CARLETON UNIVERSITY
SCHOOL OF COMPUTER SCIENCE
WINTER 2020

COMP 4106
ARTIFICIAL INTELLIGENCE

_____

Instructor
John Oommen

Address
Herzberg 5372 (oommen@scs.carleton.ca; www.scs.carleton.ca/~oommen)

Phone
520-2600 (Ext. 4358)

Lecture Room/TA Room
Loeb C 264/HP 5336 (Tentative)

Teaching/Office Hours
Teaching: Monday/Wednesday   11:35 to 12:55 Hours
Office: Monday/Wednesday   14:00 to 15:00 Hours

Teaching Assistants (TBD)
1. Geetika Sharma (GeetikaSharma@cmail.carleton.ca)
    Office Hours: Wednesday 15:00 to 17:00 Hours

2. Jacob Boertjes (JacobBoertjes@cmail.carleton.ca)
    Office Hours: Thursdays 12:30 to 14:30 Hours

3. Tim Patton (TimPatton@cmail.carleton.ca)
    Office Hours: Monday 15:00 to 17:00 Hours

4. Yunkai Wang (YunkaiWang@cmail.carleton.ca)
    Office Hours: Tuesday12:30 to 14:30 Hours

5. Christopher Blackman (christopherblackman@cmail.carleton.ca)
    Office Hours: Friday 14:00 to 16:00 Hours

Marking Scheme:
1. There will be 3 assignments, equally weighted, and totaling *50%* of the final credit.
2. Since the assignments are mostly programming assignments, the students will demo them on the due date on the lab machines in the TA lab *or* their own laptops. You may program the assignment in any language you like.
3. There will be 1 final project carrying *30%* of the final credit.
    - After a few weeks, students are expected to propose or ask for a suitable project.
    - The project will be due during the second-half of the examination period.
    - At a later date, which will be announced, all students will hand in a *brief* 1-to-2 page description/proposal of their chosen project.
4. There will be a final exam, not an in-class quiz, worth *20%* of the final credit.

Assignment Regulations:
1. No **LATE** assignments will be accepted. But I believe that I am very reasonable!
2. Retain all your assignments for a proof of your mark.
3. In case your mark is erroneously entered, we will discuss this on a case-by-case basis.
4. Please go to the course website to clearly understand the consequences of "cheating".

Text Book and Material

Text Book

G. Luger, *Artificial Intelligence: Structures and Strategies for Complex Problem Solving*, Pearson (Addison Wesley). Latest Edition (2009).

Book: Additional Reading

S. J. Russell and P. Norvig, *Artificial intelligence: A Modern Approach*, Prentice Hall. Third Edition (2009).

Class Notes

The notes of the course will be posted *before* each lecture.

Course Contents

Goal

This course will introduce the students to the elementary concepts of Artificial Intelligence (AI).

Background:

The prerequisites of the course are as specified in the Calendar, or equivalent.

Material (Tentative):
1. History of AI; its role in Cognitive Science.
2. Different types of Agents
3. Graph search as used in AI
4. Heuristic graph search solutions for problem solving "puzzles"
5. Heuristic graph search solutions for problem 2-player and multi-player games
6. Foundations of Classification Theory and Bayesian inference
7. Introduction to Decision Tree induction
8. Introduction to *Dependence* Tree models and Bayesian Networks
9. Introduction to Reinforcement Learning
10. Introduction to Neural Networks (NN): We will study at least three families of NNs

Since the area is so vast, this is a *tentative* list of topics that I will cover.