Introduction to Cognitive Science
COGST 1101/CS 1710/LING 1170/PHIL 1910/PSYCH 1102
Spring 2020, Syllabus
Uris Hall, Room G01 (Uris Auditorium)
Tuesdays and Thursdays, 10:10-11:25

Instructor Information

Instructor: Professor Khena M. Swallow
Office: 240 Uris Hall
Office Phone: (607) 255-4387
Office Hours: Thurs, 11:45-1:45, and by appointment
Email: KMS424@cornell.edu

Teaching Assistants

	Office	Office Hours
Andrea Hummel (**WIM Only**)	B07 Morrill Hall	Wed., 1pm-2:30pm
Francesco Burroni	B11 Morrill Hall	Wed., 9am-11am
Tayler Eaton	201 Uris Hall	Tue., 1pm-3pm
Felicity Frinsel	B59 Uris Hall	Fri., 10:00am - 12:00pm
Andres Montealegre	201 Uris Hall	Thurs., 1:45pm - 3:45pm
Roy Moyal	B62 Uris Hall	Tue., 11:45am - 1:45pm
Alyssa Varhol	201 Uris Hall	Tue. & Thurs., 11:30am – 12:30pm

Course Information

Course Email: cogst1101-sp2020@cornell.edu
Course Website: canvas.cornell.edu *

Please use the course email to get the fastest response to your questions – it will be monitored by all the TAs and the instructor. You can expect a response by the end of the next business day.

* We are moving this course to Canvas this semester. Though we will try to make this transition as smooth as possible there could be some issues. Please let us know if you notice something is missing or isn't working as it should.

This Course and its Goals

Cognitive Science investigates the mechanisms involved in perceiving, thinking, and acting. Though young as a science, the questions that cognitive science seeks to answer are old, familiar, and remarkably difficult to delineate. It is for these reasons that cognitive science is a truly interdisciplinary endeavor. It draws on and integrates five disciplines: *Philosophy*, which provides insight into the nature of the questions themselves; *Psychology* and *Linguistics*, which investigate the functions of the mind; *Neuroscience*, which describes the physical bases of the mind; and *Computer Science*, which explores the ways that minds can be constructed. This course will introduce you to the insights that each discipline offers to understanding the mind, what current scientific approaches to the mind can tell us about what it does and how it does it, and emerging issues and approaches to the study of the mind and its physical and conceptual boundaries.

Goals. The primary goal of this course is for you to think about and understand the mind from a scientific perspective. By the end of this course you should be able to (1) identify the problems that cognitive science seeks to address, (2) describe the major empirical and theoretical insights cognitive science offers into mental functions (perception, action, attention, memory, learning, problem solving, comprehension, language, etc.), and (3) describe how philosophy, psychology, linguistics, neuroscience, and computer science contribute to and broaden our understanding of cognitive science. A final, equally

important goal is for you to (4) be able to describe the empirical approaches cognitive scientists use to discover the machinery of the mind. Thus, this course's emphasis is not just on *what* we know (and don't know) about the mind, but also on *how* cognitive scientists study it.

Writing in the Majors (WIM)

This course has an optional WIM section (1 additional credit) that will be led by Andrea Hummel. The WIM section is a unique opportunity for students to learn about cognitive science in a seminar-like setting. Students enrolled in this section will more deeply explore select topics from this course through additional readings, writing assignments, and weekly discussions (discussion will be held during an extra 50-minute long weekly meeting, timing TBD). The grade from these assignments replaces one of the exams in the main course and the homework (or 50% of the final grade). Because one of the exams is dropped, students in the WIM section may take only one exam (though they can take all three if they choose). The syllabus for the WIM section is available on the course website. Students who are interested in enrolling in the WIM section should contact Andrea Hummel (ARH234@cornell.edu).

Lectures and Readings

This course will rely heavily on Bermúdez (2014). *Cognitive Science: An Introduction to the Science of the Mind*, 2nd Ed. from Cambridge University Press. Other readings will be posted on the course web page. The text is available at the library and the bookstore, as an eBook, and from online retailers. The Bermúdez (2014) eBook can be ordered at this website: http://www.cambridge.org/nl/academic/subjects/psychology/cognition/cognitive-science-introduction-science-mind-2nd-edition?format=AR.

The lectures will cover some of the material in the assigned readings. They will also include new material, demonstrations, and opportunities for you to think through some of the issues that are central to cognitive science. Exams will cover the readings and the lectures. You are encouraged to complete all of the assigned readings and to attend each class meeting (see Participation and Quizzes section).

A clicker is required for participation in this course. You can purchase one from the bookstore or use one that you already have. You should register your clicker. Instructions for this are available in the course website.

Office Hours and Contacting the Instructor and TAs

We would love to talk to you during office hours! These are a great time to discuss course material and get help with questions, particularly those that require an in-depth response. If you are unable to come to office hours please let us know. To facilitate better interactions, you will need to sign up for a particular TA on Canvas. You should choose a TA whose office hours are compatible with your schedule.

Please use the course email address for faster responses. You can expect a response by the end of the next business day.

Course Requirements

Your final grade will be determined by your performance on three exams (2 preliminary exams and a final), class participation & quizzes, and homework assignments. Extra credit opportunities will be available throughout the semester. *You are expected to check your grades regularly to ensure your work has been received and grades are accurately recorded.*

Exams (70%). There will be three exams for this course (2 preliminary and 1 cumulative final). Your two highest exam scores will be used to determine your final grade. The lowest exam score won't count. If you miss one of the preliminary exams, you can take the final exam as a make-up exam. Because of this, **there will be no other makeup exams except in the case of an unusual need (e.g., a documented illness)**. If you are completely happy with your scores on the two preliminary exams you do not need to take the final. I strongly encourage you to take the first exam. Exams will be primarily multiple choice, but will include short answer and short essay questions. Exams will cover material from lectures, readings, assignments, and videos shown in class. Preliminary exams will take place during regular class

times. Exams will be available for you to review during office hours for one week after the grades are posted (you can set up an appointment to review an exam later as well, we just need some notice if it's been more than a week since the grades were posted). *Any requests for a regrade must be received within two weeks of the date that exam grades were posted*. A regrade request will cause all answers to be regraded, and could result in a lower grade.

Participation and Quizzes (15%). One of the many things cognitive science has taught us is that learning is enhanced by both engagement and testing. In fact, if you want to remember something you just learned, testing your memory is more effective than studying it again. So, for each class meeting you will earn points based on your responses to clicker questions and in-class activities using the clicker. Responding to a question will earn you one point and clicker questions can occur at any time during the 75 minute class. *In-class questions will not be graded*.

Once a week there will also be a brief (< 5 minutes), low-stakes online quiz that asks you to answer questions and consider issues that were brought up in class or in the readings. Sometimes these will be multiple choice questions or fill in the blank questions, and sometimes they will be questions requiring a few sentences to answer. Quizzes will be on the assigned reading or on material from a lecture.

Points for the first class meeting will be earned by signing up for a TA on Canvas and introducing yourself your TA or to Prof. Swallow during office hours or <u>after</u> class within the first three weeks of the semester (*by the end of the day, February 11th*).

At the end of the semester, your participation and quiz grade will be based on the total points you earned divided by 90% of your total possible points. Please note that missing several classes is unlikely to hurt your grade *as long as you learn the material* - 10% of the points won't count and online quizzes will be available to all students, whether they make it to class or not. Students needing accommodations for a missed class should contact the instructor and their TA as early as possible and before the missed class.

Homework Assignments (15%). There will be three homework assignments, one for each major section of the course. The assignments will be announced on the course website and during class. You will have 1 week to complete them. Final grades on assignments will be reduced by 10% for each day they are late, including weekends. *Important: You are responsible for ensuring that your homework was successfully submitted -- <u>check at least twice to make sure your homework was received</u>.*

Turnitin Notice. Students agree that by taking this course all required papers might be subject to submission for textual similarity review to Turnitin.com for the detection of plagiarism. All submitted papers from this year and from previous years will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. Use of Turnitin.com service is subject to the Usage Policy posted on the Turnitin.com site.

Laptops. Laptops, cell phones, and other electronic devices are a distraction for you, me, and other students. Please be considerate of those around you and keep your use of these to a minimum. The first 7 rows of seats is a laptop free zone for students who do not wish to be distracted by laptops.

Extra Credit. There will be several opportunities for extra credit. Extra credit can add as much as (and no more than) 5% to your final grade. For example, if at the end of the semester you have earned a final grade of 90% and you complete the maximum amount of extra credit (5%) then you will receive an A in the course (95%). You can earn extra credit (5% maximum) with any combination of the following options (also listed on the course website).

<u>Option 1: Experiment Participation</u>. You can earn SONA credits by volunteering to participate in laboratory experiments through the Psychology Department's SONA website (cornellpsych.sona-systems.com). For every half-hour you spend in an experiment you will earn 1 SONA credit. Each credit adds 0.5% to your final grade. SONA credit can be earned up to the day of the final exam. However, you should start early – students often have difficulty finding open appointments at the end of the semester. If you choose to earn extra credit through SONA, please note that you will only receive credit for studies that have been approved for this course (generally only in-lab studies). The

study's description on SONA will have a list of the classes it is eligible for, so make sure this class is listed before signing up. Please read the fact sheet available on the course website before signing up for studies.

Option 2: Written Report. Write a brief report on any of the following (1 report = up to 1% added to your final grade):

a. a colloquium talk (Psychology colloquia are typically Fridays at 12:20 in room 202; announcements may also be made in class) related to cognitive science. *Space is limited, so you must email us (cogst1101-sp2020@cornell.edu) ahead of time to sign up and get credit!* You can write up to 3 of these reports. They should be 1 page, double-spaced.
b. the *discussion* that follows a Sprocket film (see http://cogsci.cornell.edu for the schedule). You can write up to 2 of these. They should be 1 page, double-spaced.
c. an item (e.g., painting, sculpture, archeological artifact) from the Johnson Museum describing how it relates to principles covered in this course. These papers should demonstrate your understanding of those principles. You can write up to 2 of these. These reports should be 2 pages, double-spaced, and should include a picture of the item (not counted in the page total).
d. a critique of a popular press report on new findings in cognitive science. These should be on articles that appeared within the last three months and are clearly related to topics covered in this class. The critique can identify ways the science could be better characterized or discuss how topics covered in class are related to the findings (they may offer alternative interpretations, support, contradict, or be contradicted by the new data). Critiques should be 2 pages, double-spaced. You can write up to 2 of these.

These options are also described on the course website. Additional opportunities may be posted there as the semester progresses. Each paper is graded and can earn up to 1% extra credit. *Colloquia and Sprocket extra credit papers are due within 2 weeks of the event. Museum or popular press reports must be submitted by the last day of classes (May 5th). Extra credit papers should be emailed to your TA.*

Grading Scale: A standard grading scale will be used to determine your letter grade at the end of the semester. A grade corresponding to a C- or better (>=70%) is required for an S on the S/U grading scale. Letter grade cut-offs are firm. Grade percentages will be rounded to the second decimal (i.e., 89.99 is a B+).

	F	D-	D	D+	C-	C	C+	B-	B	B+	A-	A	A+
Min	0	60	63	67	70	73	77	80	83	87	90	93	97
Max	59.99	62.99	66.99	69.99	72.99	76.99	79.99	82.99	86.99	89.99	92.99	96.99	100

Need Help? We want to help you succeed in this class! If you find you are having difficulty keeping up please come to office hours or email us as soon as you have concerns.

Academic Integrity: You are expected to adhere to the Cornell University Code of Academic Integrity. This can be found at http://cuinfo.cornell.edu/Academic/AIC.html. By submitting your work for academic credit, you are affirming that it is your own.

Students with Disabilities: I am committed to ensuring that all students have the opportunity to do well in this course. Please give me your Student Disability Services (SDS) accommodation letter as soon as possible. This will give me adequate time to arrange your approved academic modifications. Meeting with me in my office hours will help ensure confidentiality. If you need an immediate accommodation, please speak with me after class or send an email message to me and/or SDS at sds_cu@cornell.edu. If the need arises for additional accommodations during the semester, please contact SDS.

The Plan

This schedule is subject change. Readings should be done before class on the assigned day.

Day		Topic	Reading
21-Jan	Tu	Overview	
23-Jan	Th	Historical Context	Bermúdez Ch. 1
28-Jan	Tu	The Emergence of Cognitive Science	Bermúdez Ch. 2
30-Jan	Th	Information Processing	
4-Feb	Tu	Brain Structure and Function	Bermúdez Ch. 11 (p. 315-329) *Verstynen & Voytek Ch. 1
6-Feb	Th	Neural Systems	
11-Feb	Tu	Perception 1: Vision	Anderson Ch. 2 (p. 27-43)
13-Feb	Th	Attention	Bermúdez Ch. 11 (p. 330-343)
18-Feb	Tu	Memory Systems	Banich Ch. 10 (p. 265-287)
		Homework #1 Due @ 11:59 p.m.	
20-Feb	Th	Memory Systems (Eaton)	
25-Feb	Tu	**February Break**	
27-Feb	Th	Catch-Up & Review	
3-Mar	Tu	***Preliminary Exam 1***	
5-Mar+	Th	Linguistics (Hummel)	Radvansky & Ashcraft, Ch. 9
10-Mar	Tu	AI: Physical Symbol Systems	Bermúdez Ch. 6
12-Mar	Th	Problem Solving	
17-Mar+	Tu	Language Acquisition (Frinsel)	Bermúdez Ch. 8
19-Mar+	Th	AI: Connectionism (Field)	Bermúdez Ch. 9
21-Mar+	Tu	Perception 2: Words (Burroni)	
26-Mar	Th	Concepts	Sternberg, Ch. 8 (p. 291-311)
31-Mar	Tu	**Spring Break**	
2-Apr	Th	**Spring Break**	
7-Apr	Tu	Comprehension	Goldstein, Ch. 11
9-Apr	Th	Catch-Up & Review	
		Homework #2 Due @ 11:59 p.m.	
14-Apr	Tu	***Preliminary Exam 2***	
16-Apr+	Th	Consciousness (Starr)	Bermúdez Ch. 14
21-Apr	Tu	Minds and Bodies	Clark Appendix 1, *Godfrey-Smith, Ch. 4
23-Apr+	Th	Dynamic Cognition (Moyal)	Bermúdez Ch. 13 (p. 403-420)
28-Apr	Tu	Situated Cognition	Bermúdez Ch. 13 (p. 420-443)
30-Apr+	Th	Nature of Science (may change)	Barrett Ch. 4
5-May	Tu	Catch-Up & Review	
		Homework #3 Due @ 11:59 p.m.	
9-May	Sa	***Final Exam @ 9 a.m.***	Review All

*Optional (but fun!) +Guest Lecture