Attention!

This is a representative syllabus.

The syllabus for the course when you enroll may be different.

Use the syllabus provided by your instructor for the most up-to-date information. Please refer to your instructor for more information for the specific requirements for a given semester.

Feel free to contact the Psychology Advising Office for any questions regarding psychology courses either by email (psychadvising@osu.edu) or phone (614.292.5750).

Thank you!
Psych 5612
Introduction to Cognitive Science

Course Syllabus, Fall 2017, Undergraduate version

Course: Psych 5612 (cross-listed as CSE 5531, Ling 5612, and Philos 5830)

Credits: 3

Prerequisites: Graduate standing, permission of instructor, or at least 12 credit hours from any of the following areas: computer science, linguistics, neuroscience, philosophy, and psychology.

Websites: https://carmen.osu.edu


Course Overview

What is cognition and how does it emerge from the brain? This course introduces you to the exciting interdisciplinary field of cognitive science. Researchers in philosophy, neuroscience, psychology, artificial intelligence, and linguistics realized that they were asking many of the same questions about the nature of the human mind/brain, that they had developed complementary and synergistic methods of investigation, and that the evidence led them to compatible answers to their questions. This course introduces cognitive science through a representative sample of such questions, methods, and answers. It is not a special-topic course for students who seek detailed knowledge in a specific area of cognitive science. We will try not to lose sight of the forest for the trees but we will take a closer look at a few trees too because science is in the details. Along the way, we will introduce the constituent disciplines and their respective contributions to the study of cognition. We will discuss the foundational concepts of computation and representation from multiple points of view. Three unifying themes are emphasized throughout: 1. Information processing: The mind/brain is viewed as a complex system that receives, stores, retrieves, transforms, and transmits information. 2. Neurological grounding: Explicit effort is made to show how mental phenomena emerge from the interactions of networks of neurons in the brain. 3. Cognitive architecture: The emphasis is on functionally complete systems rather than disjoint empirical phenomena.
Intended Audience. Prerequisites

This course is cross-listed in the Departments of Computer Science and Engineering, Linguistics, Philosophy, and Psychology. It is intended for graduate and advanced undergraduate students in these departments. Interested students from related areas (notably neuroscience) are welcome too. The formal prerequisites for taking the course are: graduate standing in any of these departments or permission of the instructor or at least 12 undergraduate-level credit hours from any of the four disciplines. The informal prerequisites are: willingness to step outside the confines of one’s area of specialization, willingness to read the professional literature (as opposed to textbooks) with help from the instructor and one’s peers, willingness to participate in open discussions, and the ability to write clearly and concisely about topics outside one’s area of specialization.

All students must be officially enrolled in the course by the end of the second full week of the semester. No requests to add the course will be approved by the Chair after that time. Enrolling officially and on time is solely the responsibility of the student.

Course Objectives

Upon successful completion of the course, the undergraduate students will:

• Appreciate the interdisciplinary nature of cognitive science, the diversity of viewpoints, the controversies and the areas of nascent consensus.
• Be exposed to the contribution of each of the five constituent disciplines and be familiar with its methods, key concepts, and focus of investigation.
• Be proficient in the lingua franca of cognitive science—the language of information processing.
• Have basic familiarity with brain anatomy and physiology.
• Master multiple definitions of the foundational concepts of computation and representation and be able to discuss them from multiple points of view.
• Understand the basic cognitive architecture—how perception, memory, language, motor control, and so forth come together to produce adaptive behavior.
• Know a multitude of specific concepts, theories, and experimental results covered in the course. The lecture plan below lists some relevant keywords.

The graduate students will:

• Do everything in the above list with proficiency greater than that expected of undergraduate students.
• Be able to read and discuss research papers from multiple disciplines.
• Be able to write critical essays on topics outside one’s area of specialization.

Course Materials

The main textbook is *Cognitive Science: An Introduction to the Science of the Mind* (Bermúdez, 2014, 2nd Ed., Cambridge UP). Various learning resources are provided on the accompanying website [http://www.cambridge.org/features/bermudez/](http://www.cambridge.org/features/bermudez/). We will supplement the textbook with additional readings listed in the bibliography below. All required readings (except the textbook itself) are posted in PDF on the Carmen (Canvas) website [https://carmen.osu.edu/](https://carmen.osu.edu/)
**Evaluation**

**At the undergraduate level**, your grade will depend on the following components:

- **Attendance** (20 checks worth 2 points each)  40
- **Midterm Exam #1** (Tuesday 9/26, 9:30 am, Jennings 140)  80
- **Midterm Exam #2** (Thursday 11/02, 9:30 am, Jennings 140)  80
- **Final Exam** (Friday 12/08, **8:00 am**, Jennings 140) 100

Total points for attendance, two midterms, and the Final: 300

Grades are based on absolute cutoffs: A=255-300, B=225-254, C=195-224, C−=185-194, D=160-184, E<=159 points, respectively.

**At the graduate level**, your grade will depend on the same components plus three written homework assignments (a.k.a. “reaction papers”). **Because graduate students score additional points for these homework assignments, their conversion cutoffs are different (and higher) than the undergraduate cutoffs.** See the graduate-level syllabus for details.

**Exams:** The two Midterm Exams (9/26 and 11/02) and the Final Exam (12/08) are closed-book and consist of multiple-choice questions. Sample questions will be given in class. The *Course Calendar* section below lists the readings required for each exam. The exams are not cumulative, except that the topics covered in later periods of the course depend on concepts and facts introduced in the earlier periods. No make-up exams will be given, except in the case of documented illness or emergency. In the event of a last-minute emergency, you **must** email Dr. Petrov (petrov.11@osu.edu) on the **same day as the exam**, preferably before the exam begins. Acceptable excuses for missing an exam are a death in your family, personal illness or the illness of your child or spouse, and unforeseen accidents like your car breaking down or getting stuck in an elevator. Please obtain documented proof of these events should they occur. If you are late for an exam, you will be allowed to take it but you will have to submit your answers by the closing time like everybody else.

**Attendance:** Attendance is required, especially on test dates. Come to class – it makes a difference. On top of that, there is a palpable incentive for attending: you earn points by just being present during a roll call. Twenty roll calls will be made during the semester without advance notice. Each time you are present during a roll call you earn 2 points.

**Academic Misconduct**

All students enrolled in OSU courses are bound by the *Code of Student Conduct* ([http://studentconduct.osu.edu](http://studentconduct.osu.edu)/http://studentaffairs.osu.edu/resource_csc.asp). The instructor and course assistants are committed to maintaining a fair assessment of student performance in this course. Suspected violations of the *Code* will be dealt with according to the procedures detailed in the *Code*. Specifically, any alleged cases of misconduct will be referred to the Committee on Academic Misconduct. It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed;
illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code.

All exams are closed book. No notes may be used during the examinations and you may not confer with other students or look at other exams for answers during the test. Before exams, you are encouraged to study in small groups. However, once you enter the exam room, you must work alone. Please silence your cell phones during all lectures and tests.

Course Calendar


14. **R 10/05 – Neuroanatomy:** Brain anatomy. Hierarchical functional organization. Decorticate animals. Functional magnetic resonance imaging (fMRI). Readings: Baars & Gage (2010, Ch. 5), Textbook Chapters 3 and 11 and Sect. 4.5.


16. **R 10/12 – Autumn break.** No classes


21. **R 11/02 – Midterm Exam #2.** Material covered in the exam: Lectures 12-19 inclusive. Readings: The union of all required readings for Lectures 12-19. Note that Lecture 20 is NOT covered on this midterm; it will be on the Final instead.


27. R 11/23 — Thanksgiving — no classes


30. F 12/08, 8:00-9:45 am – Final Exam – Note the unusual day and time!!!
Material covered in the final exam: Lectures 20-29 inclusive.

The above calendar is subject to change at the discretion of the instructor, depending on the rate of progress through the material, student interest in alternative topics, and/or scheduling constraints.
Additional Readings

In addition to Bermúdez’ (2014) textbook, which is the main text for this course, the following required readings supplement and amplify some topics of particular importance. All of the following items are available on Carmen (Canvas) in PDF format. The list of readings is subject to change at the discretion of the instructor. In fact, it is likely that one or two items will be added to the list. This will be announced in class and the PDFs will be posted on Carmen.


Optional Readings

The following were used as (required) additional readings in previous installments of this course, but were dropped to save time. They still are great articles, though, and you may want to check them out. PDFs are available on Carmen.


Disability Services

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion.

**SLDS contact information:** slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Sexual Misconduct / Relationship Violence

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at [http://titleix.osu.edu](http://titleix.osu.edu) or by contacting the Ohio State Title IX Coordinator, Kellie Brennan, at titleix@osu.edu.

Finally, welcome to the course. I hope that you will enjoy the class and learn valuable information and skills. I look forward to seeing you on August 22.

Alex Petrov