# Artificial Intelligence
# Winter, 2017

**Instructor:** Jackie Chi Kit Cheung (../../../index.html)
**Time:** Tuesdays and Thursdays, 8:30am – 10:00am
**Location:** Bronfman 151

**Office hours:** Thursdays, 10:00am – 12:00pm, starting on January 12th
**Office hours location:** McConnell 108N
Course outline (comp424-outline.pdf)

**TAs:** Ali Emami, Christopher Glasz, Michael Noseworthy, Harsh Satija, Matthew Smith

This course presents an introduction to the the field of artificial intelligence. Topics covered include: Search methods, knowledge representation using logic and probability, planning and decision making under uncertainty. Introduction to machine learning.

**Prerequisites:** (COMP 206 or ECSE 321), MATH 323 or equivalent and COMP 251.

## Announcements

**Classes start January 5th**. All further announcements will be made in-class and on myCourses.

## Lectures and Readings

Below is a tentative schedule of the topics in the course, and subject to modifications. Lectures slides and recordings will be made available on myCourses.

| Date | Topic | Readings |
| --- | --- | --- |
| Jan 5 | Introduction to AI | R&N Ch 1, 2 |
| Jan 10 | Uninformed search | R&N Ch 3-3.4 |
| Jan 12 | Informed search | R&N Ch 3.5-3.7 |
| Jan 17 | Search for optimization | R&N Ch 4.1, 4.2 |
| Jan 19 | Constraint satisfaction problems | R&N Ch 6 |
| Jan 24 | Searching under uncertainty | R&N Ch 4.3, 4.4 |
| Jan 26 | Game playing | R&N Ch 5 |
| Jan 31 | Monte Carlo tree search | |
| Feb 2 | Propositional logic | R&N Ch 7 |
| Feb 7 | First-order logic | R&N Ch 8, 9 |
| Feb 9 | Classical planning | R&N Ch 10 |
| Feb 14 | Planning, uncertainty | R&N Ch 13 |
| Feb 16 | **Midterm** | |
| Feb 21 | Bayes Nets | R&N Ch 14 |

| Feb 23 | Bayes Nets | |
| Feb 28 | *Reading week* | |
| Mar 2 | *Reading week* | |
| Mar 7 | Machine learning basics | R&N Ch 20 - 20.2 |
| Mar 9 | Unsupervised learning | R&N Ch 20.3 |
| Mar 14 | Supervised learning | R&N Ch 18 |
| Mar 16 | Temporal inference | R&N Ch 15 - 15.2 |
| Mar 21 | Hidden Markov models | R&N Ch 15.3 |
| Mar 23 | Utility and decisions | R&N Ch 16 |
| Mar 28 | Markov decision processes | R&N Ch 17 |
| Mar 30 | MDPs and POMDPs | R&N Ch 17 |
| Apr 4 | Reinforcement learning | R&N Ch 21 |
| Apr 6 | Natural language processing | R&N Ch 22 |
| Apr 11 | Wrap-up | |

# Coursework

All relevant handouts and other information will be distributed through myCourses.