

# COGNITIVE SCIENCE (COGS)

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**COGS 100 Introduction to Cognitive Science Units: 3.00**

A multidisciplinary approach to the study of the mind combining approached from philosophy, psychology, linguistics, neuroscience, anthropology, and artificial intelligence. Logic, rules, concepts, and other mental representations used to generate thought and behaviour. Implementation of computational and cognitive models of mental processes.

NOTE Also offered online. Consult Arts and Science Online. Learning Hours may vary.

LEARNING HOURS 120 (36L;84P)

**Requirements:** Prerequisite None.

**Offering Faculty:** Faculty of Arts and Science

**COGS 200 Cognitive Psychology Units: 6.00**

**Requirements:** (COGS100 AND PSYC100)

**Offering Faculty:** Faculty of Arts and Science

**COGS 201 Cognition and Computation Units: 3.00**

Introduction to the computational aspects of the mind. Implementation of computer programs for reasoning, decision making, and problem solving to understand these mental processes. Information theory and behaviourism; computational models of cognition, perception and memory processes demonstrating modeling approaches, and cognitive architectures.

LEARNING HOURS 120 (36L;84P)

**Requirements:** Prerequisite Level 2 or above and a minimum grade of a C- (obtained in any term) or a 'Pass' (obtained in Winter 2020) in (COGS 100 or PSYC 100). Exclusion COGS 200; PSYC 220.

**Offering Faculty:** Faculty of Arts and Science

**COGS 300 Programming Cognitive Models Units: 3.00**

Importance and challenges of building cognitive models; steps of model building, programming simple models using computational and statistical techniques and tools such as Matlab. Recent models from research publications.

LEARNING HOURS 120 (36L;84P)

**Requirements:** Prerequisite A minimum grade of a C- (obtained in any term) or a 'Pass' (obtained in Winter 2020) in [(COGS 201 or PSYC 221) and [PSYC 202 or STAT\_Options]].

**Offering Faculty:** Faculty of Arts and Science

**COGS 400 Neural and Genetic Cognitive Models Units: 3.00**

Artificial Neural Networks (ANN) and Genetic Algorithms (GA) for problem solving and prediction tasks such as classification, clustering, optimization and data reduction and modeling human cognition, with application to real world problems. Ongoing research in this area in various application domains.

LEARNING HOURS 120 (36L;84P)

**Requirements:** Prerequisite Registration in a COGS Plan and a minimum grade of a C- (obtained in any term) or a 'Pass' (obtained in Winter 2020) in (CISC 235 or ELEC 278). Exclusion CISC 452; CMPE 452.

**Offering Faculty:** Faculty of Arts and Science

**COGS 499 Advanced Undergraduate Project Units: 3.00**

Topic selected under the supervision of a member of one of the faculties of CISC, LING, PHIL, PSYC. Emphasis may be on experimental, theoretical, or computer implementation topics. Independent research, an oral presentation, and a written report are required.

LEARNING HOURS 120 (24S;12I;84P)

**Requirements:** Prerequisite Level 4 or above and registration in a COGS Specialization Plan and a cumulative GPA of 1.90 or higher and a (GPA of 2.60 in CISC; COCA; COGS; SOFT) and (30.0 units in CISC; COCA; COGS; SOFT) and a minimum grade of a C- (obtained in any term) or a 'Pass' (obtained in Winter 2020) in (CISC 352 or CISC 365). Exclusion CISC 499; CISC 500.

**Offering Faculty:** Faculty of Arts and Science

**COGS 594 Independent Study Units: 3.00**

**Offering Faculty:** Faculty of Arts and Science