobeva) <b>Reflection 1 due</b>                     |
| Oct. 4     | Visit from FASS (Guest: FASS); Neural Networks                                |
| Oct. 6     | <b>Online:</b> Personal Identity (Taeko Bourque)                              |
| Oct. 11    | Neural Networks   |
| Oct. 13    | <b>Online:</b> Dyslexia, ADHD, and Neurodiversity (Taeko Bourque)             |
| Oct. 18    | IQ isn't real (Guest: Robert L. West)   |
| Oct. 20    | Plant Intelligence (Guest: David Pierre-Lebovitz); <b>Article summary due</b> |
| Oct. 24-28 | <b>Fall break. No lectures.</b>   |
| Nov. 1     | IQ and Race   |
| Nov. 3     | Gender  |
| Nov. 8     | Functionalism   |
| Nov. 10    | Library research (Guest: Library Services), <b>Reflection 2 due</b>           |
| Nov. 15    | Academic writing (Guest: Academic Support); <b>Last day for withdrawal</b>    |
| Nov. 17    | Thought Experiments   |
| Nov. 22    | Reasoning   |
| Nov. 24    | Child development (Guest: Rebecca Merkley)                                    |
| Nov. 29    | Cognitive Bias (Guest: Deirdre Kelly)   |
| Dec. 1     | <b>Online:</b> Writing Workshop (Taeko Bourque)                               |
| Dec. 6     | Reasoning   |
| Dec. 8     | <b>No Lecture; End of Term Quiz; Book review due</b>                          |
| Dec. 10-22 | <b>Exam Period; No exam scheduled</b>   |

|             |   |
|-------------|---|
| Jan. 10     | Decision-making   |
| Jan. 12     | Argument Complexity   |
| Jan. 17     | Career Services resumé workshop; <b>Reflection 3 due</b>    |
| Jan. 19     | <b>Online:</b> Getting involved in research (Taeko Bourque) |
| Jan. 24     | Moral reasoning; <b>Blog Post draft due</b>                 |
| Jan. 26     | Moral reasoning   |
| Jan. 31     | Memory; <b>Blog Post due</b>                                |
| Feb. 2      | Memory  |
| Feb. 7      | Extended Mind   |
| Feb. 9      | <b>Online:</b> Academic writing (Taeko Bourque)             |
| Feb. 14     | Embodied Cognition  |
| Feb. 16     | Consciousness; <b>Final paper outline due</b>               |
| Feb. 20-24  | <b>Winter break. No lectures.</b>                           |
| Feb. 28     | Consciousness   |
| March 2     | AI Consciousness; <b>In the Media due</b>                   |
| March 7     | Creativity  |
| March 9     | Artificial General Intelligence                             |
| March 15    | <b>Last day for academic withdrawal</b>                     |
| March 14    | Evolution and the Mind; <b>Final paper draft due</b>        |
| March 16    | Evolution and the Mind                                      |
| March 21    | Animal Minds  |
| March 23    | Animal Minds; <b>Reflection 4 due</b>                       |
| March 28    | Perception  |
| March 30    | Perception  |
| April 4     | Attention   |
| April 6     | Attention   |
| April 11    | <b>No Lecture; End of Term Quiz; Final paper due</b>        |
| April 15-27 | <b>Exam Period; No exam scheduled</b>                       |

## Plagiarism

The University Academic Integrity Policy defines plagiarism as “*presenting, whether intentionally or not, the ideas, expression of ideas or work of others as one’s own.*” This includes reproducing or paraphrasing portions of someone else’s published or unpublished material, regardless of the source, and presenting these as one’s own without proper citation or reference to the original source. Examples of sources from which the ideas, expressions of ideas or works of others may be drawn from include but are not limited to: books, articles, papers, literary compositions and phrases, performance compositions, chemical compounds, artworks, laboratory reports, research results, calculations and the results of calculations, diagrams, constructions, computer reports, computer code/software, material on the internet and/or conversations.

Examples of plagiarism include, but are not limited to:

- any submission prepared in whole or in part, by someone else;
- using ideas or direct, verbatim quotations, paraphrased material, algorithms, formulae, scientific or mathematical concepts, or ideas without appropriate acknowledgment in any academic assignment;
- using another’s data or research findings without appropriate acknowledgement;
- submitting a computer program developed in whole or in part by someone else, with or without modifications, as one’s own; and
- failing to acknowledge sources through the use of proper citations when using another’s work and/or failing to use quotations marks.

Plagiarism is a serious offence that cannot be resolved directly by the course’s instructor. The Associate Dean of the Faculty conducts a rigorous investigation, including an interview with the student, when an instructor suspects a piece of work has been plagiarized. Penalties are not trivial. They can include a final grade of “F” for the course.

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## Statement on Student Mental Health

As a University student you may experience a range of mental health challenges that significantly impact your academic success and overall well-being. If you need help, please speak to someone. There are numerous resources available both on- and off-campus to support you. Here is a list that may be helpful:

**Emergency Resources (on and off campus):** <https://carleton.ca/health/emergencies-and-crisis/emergency-numbers/>

### **Carleton Resources:**

- Mental Health and Wellbeing: <https://carleton.ca/wellness/>
- Health & Counselling Services: <https://carleton.ca/health/>
- Paul Menton Centre: <https://carleton.ca/pmc/>
- Academic Advising Centre (AAC): <https://carleton.ca/academicadvising/>
- Centre for Student Academic Support (CSAS): <https://carleton.ca/csas/>
- Equity & Inclusivity Communities: <https://carleton.ca/equity/>

### **Off Campus Resources:**

- Distress Centre of Ottawa and Region: (613) 238-3311 or TEXT: 343-306-5550, <https://www.dcottawa.on.ca/>
- Mental Health Crisis Service: (613) 722-6914, 1-866-996-0991, <http://www.crisisline.ca/>
- Empower Me: 1-844-741-6389, <https://students.carleton.ca/services/empower-me-counselling-services/>
- Good2Talk: 1-866-925-5454, <https://good2talk.ca/>
- The Walk-In Counselling Clinic: <https://walkincounselling.com>

### **Statement on Pandemic Measures**

It is important to remember that COVID is still present in Ottawa. The situation can change at any time and the risks of new variants and outbreaks are very real. There are [a number of actions you can take](#) to lower your risk and the risk you pose to those around you including being vaccinated, wearing a mask, staying home when you're sick, washing your hands and maintaining proper respiratory and cough etiquette.

**Feeling sick?** Remaining vigilant and not attending work or school when sick or with symptoms is critically important. If you feel ill or exhibit COVID-19 symptoms do not come to class or campus. If you feel ill or exhibit symptoms while on campus or in class, please leave campus immediately. In all situations, you should follow Carleton's [symptom reporting protocols](#).

**Masks:** Masks are no longer mandatory in university buildings and facilities. However, we continue to recommend masking when indoors, particularly if physical distancing cannot be maintained. We are aware that personal preferences regarding optional mask use will vary greatly, and we ask that we all show consideration and care for each other during this transition.

**Vaccines:** While proof of vaccination is no longer required to access campus or participate in in-person Carleton activities, it may become necessary for the University to bring back proof of vaccination requirements on short notice if the situation and public health advice changes. Students are strongly encouraged to get a full course of vaccination, including booster doses as soon as they are eligible and submit their booster dose information in [cuScreen](#) as soon as possible. Please note that Carleton cannot guarantee that it will be able to offer virtual or hybrid learning options for those who are unable to attend the campus.

All members of the Carleton community are required to follow requirements and guidelines regarding health and safety which may change from time to time. For the most recent

information about Carleton's COVID-19 response and health and safety requirements please see the [University's COVID-19 website](#) and review the [Frequently Asked Questions \(FAQs\)](#). Should you have additional questions after reviewing, please contact [covidinfo@carleton.ca](mailto:covidinfo@carleton.ca).

## **Requests for Academic Accommodations**

### **ACADEMIC ACCOMMODATION**

You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

**Pregnancy obligation:** write to me 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 accommodation regarding a formally-scheduled final exam, you must complete the Pregnancy Accommodation Form ([click here](#)).

**Religious obligation:** write to me 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 [click here](#).

**Academic Accommodations for Students with Disabilities:** The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or [pmc@carleton.ca](mailto:pmc@carleton.ca) for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and 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 me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (if applicable).

### **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 where 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: <https://carleton.ca/equity/sexual-assault-support-services>

### **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 will be provided to students who compete or perform at the national or international level. Write to me 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. <https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf>

## **Important Information**

- The last day for academic withdrawal from winter and fall/winter courses is March 15, 2023
- Students must always retain a hard copy of all work that is submitted.
- All final grades are subject to the Dean's approval.
- For us to respond to your emails, we need to see your full name, CU ID, and the email must be written from your valid CARLETON address. Therefore, in order to respond to your inquiries, please send all email from your Carleton CMail account. If you do not have or have yet to activate this account, you may wish to do so by visiting <http://carleton.ca/ccs/students/>

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For a list of dates and deadlines, including holidays and exam dates, please visit:

<https://calendar.carleton.ca/academicyear/>