

# SOSC 2888A: Foundations of Cognitive Science

Class Hours: TU & TR 12:00-13:20 p.m.

Spring 2024

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## Course Description

On completing this course, students will be able to:

1. Develop basic understanding of core findings from across the interdisciplinary field of Cognitive Science.
2. Develop research skills and the ability to understand research findings from a variety of the constituent disciplines that make up the field of Cognitive Science, and the ability to critically evaluate such research.
3. Critically reflect upon their own conceptions of the nature of consciousness and mental phenomena, and whether these views are supported by theory and empirical evidence.
4. Work as a member of a team to investigate and study mental phenomena.

## Course Policy

### Assessments

Assessment for this course will be 48% coursework and 52% exam. Multiple-choice questions will be used for less than 30% of the total course assessment.

The *coursework assessment* will consist of three parts:

- *Assignments & discussions* (18%): Discussion answer submission (14%) and discussion participation (4%). The marks for discussion participation will be assessed according to the following criteria:
  - Intellectual contribution (40%)
  - Group discussion skills (30%)
  - Communication of ideas (30%)

The discussion answer submitted by each student will be graded according to the understanding of the reading (50%) and analysis and synthesis with new ideas (50%). In total there are 7 submissions.

- *Group project (30%)*: 10% for an oral presentation of the group project, and 20% for the individual essay.

The *exam assessment* will consist of three parts:

- *Pre-lecture exercises (open-book quizzes) (7%)*. There will be 7 pre-lecture exercises; each exercise will count 1% of the total mark.
- *Midterm/Final exams (closed-book) (45%)*. The 3 midterm/final exams will each count 15% of the total mark. They will consist of multiple choice, fill in the blank, and short answer questions.

### **Submission of coursework**

All written assignments must be submitted online on Canvas; **no email submission will be accepted.** Late submissions, for whatever reasons, will be marked down by 0.5% of the total marks earned for each *minute* late. Note that medical conditions do not warrant an extension of the deadline. Technical issues will be considered only if there is an official announcement from Moodle saying that the system is unavailable at the deadline. Thus, please try to finish and submit the coursework as early as possible.

### **Feedback policy**

Please note that we will not return any submitted reports or exam papers. However, we will review pre-lecture exercises and the midterm exam questions to help students revise. In addition, students can get individual feedback about the final exam and reports after the semester, by arrangement with the instructor/tutor. Students will be notified when marks are available online.

### **Marks appeal**

Any dispute on marks you receive on a written assignment or quiz must be made within one week after the marks are available. Another member of the teaching team will re-grade the materials (without seeing the comments and marks given by the original grader). The average of the two marks will be final.

### **Make-up policy**

No make-up will be given for any exercise/examination missed. However, if a medical certificate is provided for the absence, a make-up examination may be considered.

### **Academic honesty**

*Academic honesty*: Academic dishonesty will not be tolerated. Any student who engages in any form of academic dishonesty (e.g., cheating on exams, plagiarism, self-plagiarism, interfering with grading, falsification and fabrication of data in any academic exercise etc.) will receive a grade of F in this course and will be reported to the Disciplinary Committee for further disciplinary action.

### **Use of Generative Artificial Intelligence (GenAI) tools**

We will be in line with the university policy on the use of GenAI tools such as ChatGPT. Such tools should be used with care, ensuring sufficient student input, to achieve the best learning experience and outcomes. Moreover, usage of these tools needs to be explicitly acknowledged in the References sections of assignments, whenever they have been used. Failure to do so will count as improper referencing or

may even constitute plagiarism.

### Plagiarism

All written assignments will only require a softcopy submission. The softcopy will be checked for plagiarism against a database of articles, books, webpages, and essays submitted by students at HKUST and other universities. No credit will be given for an assignment that contains plagiarized materials. Further penalties will also be applied. These penalties include a zero mark for participation in course tutorials and a zero mark for the course. Plagiarism will also be reported to the Disciplinary Committee for consideration of possible disciplinary action. Note that you also should not use any materials submitted for another course for the coursework in this course without proper acknowledgement (i.e., self-plagiarism). Also, for group projects, all group members are responsible for the group submission and will receive the same penalty if plagiarized materials are discovered.

### Final grade

Each assessment is designed to assess students' knowledge of a combination of different course objectives. Students' final grade will be given according to the following criteria:

A: Excellent (total mark 80+): Students demonstrate consistent evidence of achieving the course objectives and substantial originality in identifying issues and in generating, analyzing, and communicating arguments.

B: Good (total mark 70~79): Students demonstrate frequent evidence of achieving the course objectives and originality in defining and analyzing issues and in creating solutions.

C: Satisfactory (total mark 60~69): Students demonstrate evidence of achieving the course objectives, but some important parts are omitted, e.g., misunderstanding of the materials, or lack of critical thinking, etc.

D: Poor (total mark 50~59): Students barely demonstrate evidence of achieving the course objectives; have assembled the bare minimum of information, poorly digested, and not well organized in presentation.

F: Fail (total mark < 50): Students fail to achieve the course objectives and demonstrate faulty understanding of the fundamental concepts.

## Class Schedule

Week	Date	Lecture	Assigned Reading	Open-Book Quiz	Assignments
1	1 Feb	Introduction	Chapter 0		
2	6 Feb	The prehistory of cognitive science	Chapter 0 & 1		(*discussion Q1)
2	8 Feb	The prehistory of cognitive science	Chapter 0 & 1		
3	13 Feb	<b>No Class (CNY)</b>			
3	15 Feb	The discipline matures: Three	Chapter 2	Chapter 0 & Chapter 1	(#discussion Q1) (*discussion Q2)

		milestones			
4	20 Feb	The discipline matures: Three milestones	Chapter 2		
4	22 Feb	The turn to the brain	Chapter 3	Chapter 2	(#discussion Q2) (*discussion Q3) <b>+ Project group formed</b>
5	27 Feb	The turn to the brain	Chapter 3		
5	29 Feb	Physical symbol systems and language of thought	Chapter 4	Chapter 3	(#discussion Q3) (*discussion Q4)
6	5 March	<b>Midterm Exam 1 (Chapter 0 to 3)</b>			
6	7 March	Physical symbol systems and language of thought	Chapter 4		<b>+ Project topic determined</b>
7	12 March	Midterm Exam 1 Review			
7	14 March	Neural networks and distributed information processing	Chapter 5	Chapter 4	(#discussion Q4) (*discussion Q5)
8	19 March	Neural networks and distributed information processing	Chapter 5		
8	21 March	Bayesianism in cognitive science	Chapter 7	Chapter 5	(#discussion Q5) (*discussion Q6)
9	26 March	<b>Midterm Exam 2 (Chapter 4-5)</b>			
9	28 March	<b>No Class (Midterm Break)</b>			
9	2 April	<b>No Class (Midterm Break)</b>			
9	4 April	<b>No Class (Midterm Break)</b>			
10	9 April	Midterm Exam 2 Review			
10	11 April	Bayesianism in cognitive science	Chapter 7		
11	16 April	Machine learning: From expert systems	Chapter 12	Chapter 7	(#discussion Q6) (*discussion Q7)

		to deep learning <b>+ Group summary report due</b>			
11	18 April	Machine learning: From expert systems to deep learning	Chapter 12		<b>+ Presentation order announced</b>
12	23 April	Student presentation		Chapter 12	(#discussion Q7)
12	25 April	Student presentation			
13	30 April	Student presentation			
13	2 May	Student presentation			
14	7 May	<b>Final Exam (7&amp;12, and student presentations)</b>			
14	8 May	Final exam review			<b>+ Individual essay due</b>

- \* **Discussion questions released**
- # **Discussion answer submission due**
- + **Project submission**

## Recommended Textbooks and Readings

Bermudez, J. L. (2022). *Cognitive Science: An Introduction to the Science of the Mind* (4th edition). Cambridge University Press: New York