Introduction to Cognitive Science
COGS 100
Winter 2023

Grading Scheme

Grade Categories	Grade
Quizzes	**15%**
Online Quizzes 1, 2, and 3, equally distributed	
Assignments	**20%**
Assignment 1 Individual: Summary and mind map	10
Assignment 2 Group: Logic and cognitive modelng	10
Exams	**65%**
Midterm	25%
Final Exam 3 hours	40%

Grading Method

A *"numbers in, letters out"* method will be used. Marks will be posted as numerical percentage. The final course numerical grade will be converted to a letter grade based on Arts and Science Grading Scheme.

Assessments

You will have a midterm and a final exam including group and individual assignments and online quizzes which must be written in the classroom during the class time based on OnQ posts. All course activities will be posted on OnQ and course calendars. A minimum of 30% must be obtained in each category to pass the course.

Late Policy

Assignments must be submitted by the posted due date. Late submissions will be accepted until the posted end date on OnQ. 1% will be subtracted from the total course mark for each day past the due date. After the END DATE, no more submissions will be accepted.

Accommodations

For any special accommodations, students MUST upload approved official accommodation letters on OnQ through assignment submission (details on OnQ). Without approved letters NO accommodation will be provided.

Calculator Policy

Calculators can be used during quizzes, tests and examinations which have the basic calculating functions required by most Arts and Science courses. For this purpose, the use of the **Casio 991** series calculator is permitted and is the **only approved calculator for Arts and Science students**. This calculator can be bought from the Queen's Campus Bookstore, Staples and other popular suppliers of school and office supplies.

General Information

Check the school website for standard information about the following:
(https://www.cs.queensu.ca/students/undergraduate/syllabus/year2021-22.php)

- **Turnitin Statement**
- **Academic Integrity**

- **Copyright of Course Materials**
- **Accessibility Statement**
- **Accommodations Statement and Academic Considerations for Extenuating Circumstances**
  - *No accommodation will be given for time zone* as students are expected to attend the classes in person.
- **Statement of the Location and Timing of Final Examinations**

Weekly Syllabus

Week 1: What is Cognitive Science and Course Overview
Topics
Unit 1 starts. Cognitive Science: A Multidisciplinary Study, Cognitive Theory, Turing Machine and Mind as a Computational Process, Related Disciplines
Readings
Textbook Chapter and additional online material.

Week 2: COGS Disciplines and Relevant Concepts from Philosophy, Psychology, Neuroscience
Topics
Unit 2 starts. Multidisciplinary Perspectives of Mind from Philosophy, Psychology, Neuroscience.
Readings
Textbook Chapter and additional online material.

Week 3: COGS Disciplines and Relevant Concepts from Neuroscience, Linguistics, Anthropology
Topics
Multidisciplinary Perspectives of Mind from Neuroscience, Linguistics and Anthropology or evolution.
Readings
Textbook Chapter and additional online material.

Week 4: COGS Disciplines and Relevant Concepts from Anthropology, Artificial Intelligence
Topics
Unit 2 ends. Multidisciplinary Perspectives of Mind from Anthropology or evolution, and Artificial Intelligence.
Readings
Textbook Chapter and additional online material.

Week 5: Cognitive Processing, Modeling, and Representation of Information in the Mind – Logic, Rule
Topics
Unit 3 starts. How is information represented in the mind so that it can be processed by mental processes? What are the outcomes of the processes? Seven different mental representations to be studied. Formal logic and representations to simulate mental processing on the machine for cognitive modeling.
Readings
Textbook Chapter and additional online material.

Week 6: Cognitive Processing and Representation of Information in the Mind – Concept and Analogy
Topics
Other mental representations to process thought and action – concepts and analogy.
Readings
Textbook Chapter and additional online material.

Week 7: Cognitive Processing and Representation of Information in the Mind – Image Network
Topics
Other mental representations to process thought and action – mental image and network.
Readings
Textbook Chapter and additional online material.

Week 8: Mental Model and Mental Processes
Topics
Unit 3 ends on representations and Unit 4 starts on mental processes. Humans tend to use mental model for mental processing. Example of logic and Wason Card.
Readings
Textbook Chapter and additional online material.

Week 9: Memory, Vision
Topics
How is information retained in the mind and processed? How does our visual system work? How can we focus our attention efficiently?
Readings
Textbook Chapter and additional online material.

Week 10: Problem Solving and Decision Making and Social Behaviour
Topics
How do we solve problem and make decisions? How do we behave socially and why?
Readings
Textbook Chapter and additional online material.

Week 11: Cognitive Modeling
Topics
Unit 5 starts. Create a computational model of the mind – simulate mental processes, logic programming and artificial neural networks
Readings
Textbook Chapter and additional online material.

Week 12: Cognitive Architecture
Topics
Implementation of computational model requires programming framework or a cognitive architecture. Types of cognitive architecture and Artificial General Intelligence (AGI) – can that be a reality some day?
Readings
Textbook Chapter and additional online material.