CS9.426 Intro to Cognitive Science

Course Information

Instructor Information

Faculty: Dr Vishnu Sreekumar
TAs: TBD
Day/Time: Tuesdays and Fridays: 2:00 pm – 3:25 pm.
Virtual Office Hours: By appointment (please email).
E-mail: vishnu.sreekumar@iiit.ac.in
First point of contact – TAs; emails: TBD

Course Information

Course Description: Cognitive Science is a highly interdisciplinary field of study that seeks to understand how the mind works. In this course, we will discuss a diverse range of perspectives from philosophy, linguistics, psychology, neuroscience, and computer science, on how to unravel the mysteries of human cognition.
Credits: 4
L-T-P: 3-1-0 (L = lecture hours, T = tutorial hours, P = practical hours)
Prerequisite: None

Textbook & Course Materials

Recommended Texts & Other Readings: Lecture slides and supplementary readings will be posted to Moodle.

Course Technology Requirements

- You will need access to the following tools to participate in this course.
    - Laptop/desktop computer
    - webcam
    - microphone
    - a stable internet connection (don't rely on cellular)

Course Structure

This course will be delivered fully in-person in a physical classroom unless COVID restrictions make us move online (Microsoft Teams).

Student Expectations

In this course you will be expected to complete the following types of tasks.

- communicate via email
- complete basic internet searches
- download and upload documents to the course site on Moodle
- read documents online
- view online videos
- participate in online discussions
- complete quizzes/tests online
- upload documents to a Dropbox/Moodle
- participate in synchronous online discussions

Expected Instructor/TA Response Times

- We will attempt to respond to student emails within 24 hours. If you have not received a reply from us within 24 hours, please resend your email.
  - ***If you have a general course question (not confidential or personal in nature), please post it to the Course Q&A Discussion Forum found on the course homepage on Moodle. We will post answers to all general questions there so that all students can view them. Students are encouraged to answer each other's questions too.
- We will attempt to reply to and assess student discussion posts within 48 hours.

Course Outcomes (COs)

After successful completion of this course, students will be able to:

- CO-1: demonstrate familiarity with seminal research findings in cognitive science.
- CO-2: read, interpret, critique, and evaluate research in cognitive science.
- CO-3: critically think about the relationship between diverse fields such as AI, philosophy, neuroscience, and cognitive science.
- CO-4: identify flaws in how scientific results are communicated and critique scientific work in terms of confounds, experimental design, etc.
- CO-5: appreciate the nature of scientific debate in cognitive science and be able to generate well-informed perspectives on these debates.

You will meet the outcomes listed above through a combination of the

following activities in this course:

- Attend lectures and participate in class discussions (CO-1, CO-2, CO-3, CO-4, CO-5)
- Debate sessions (CO-1, CO-2, CO-3, CO-5)
- Quiz 1, Quiz 2, mid-semester, and end-semester exams (CO-1, CO-2, CO-3, CO-5)
- Complete a term paper/debate reaction paper (CO-1, CO-2, CO-3, CO-5)

List of topics and activities

Students are encouraged to ask questions and steer the lecture in directions that are interesting to them. We will still manage to cover a range of topics from the ones listed below, but we will learn via the Socratic Method.

- **Introduction**
- **Evolution of Cognitive Science**
- **A free-form discussion on consciousness**
- **Empirical approaches in cognitive science**
- **Brain: Organization; Intro to sensation and perception**
- **Sensory systems**
- **Perception and Perceptual Learning, Cross-modal interactions**
- **Vision**
- **Attention**
- **Learning**
- **Development**
- **Memory**
- **Language and Cognition**
- **Knowledge Representation**
- **Special topics: e.g. Music, mind, and technology**
- **Several debate sessions with student debate teams**

Grading Policies

Graded Course Activities

Description	Percentage
Quiz 1 (10 marks)	10%
Quiz 2 (10 marks)	10%
Debate reaction paper or debate team participation (20 marks)	20%
Mid-Sem exam (20 marks)	20%
End semester exam (40 marks)	40%
Total (100 marks)	100

Quizzes

Quiz 1 will cover topics covered until Quiz 1, and Quiz 2 will cover topics taught between Quiz 1 and Quiz 2. They will contain mostly multiple choice questions.

Mid-semester exam (20 marks)

The mid-semester exam will cover all material taught up to that point, and may include both multiple choice and descriptive questions.

End semester exam (40 marks)

The end semester exam will cover material taught during the whole semester and will include both multiple choice and descriptive type questions.

Debate participation (20 marks = 10 marks for presenting + 10 marks for a short report)

We will reserve at least 3-4 lecture slots for student debates on contemporary issues in Cognitive Science. A list of representative topics are as follows:

1. Are there top-down influences on basic perception? Evidence for and against.
2. Do 3 year olds have a theory of mind?
3. Is cognition/consciousness a computational process?
4. Do we need representations for cognition?

Each debate team will have 3 members. They will read the recommended material for the chosen topic, and organize their arguments distributed across the 3 members. Each member gets 5 minutes to present their arguments (15 minutes per team). They may choose to use slides or not but the arguments must be clearly presented. At the end of both teams' presentations, each team gets 5 minutes for rebuttal when they can pick 2-3 claims made by the opposite team and present counterarguments.

The students participating in debate teams will only be required to write a short report but the ***remaining students will need to write a reaction paper to any one debate session OR write a term paper on any other topic that they choose (see next main section).***

For debate team students (each person writes this separately without discussion with other team members, plagiarism software will be used to check your work), your short report should contain the following:
The paper will first summarize the problem (2 marks), and then summarize the arguments made by both sides (3 marks), and then will provide the student's OWN opinion about where they stand on the debate and what arguments were convincing to them (5 marks).

Recommended: 2-3 pages, font size 12, single-spaced.

The debate teams will be made on a first-come first-serve basis. TAs will open sign-up forms and make announcements on the course page on Moodle. It is important to check announcements on Moodle regularly for this reason.

Submission window for the short report: Nov 7-17
No extensions will be given because this is a wide window.
You are welcome to make multiple submissions within this window. Feedback will be given to people who submit within the first three days of this window and they will be allowed to revise and resubmit their work during the same window.

IMPORTANT: See the last section of this syllabus for policies about plagiarism. There will be no exceptions to those policies.

Term Paper or debate reaction papers for non-debate team students (20 marks)

1. Introduction and clarity of describing the background literature and specifying the nature of the problem – 3 marks
2. Describing the different schools of thought that tackle the question – 7 marks

3. Offer your own thinking on the matter (either siding with one school of thought, or offering a new insight or suggestions for experiments or investigations, providing appropriate justifications) – 5 marks
4. Overall clarity, organization of thoughts, and originality – 3 marks
5. Formatting (Citations, References) – 2 marks

Recommended: 8-10 pages, font size 12, single-spaced.

Submission window for the term paper/debate reaction paper: Nov 7-17
No extensions will be given because this is a wide window.
You are welcome to make multiple submissions within this window. Feedback will be given to people who submit within the first three days of this window and they will be allowed to revise and resubmit their work during the same window.

Participation

Students are expected to participate in all activities as listed on the course calendar. *Failure to participate will result in students being unable to complete the term paper satisfactorily. The exams may also include questions from the in-class activities such as the debates and any resulting effect on the final grade is entirely the student's responsibility.*

Complete Assignments

All assignments for this course will be submitted electronically through the course page on Moodle unless otherwise instructed. Assignments must be submitted by the given deadline or special permission must be requested from instructor *before the opening of the submission window with documented evidence of an emergency*.

Late or missing assignments will affect the student's grade.

Late Work Policy

Be sure to pay close attention to deadlines—there will be no make-up assignments or quizzes, or late work accepted without a serious and compelling reason and instructor approval.

Viewing Grades on Moodle

Points you receive for graded activities will be posted to the course page on Moodle. Click on the Grades link to view your points.

Letter Grade Assignment

Final grades assigned for this course will be based on the percentage of total points earned. The exact cutoffs will be announced after the end semester exam is graded.

Course Policies

Netiquette Guidelines

Netiquette is a set of rules for behaving properly online. Your instructor and fellow students wish to foster a safe online learning environment. All opinions and experiences, no matter how different or controversial they may be perceived, must be respected in the tolerant spirit of academic discourse. You are encouraged to comment, question, or critique an idea but you are not to attack an individual. Working as a community of learners, we can build a polite and respectful course community.

The following netiquette tips will enhance the learning experience for everyone in the course:

- Do not dominate any discussion.
- Give other students the opportunity to join in the discussion.
- Do not use offensive language. Present ideas appropriately.
- Be cautious in using Internet language. For example, do not capitalize all letters since this suggests shouting.
- Avoid using vernacular and/or slang language. This could possibly lead to misinterpretation.
- Never make fun of someone's ability to read or write.
- Share tips with other students.
- Keep an "open-mind" and be willing to express even your minority opinion. Minority opinions have to be respected.
- Think and edit before you push the "Send" button.
- Do not hesitate to ask for feedback.
- Always assume good intentions and ask for clarification. Communication online is difficult without facial and gestural cues.

Adapted from:

Mintu-Wimsatt, A., Kernek, C., & Lozada, H. R. (2010). *Netiquette: Make it part of your syllabus*. Journal of Online Learning and Teaching, 6(1). Retrieved from http://jolt.merlot.org/vol6no1/mintu-wimsatt_0310.htm

Shea, V. (1994). Netiquette. Albion.com. Retrieved from: http://www.albion.com/netiquette/book/.

Build Rapport

If you find that you have any trouble keeping up with assignments or other aspects of the course, make sure you let your instructor know as early as possible. As you will find, building rapport and effective relationships are key to becoming an effective professional. Make sure that you are proactive in informing your instructor when difficulties arise during the semester so that we can help you find a solution.

Inform Your Instructor of Any Accommodations Needed

If you have a documented disability and wish to discuss academic accommodations, please contact your instructors as soon as possible.

Statement of Policy

The instructors of this course will modify requirements as necessary to ensure that they do not discriminate against qualified students with disabilities. The modifications should not affect the substance of educational programs or compromise academic standards; nor should they intrude upon academic freedom. Examinations or other procedures used for evaluating students' academic achievements may be adapted. The results of such evaluation must demonstrate the student's achievement in the academic activity, rather than describe his/her disability.

If modifications are required due to a disability, please inform the instructor

Commit to Integrity

As a student in this course (and at IIIT Hyderabad) you are expected to maintain high degrees of professionalism, commitment to active learning and participation in this class and also integrity in your behavior in and out of the classroom.

IIIT Hyderabad Academic Honesty Policy & Procedures

Student Academic Disciplinary Procedures

(1) Academic misconduct is an act in which a student:

(a) Seeks to claim credit for the work or efforts of another without authorization or citation;

(b) Uses unauthorized materials or fabricated data in any academic exercise;

(c) Forges or falsifies academic documents or records;

(d) Intentionally impedes or damages the academic work of others;

(e) Engages in conduct aimed at making false representation of a student's academic performance; or
(f) Assists other students in any of these acts.

(2) Examples of academic misconduct include, but are not limited to: cheating on an examination; collaborating with others in work to be presented, contrary to the stated rules of the course; submitting a paper or assignment as one's own work when a part or all of the paper or assignment is the work of another; submitting a paper or assignment that contains ideas or research of others without appropriately identifying the sources of those ideas; stealing examinations or course materials; submitting, if contrary to the rules of a course, work previously presented in another course; tampering with the laboratory experiment or computer program of another student; knowingly and intentionally assisting another student in any of the above, including assistance in an arrangement whereby any work, classroom performance, examination or other activity is submitted or performed by a person other than the student under whose name the work is submitted or performed.

We will be using plagiarism detection software. Please do not copy-paste from other papers or use AI/LLMs in ways that are not authorized by the faculty. If you use direct quotes, you have to use the quotation marks "xyz" and cite your source: e.g. (Johnson & Johnson, 1988, p. 5). Please use APA format. If plagiarism is detected, for the first violation, you will get 0 for the term paper or assignment in question. If plagiarism is detected a second time in another assignment/project write-up, then one letter grade will be deducted from the final grade (e.g if you get a B/B-, that will be changed to C/C-) and you will be reported to the appropriate authorities for further disciplinary action.

Note: This syllabus was adapted from a template provided at www.uwsp.edu