Cognitive Science (Major/Minor)

Cognitive Science is the scientific study of the mind and mental phenomena. For example, what is consciousness? Do other animals have language? Could a computer ever think? What is mental imagery? Answering these questions relies upon an interdisciplinary perspective, and so Cognitive Science adopts methodologies from computer science, psychology, philosophy, linguistics, and neuroscience. Students who take this major will be exposed to research in all these disciplines, and will integrate results from across the different approaches in order to more fully understand the complexities of the mind and the brain.

A core aspect of the programme is to ensure that students learn skills from different research traditions; for example, a Cognitive Science student could be expected to learn how to run psychological experiments, apply formal linguistic analysis, or critique a philosophical argument. In doing so, this program will develop students who have a variety of formal intellectual skills, and can bring those skills to bear on a range of issues in our increasingly technological world. Students with a Major in Cognitive Science will also be able to act as a bridge between those who are technically skilled and those who seek to understand technology, by placing formal computational analysis within the context of human thought and behaviour.

I. Objectives

This program aims to:

- introduce students to critical issues within the interdisciplinary field of Cognitive Science, particularly related to the core disciplines of Psychology, Computer Science, Linguistics, and Philosophy;
- provide students with training in research techniques that are used to study the mind, thinking, and intelligence, from an interdisciplinary perspective;
- develop skills in critical analysis and reasoning; and
- provide students opportunities for tackling novel problems, and give them experience of addressing issues that are ill-defined.
## Programme structure

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<tr>
<th>Components</th>
<th>No. of credits</th>
<th>Major</th>
<th>Minor</th>
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<tbody>
<tr>
<td><strong>a) Introductory courses</strong></td>
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<tr>
<td>i) disciplinary</td>
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<td>(COMP1117/ LING1000 /</td>
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<td>LING2034 / PHIL1012 /</td>
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<td>PSYC1001)</td>
<td>LING2034 / PHIL1012 /</td>
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<td>PSYC1001)</td>
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<tr>
<td>ii) pre-requisites*</td>
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<td>(2 courses from 9 units)</td>
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<td><strong>b) Advanced courses</strong></td>
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<tr>
<td>i) core courses</td>
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<td>(PSYC2066 &amp; PSYC2067)</td>
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<td>ii) disciplinary electives</td>
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<td>(COMP / LING / PHIL / PSYC)</td>
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<td>(COMP / LING / PHIL / PSYC)</td>
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<td>iii) capstone experience</td>
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<td>(PSYC4068)</td>
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<td><strong>Total</strong></td>
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<td>36</td>
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* Candidates who opt to declare two major programmes offered by the Faculty of Social Sciences should avoid selecting overlapping pre-requisites.
Candidates who wish to declare a major (72 credits) or minor (36 credits) in Cognitive Science must complete:

a) **Introductory courses (24 credits for major; 12 credits for minor)**

i) Two disciplinary courses from the following list:

- **COMP1117.** Computer programming (6 credits)
- **LING1000.** Introduction to language (6 credits)
- **LING2034.** Psycholinguistics (6 credits)
- **PHIL1012.** Mind and knowledge: An introduction to philosophy (6 credits)
- **PSYC1001.** Introduction to psychology (6 credits)

ii) Two pre-requisite courses from the following nine units, but not more than one from a single unit (12 credits):

- Faculty of Social Sciences
  - Geography
  - Politics and Public Administration
  - Psychology
  - Social Work and Social Administration
  - Sociology
- Computer Science
- Linguistics
- Philosophy

b) **Advanced courses (48 credits for major; 24 credits for minor)**

i) Core courses (12 credits for both major and minor)

- **PSYC2066.** Foundations of cognitive science (6 credits)
- **PSYC2067.** Seminars in cognitive science (6 credits)

ii) Disciplinary electives (30 credits for major; 12 credits for minor)

Candidates who **major** in this programme must complete at least 5 elective courses from the course list below. Candidates who **minor** in this programme must complete at least 2 elective courses from the course list below. The following courses are grouped by subject area; students are free to specialize within one area or select courses from different areas. In course registration, students should pay special attention to the prerequisite of individual course as specified in the syllabus.
Philosophy of Mind
PHIL2110. Knowledge
PHIL2220. The mind
PHIL2230. Philosophy and cognitive science
PHIL2510. Logic
PHIL2520. Philosophy of logic
PHIL2610. Philosophy of language
PHIL2245. Philosophy and emotions

Artificial Intelligence and Computational Modelling
COMP3270. Artificial intelligence
COMP3314. Machine learning
COMP3407. Scientific computing
PSYC3061. Advanced issues in perception

Brain and Cognition
LING2053. Language and the brain
LING2057. Language evolution
PSYC2007. Cognitive psychology
PSYC2022. Biological psychology
PSYC2051. Perception
PSYC3054. Human neuropsychology
PSYC3068. Advanced cognitive psychology

Mind and Language
LING2003. Semantics: Meaning and grammar
LING2032. Syntactic theory
LING2037. Bilingualism
LING2048. Language and cognition
LING2055. Reading development and reading disorders
LING2063. Advanced topics in reading, language and cognition
PHIL2075. The semantics/pragmatics distinction

iii) Capstone experience (for major only)
PSYC4068. Research project in cognitive science (6 credits)

Rev Jul 2017
Updated Jul 2018