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Course Description
Seminar in Cognitive Science   2024/25

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Time & Venue
Tue 1:30 pm – 4:20 pm @ LSK1026

Instructor

Prof. Janet Hui-wen Hsiao   Office: Room 3374, , 3/F Academic Building
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Course Information
This course aims to introduce current issues in Cognitive Science to postgraduate students. Cognitive Science is the interdisciplinary, scientific study of the mind and mental phenomena, encompassing Artificial Intelligence, Psychology, Linguistics, Neuroscience, Philosophy, Anthropology, and Education. At each week's class, we will read and discuss research papers from major Cognitive Science journals including *Trends in Cognitive Science* and *Topics in Cognitive Science*, or other related interdisciplinary journals. This course is open to all graduate students who are interested in learning more about interdisciplinary studies on the mind and behavior.

Course Requirements
<u>Weekly:</u> At each week's class, one student will lead a discussion on the assigned article(s). Everyone is expected to finish reading the assigned article(s) BEFORE the class. The presenter should post the assigned article(s) on the corresponding discussion forum on Canvas one week before the class. On the weekday before the class (**<u>Monday</u>**), everyone needs to post 1-2 discussion questions on the corresponding Discussion forum **<u>before NOON</u>** as an after-thought of the assigned article(s) of that week. During the class, the presenter will give a short presentation of the article(s) as a warm-up for group discussion, and also serve as the discussion leader. On the 2nd weekday after the class (**<u>Thursday</u>**), everyone needs to submit a reflective essay on Moodle **<u>by 5PM</u>** as an after-thought of the discussion. The order of taking the presenter role will be determined during the organization meeting. The duty of the discussion leader is to provide an encouraging atmosphere and stimulate the group to move beyond the content of the assigned article(s). You are more than welcome to meet with the instructor if you need help to prepare for a discussion session. You are encouraged to explore and pick your own topic; however, a new topic has to be approved by the instructor first.

Please note that you need to lead the discussion at least once and attend at least 80% of the seminars to pass this course. Discussion questions and reflective essays should still be submitted even if you miss a seminar. You need to submit at least 80% of the discussion questions and reflective summaries <u>in time</u> in order to pass the course. Late submissions will not be accepted.

Assessments
Assessment for this course will be 30% discussion participation, 30% presentation, and 40% reflective essays.

Discussion participation will be assessed by the following criteria:
- Intellectual contribution (40%)
- Group discussion skills (30%)
- Communication of ideas (30%)

Presentation will be assessed by the following criteria:
- Addressing the task (10%)
- Understanding, analysis, synthesis, and application of knowledge (20%)
- Argumentation (20%)
- Structure/organization (20%)
- Delivery (20%)
- Presentation mechanics (10%)

The reflective essays will be assessed by the following criteria:
- Addressing the task (20%)
- Intellectual engagement with concepts, theories or issues (40%)
- Personal development and reflection (30%)
- Writing mechanics (10%)

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.

Tentative Timetable

Week	Date	Topic	Presenter
1	3 Sept	Introduction & organization meeting	-
2	10 Sept	Understanding human cognition through computational modelling	Janet
3	17 Sept		
4	24 Sept		
5	1 Oct	Holiday	-
6	8 Oct		

7	15 Oct		
8	22 Oct		
9	29 Oct		
10	5 Nov		
11	12 Nov		
12	19 Nov		
13	26 Nov		

Potential Topics:
- Hsiao, J. H. (2024). Understanding human cognition through computational modelling. *Topics in Cognitive Science*, *16*(3), 349-376. https://doi.org/10.1111/tops.12737

Articles from *Trends in Cognitive Sciences*:
Sleep:
- Plasticity–stability dynamics during post-training processing of learning (review) https://browzine.com/libraries/230/articles/589110966/pdf
- Coupled sleep rhythms for memory consolidation (review) https://browzine.com/libraries/230/articles/607909143/pdf

Reading & visual cognition:
- Dynamic reading in a digital age: new insights on cognition (review) https://browzine.com/libraries/230/articles/583961458/pdf
- Rethinking cortical recycling in ventral temporal cortex (opinion) https://browzine.com/libraries/230/articles/589398553/pdf

Social cognition:
- Simplifying social learning (opinion) https://browzine.com/libraries/230/articles/605182632/pdf
- An 'embedded brain' approach to understanding antisocial behaviour (review) https://browzine.com/libraries/230/articles/584960667/pdf

Language processing:
- Interactive repair and the foundations of language (review) https://browzine.com/libraries/230/articles/589110965/pdf

Large language models:
- Dissociating language and thought in large language models (review) https://browzine.com/libraries/230/articles/609488550/pdf
- From task structures to world models: what do LLMs know? (opinion) https://browzine.com/libraries/230/articles/607909142/pdf

AI vs. humans:

- Generating meaning: active inference and the scope and limits of passive AI (opinion)
  https://browzine.com/libraries/230/articles/594733468/pdf
- Tests for consciousness in humans and beyond (review)
  https://browzine.com/libraries/230/articles/609029176/pdf

Social Science:
- When Are Social Protests Effective? (review)
  https://browzine.com/libraries/230/articles/592576692/pdf
- When expert predictions fail (opinion)
  https://browzine.com/libraries/230/articles/593865196/pdf

Development:
- Helpless infants are learning a foundation model
  https://www.ncbi.nlm.nih.gov/pmc/articles/PMC11310914/
- A cognitive-computational account of mood swings in adolescence (opinion)
  https://browzine.com/libraries/230/articles/609405563

Attention:
- Representational structures as a unifying framework for attention (opinion)
  https://browzine.com/libraries/230/articles/603076504/pdf

Decision making:
- Naturalistic reinforcement learning (review)
  https://browzine.com/libraries/230/articles/587027759/pdf

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 on the component(s) of assessment concerned or in this course and will be reported to the Department/School/University for further disciplinary action. There will be no exception.

Plagiarism
A softcopy is required for all written assignments. The softcopy will be checked for plagiarism. 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 Department/School/University 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).