



# CGSC170:

# Introduction to Cognitive Science

Winter 2026

# Virtual / Asynchronous

(Visit the course Canvas site [here](#))



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# 1. General Information

## Instructors

Dr. Alon Hafri (he/him)

Assistant Professor of Linguistics & Cognitive Science

Zoom Room: <https://udel.zoom.us/my/ahafri>

Office Hours: By appointment

Email: [alon@udel.edu](mailto:alon@udel.edu)

To make sure we see any message you send, please **add “winter26” to the subject line of every email**. Note also that all assignments should be uploaded on Canvas, *not* emailed.

Dr. Tyler Knowlton (he/him)

Postdoc in the Linguistics & Cognitive Science Department

Zoom Room: <https://udel.zoom.us/my/tknowlton>

Office Hours: By appointment

Email: [tzk@udel.edu](mailto:tzk@udel.edu)

## About This Course

How do minds work? How does the brain give rise to the mind? Could a mind be implemented in a machine? Cognitive science addresses these questions and many others from an interdisciplinary perspective, drawing on methods and ideas from psychology, linguistics, philosophy, neuroscience, computer science, and anthropology. This course will provide a comprehensive overview of the field. Along the way, we'll explore topics such as perception, language, memory, learning, reasoning, decision-making, consciousness, cognitive disorders, and artificial intelligence.

This course has no prerequisites and does not assume any background knowledge of cognitive science or related disciplines; it just requires that you're curious about how your mind works! Our goal is that you come away from the course with an integrated picture of what cognitive science is and an interest in taking other related classes in the future.

If you're particularly interested in some of the things we talk about during the semester and want to get involved in cognitive science research yourself, there are always faculty in [Linguistics & Cognitive Science](#), [Psychological & Brain Sciences](#), [Communication Sciences & Disorders](#), [Education](#), and other departments who are looking for motivated student collaborators. If you'd like to learn more about this possibility, contact faculty at the links above directly, or get in touch with one of us and we'll point you in the right direction.

# 2. Materials and Format

## Canvas

All course materials and communication are housed on [our Canvas page](#). This is where you should:

- View Lectures (available under “Modules”)
- Find and Upload your [Response Questions](#) (available under “Modules” or “Assignments”)
- Check your Grades

Information on how to use Canvas is available through [this guide](#).

## Readings



**You do not need to purchase a textbook for this course.** All the necessary information will be covered in the lectures. We may sometimes assign optional readings from scientific journals such as *Nature* and *Science* and long-form journalistic articles in *The New Yorker*, *The Atlantic*, or *Bloomberg*. These readings will be posted as PDFs or links on Canvas.

## Class Format

This course is **asynchronous and self-paced**. It is organized into five week-long “modules” (Introduction, Theoretical Background, Language, Vision, and Broader Cognitive Science). **You do not need to stick to a strict five-week schedule as there are no timed requirements within the course.** You can choose to complete the modules as soon as they are posted to the course Canvas page or to wait until all modules are posted to begin. That said, we recommend sticking to **one module per week** (and have designed the course with that pacing in mind).

The bulk of each module will consist of a series of recorded lectures, either by Dr. Hafri or Dr. Knowlton, and a set of lecture response questions (see [this section](#) below). In addition, each module will contain interactive demos and demo response questions (sometimes with optional readings) which further elaborate on the themes discussed in the lectures. Note that cognitive science is an extremely broad and diverse field, and there is more material worth covering than there is time to cover it, especially in a condensed course!

## 3. Requirements & Evaluation

### Lecture Response Questions (80%)

Lecture response questions (posted on Canvas) accompany each lecture. These questions will be our main metric of assessing your lecture comprehension and thus will make up the bulk of the grade in this course. Each set of lecture response questions will be worth a certain number of points (usually corresponding to how many questions are asked in the assignment).

They will sometimes ask that you go slightly beyond what is literally said verbatim in lecture (e.g., by applying that knowledge to a new situation), but all of the ingredients necessary for answering these questions are present in the lectures themselves. You do not need to consult outside resources to answer these response questions. **Responses must be submitted on Canvas, not emailed. They must be submitted on or before the last day of Winter session: Friday, January 30th.**

Questions following each lecture must be answered before moving on to the next lecture. Because of that, **you may watch each lecture as many times as you like before answering its associated lecture response questions, but you may only submit one answer to each response question.** Once you move on to the next lecture, you may not resubmit answers to a previous lecture's questions. We encourage you to reread lectures (or parts of lectures) if you are unclear about the question. You should also feel free to reach out to either of us via email if you're struggling with a question or a particular part of a lecture (or if you're interested about a topic we discuss and just want to learn more about it!).

**Lecture response questions are, in general, not cumulative**, meaning that each set of questions will cover the material from that lecture. That said, the questions are cumulative in the sense that later questions may rely on concepts introduced earlier (e.g., the "brain" lecture will be early in the course, but later questions may well mention the brain).

**These are not collaborative assignments, and must be done individually. This policy also extends to the use of generative AI tools (like ChatGPT).** We prefer that you don't consult any AI tools about these questions; in fact, we would require that you do not use such tools, if not for the fact that it would be a very difficult policy to enforce. So instead we will note that these questions are meant to probe (and extend) your comprehension of the content discussed in lectures, but not to probe generic knowledge about cognitive science—knowledge that AI tools would regurgitate without hesitation. As such, **answers that are technically correct but draw on information not discussed in lecture will be penalized.** To be extra clear: If you were to merely ask ChatGPT or another Generative AI system / large language model to respond to these questions, the resulting answer would not earn a passing grade (even though, in some cases, the response wouldn't be strictly false). Again, we prefer and recommend that you do not consult such tools. But if you must, be sure to include your own summary of what we discussed in lecture as part of your prompt and be sure to carefully evaluate the output and ensure that you're actually answering the question being asked. More info on our AI policy appears [below](#).

**The secret to success on these questions (and in the class) is to pay attention to the lectures.** This is generally true in any class, but especially true here. Here's some data to back up that claim: [these researchers](#) find that "early and consistent class attendance strongly correlates with academic performance" and [this meta-analysis](#) of education research argues that class attendance is a better predictor of college grades than any other known predictor of academic performance, including scores on standardized admissions tests such as the SAT, high school GPA, study habits, and study skills.

## "Demo" Responses (20%)

Each module will also consist of short demo activities, which provide a more "hands-on" presentation of related material. Your goal is to show you've completed (and caught the gist of) these demos; our goal is to encourage you to engage with the material in some way outside of watching the lectures and answering the response questions. Each set of demo responses will be worth a certain number of points.

Instructions for each demo response will be posted in the assignment on Canvas. In general, **you will almost always be asked to submit one or more screenshots mid-way through the demo.** See [this resource](#) for instructions on how to take a screenshot on different operating systems (e.g., Mac, Windows). **Responses must be submitted on Canvas, not emailed. They must be submitted on or before the last day of Winter session: Friday, January 30th.**

## Your Final Grade

Your final letter grade will be based on two components:

- Lecture response questions (80% of the final grade)
- Demo responses (20% of the final grade)

For each of the above two components, the contribution to your final grade is calculated as: (points earned / points possible) × component weight. For example, if there are 70 possible points across all of the lecture response questions and you earn 63 points, this contributes  $(63/70) \times 80\% = 72\%$  toward your final grade. If there are 24 possible points across all demo responses and you earn 18 points, this contributes  $(18/24) \times 20\% = 15\%$ . Your final course percentage is the sum of these contributions, which in this example would be 87%.

Final letter grades will be assigned according to the scale below:

	B+	88-89%	C+	78-79%	D+	68-69%		
A	94% and above	B	84-87%	C	74-77%	D	64-67%	
A-	90-93%	B-	80-83%	C-	70-73%	D-	60-63%	F <60%

Numerical grades will be rounded to the nearest integer before being converted into letters (e.g., 89.5% ⇒ 90% ⇒ A-; 89.49% ⇒ 89% ⇒ B+). Final grades will not be curved.

**NOTE: All assignments must be submitted on or before the last day of Winter session: Friday, January 30th.**

## 4. Course Policies

### Academic Honesty

The Dean's Office provides this message about academic honesty:

Students must be honest and forthright in their academic studies. Students are expected to do their own work and must give proper credit for any work not their own. Students may neither give nor receive unauthorized assistance. Engaging in academic dishonesty, or allowing other students to do the same, corrupts the educational process and diminishes the quality of a University of Delaware degree. View the university's procedures for resolving academic dishonesty concerns here: <https://www.udel.edu/students/community-standards/conduct-process/>. Contact Community Standards & Conflict Resolution at [communitystandards@udel.edu](mailto:communitystandards@udel.edu) (218 Hullihen Hall, (302) 831-2117).

**Note that no for-credit assignment in this course is collaborative.** That means that answers to lecture response questions are to be written completely on your own. We'll do our best to craft questions that test comprehension rather than memorization. If you are ever feeling desperate enough that a few extra points in this course seem to be worth risking so much, please consider talking to someone first — that could be one of us or even someone at the [Student Success Center](#) or the [Counseling Center](#). We want you to succeed, and we are happy to talk to you if you are feeling undue pressure from this course or anything else going on in your life.

### Policy on Use of AI Tools (e.g., ChatGPT)

We recognize that students may be tempted to use generative artificial intelligence (AI) tools (such as ChatGPT, Gemini, Llama, Claude, and DeepSeek) for assistance in their written assignments. However, as noted above, we want to discourage reliance on these tools. For one thing, we believe it seriously diminishes your ability to learn. In addition, these tools are rife with biases and other ethical issues. And, practically, they will not produce good responses to our questions (especially in the context of this course),

as discussed above). Still, we recognize that students may find it helpful at times to use such tools for inspiration or proofing. **If you utilize any such tools, you are required to explicitly acknowledge the AI-generated content through comments, footnotes, endnotes, or other markings.** You will not be penalized for such acknowledgements, but **no more than 5% of your work should be generated by AI.** **Lack of proper acknowledgement constitutes plagiarism and academic dishonesty, which may result in failure of the assignment or even the course.** Students are responsible for understanding and avoiding plagiarism. If any part of this is confusing or uncertain, please reach out to one of us before submitting your work.

In addition, [as we discuss above](#), the material to answer the response questions comes completely from the lecture (or other reading/demo material we share). One way we can tell whether an AI tool is used to generate lecture responses is if the responses contain material that clearly did not appear in lecture. All this to say: just don't do it!

## Class Climate

If you ever have concerns in this course about harassment, discrimination, or unequal treatment, we invite you to contact one of us. We promise to take your concerns seriously and to seek mutually acceptable resolutions and accommodations. Raising such issues will never impact your grade. You may also share concerns with our Department Chair ([Prof. Benjamin Bruening](#)) or [the Office of Equity & Inclusion \(OEI\)](#). See [below](#) for more information about UD policies and procedures on harassment, discrimination, and sexual misconduct.

## Feedback

We value your feedback at any time (before, during, or after the course). This will make the course better for everyone, including you — so please do share! You can do so at [this link here](#) (we promise that we will not know your identity; you will remain completely anonymous).

## Accommodations for Students with Disabilities

Students with disabilities are offered accommodations, but first they must make themselves known to the Office of Disability Support Services (DSS) as soon as possible. To do so, visit [this link](#). Alternatively, contact DSS by phone: 302-831-4643; fax: 302-831-3261; website: [sites.udel.edu/dss/](#); email: [dssoffice@udel.edu](mailto:dssoffice@udel.edu); or visit 240 Academy Street, Alison Hall Suite 130 during business hours (8-5 M-F). They will in turn inform us of the approved accommodations.

## 5. Course Calendar

**NOTE: The schedule below is subject to change!**

Week (recommended)	Module (broad theme)	Topic (lecture)
1	Introduction	Introduction to <i>Introduction to Cognitive Science</i>
1	Introduction	The History of Cognitive Science: Behaviorism
1	Introduction	The History of Cognitive Science: Against Behaviorism
2	Theoretical Background	The Computational Theory of Mind (CTM)

Week (recommended)	Module (broad theme)	Topic (lecture)
2	Theoretical Background	CTM and the Mind/Body Problem
2	Theoretical Background	The Brain and Marr's Levels
2	Theoretical Background	Using the Brain to Understand the Mind
2	Theoretical Background	Computation and Turing Machines
2	Theoretical Background	Neural Networks vs. Symbolic Systems
2	Theoretical Background	Module Summary: What Have We Learned?
3	Language	Linguistics as Cognitive Science
3	Language	Mental Grammar: Sounds
3	Language	Mental Grammar: Morphology
3	Language	Mental Grammar: Syntax
3	Language	Acquiring Language: Universal Grammar
3	Language	Acquiring Language: Sounds
3	Language	Acquiring Language: Words
3	Language	Language and Thought
3	Language	Module Summary: What Have We Learned?
4	Vision	The Paradox of Perception: Not Enough Information
4	Vision	The Paradox of Perception: <i>Too Much</i> Information
4	Vision	Vision in the Brain: Edges and Other "Low-Level" Stuff
4	Vision	Vision in the Brain: Objects and Categories
4	Vision	Modeling Vision: Older Modeling Approaches
4	Vision	Modeling Vision: Modern AI
4	Vision	Mental Imagery and Representational Format
4	Vision	Module Summary: What Have We Learned?
5	Broader CogSci	Spatial Navigation
5	Broader CogSci	Memory
5	Broader CogSci	Cognitive Development

Week (recommended)	Module (broad theme)	Topic (lecture)
5	Broader CogSci	Social Cognition and Theory of Mind
5	Broader CogSci	Philosophical Puzzles
5	Broader CogSci	Overall Course Summary

**NOTE: All assignments must be submitted on or before the last day of Winter session:  
*Friday, January 30th.***

## 6. General UD Academic Resources and Policies

The following are general academic resources and policies that apply across the university.

### Additional Learning Resources

Do you need assistance with note-taking, time management, or study strategies? Check out the [Office of Academic Enrichment](#) for one-on-one academic coaching, tutoring, and study skills workshops.

### Student Mental Health & Wellbeing

In addition to impacting your overall well-being, diminished mental health can interfere with optimal academic performance. If this course is causing or contributing significant mental or emotional stress, then please reach out to me directly. However, problems with other parts of your life can also contribute to decreased academic performance. UD's Center for Counseling & Student Development (CCSD) provides cost-free and confidential mental health services to help you manage personal challenges that threaten your emotional or academic well-being. Remember, getting help is a smart and courageous thing to do — for yourself and for those who care about you.

- **Contact one of us:** If you are struggling with this class, please check-in during office hours or contact the instructor by email.
- **Check-in with your academic advisor:** If you are struggling in multiple classes, unsure whether you are making the most of your time at UD, or unsure what academic resources are available at UD. You can see a complete list of advisors [here](#).
- **UD's Center for Counseling & Student Development (CCSD), TimelyCare, and UD Helpline:** CCSD provides cost-free and confidential mental health services promoting psychological wellbeing so that students can be more successful in their academic, personal, and career pursuits. CCSD provides in-person services including walk-in urgent visits, scheduled individual and group counseling, and consultation for students, parents, and faculty. CCSD partners with [TimelyCare](#) to provide scheduled counseling and health coaching via telehealth. For 24/7 mental health support, students have the option of calling the UD Helpline at 302-831-1001 or accessing TimelyCare's Talk Now service through the TimelyCare app or online. Visit [CCSD's website](#) for additional information and resources.
- **UD's Crisis Text Line:** Text "UDTEXT" or "STEVE" at 741741 connect with a professional who specializes in supporting students of color via a confidential text message.
- **Division of Student Life:** Our three wellbeing units—Student Health Services (SHS), Student Wellness and Health Promotion (SWHP) and the Center for Counseling and Student Development (CCSD)—are here to help you thrive both mentally and physically in your time as a Blue Hen and beyond. Come visit us on the South Green for all of your wellness needs! Explore the Student Life's [Wellbeing webpage](#) for a comprehensive listing of well-being resources, activities and services available to all students.

### Harassment, Discrimination, and Sexual Misconduct

The University of Delaware works to promote an academic and work environment that is free from all forms of discrimination, including harassment and sexual misconduct. As a member of the community, your rights, resources, and responsibilities are reflected in the Non-Discrimination, Sexual Misconduct, and Title IX policy. Please familiarize yourself with this policy at the [University's Office of Equity & Inclusion website](#). You can report any concerns to the University's Office of Equity & Inclusion, at 305 Hullihen Hall, (302) 831-8063 or you can report anonymously through UD Police (302) 831-2222 or the [EthicsPoint Compliance Hotline](#).

- Read the [full policy](#)
- [File a report](#)

## Faculty Statement on Disclosures of Instances of Sexual Misconduct

If, at any time during this course, we happen to be made aware that a student may have been the victim of sexual misconduct (including sexual harassment, sexual violence, domestic/dating violence, or stalking), we are obligated by federal law to inform the university's Title IX Coordinator. The university needs to know information about such incidents to, not only offer resources, but to ensure a safe campus environment.

The Title IX Coordinator will decide if the incident should be examined further. If such a situation is disclosed to one or both of us in an assignment or in office hours, we promise to protect your privacy — we will not disclose the incident to anyone but the Title IX Coordinator.

For more information on Sexual Misconduct policies, where to get help, and reporting information, please refer to [www.udel.edu/sexualmisconduct](http://www.udel.edu/sexualmisconduct). At UD, we provide 24/7/365 crisis assistance and victim advocacy and counseling. Contact 302-831-1001 to get in touch with a sexual offense support advocate, as well as confidential and anonymous counseling services for other concerns.

## Non-Discrimination

The University of Delaware does not discriminate against any person on the basis of race, color, national origin, sex, gender identity or expression, sexual orientation, genetic information, marital status, disability, religion, age, veteran status or any other characteristic protected by applicable law in its employment, educational programs and activities, admissions policies, and scholarship and loan programs as required by Title IX of the Educational Amendments of 1972, the Americans with Disabilities Act of 1990, Section 504 of the Rehabilitation Act of 1973, Title VII of the Civil Rights Act of 1964, and other applicable statutes and University policies. The University of Delaware also prohibits unlawful harassment including sexual harassment and sexual violence.

For inquiries or complaints related to non-discrimination policies, please contact: Office of Equity & Inclusion, [oei@udel.edu](mailto:oei@udel.edu), 305 Hullihen Hall Newark, DE 19716 (302) 831-8063

For complaints related to Section 504 of the Rehabilitation Act of 1973 and/or the Americans with Disabilities Act, please contact: Office of Disability Support Services, [dssoffice@udel.edu](mailto:dssoffice@udel.edu), Alison Hall, Suite 130, Newark, DE 19716 (302) 831-4643 or contact the [U.S. Department of Education - Office for Civil Rights](#).