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### ECE 470 – Artificial Intelligence

Term – Summer 2019 (30309,30310)

#### Instructor

Zahra Nikdel

E-mail: nikdel@uvic.ca

#### Office Hours

Days: Tuesdays.

Time: 9:30 to 11:30 (or by appointment)

Location: EOW 419

*Note:* All course emails **MUST** have “ECE 470” in the subject line and **MUST** be sent from UVic email accounts.

Emails without proper subject lines or sent from off-campus email accounts will likely be dropped by UVic’s email spam filters or be automatically redirected to junk email folders.

#### Course Objectives

The course objectives are to introduce the fundamentals of Artificial Intelligence (AI) and the basic techniques for building intelligent computer systems and an understanding of how AI is applied to real world complex problems such as face recognition, web search, industrial robots and cancer detection.

#### Learning Outcomes

Upon completion of this course, students will learn

- History of AI
- Applications of AI (Natural Language Processing, Robotics/Vision, etc)
- How to design and build intelligent agents (search, games, logic, constraint satisfaction problems)
- Machine learning different algorithms
- Solving real world problems through different AI techniques
- The limitations of current Artificial Intelligence techniques

#### Syllabus

The exact pacing and coverage of the syllabus materials will vary with course offerings.

#### Introduction to AI

##### Search Techniques for AI

Uninformed Search

Informed (Heuristic) Search

Local Search and Optimization Problems

Adversarial Search

Constraint Satisfaction Problems

##### Knowledge and Reasoning

Logical Agents, Propositional Logic and First-Order Logic

Reasoning with Uncertainty (Bayesian Networks)

Knowledge Representation  
**Machine Learning**  
Supervised Learning  
Unsupervised Learning  
**Deep Learning (Basics)**  
**AI Applications**

**A-Section(s): A01, A02 / CRN (30309,30310)**

Days: Tues., Wed., Fri.

Time: 8:30 am - 9:20 am

Location: Clearihue Building (CLE) room A127

**Required Text**

Title: Course notes available online

**Optional Text**

Title: Artificial Intelligence: A  
Modern Approach  
Author: S. Russel and P. Norvig  
Publisher: Prentice Hall, 3rd Ed.  
Year: 2010

**Assessment:**

Mid-term1	20%	Date: Tue 25 <sup>th</sup> June
Course Project	30%	Due : Fri 19 <sup>th</sup> July
Mid-term2	20%	Date: Fri 19 <sup>th</sup> July
Assignments	30%	TBA

**Note:**

The final grade obtained from the above marking scheme for the purpose of GPA calculation will be based on the percentage-to-grade point conversion table as listed in the current Undergraduate Calendar.

<https://web.uvic.ca/calendar2019-05/undergrad/info/regulations/grading.html>

**There will be no supplemental examination for this course.**

<https://web.uvic.ca/calendar2019-05/undergrad/info/regulations/exams.html#>

**Note to students:** Students who have issues with the conduct of the course should discuss them with the instructor first. If these discussions do not resolve the issue, then students should feel free to contact the Chair of the Department by email or the Chair's Assistant to set up an appointment.

**Accommodation of Religious Observance:**

<https://web.uvic.ca/calendar2019-05/undergrad/info/regulations/religious-observanc.html>

**Policy on Inclusivity and Diversity:**

<https://web.uvic.ca/calendar2019-05/general/policies.html>

**Standards of Professional Behaviour:** You are advised to read the Faculty of Engineering document Standards for Professional Behaviour, which contains important information regarding conduct in courses, labs, and in the general use of facilities.

<https://www.uvic.ca/engineering/assets/docs/professional-behaviour.pdf>

Cheating, plagiarism and other forms of academic fraud are taken very seriously by both the University and the Department. You should consult the entry in the current Undergraduate Calendar for the UVic policy on academic integrity.

<https://web.uvic.ca/calendar2019-05/undergrad/info/regulations/academic-integrity.html>

**Equality:** This course aims to provide equal opportunities and access for all students to enjoy the benefits and privileges of the class and its curriculum and to meet the syllabus requirements. Reasonable and appropriate accommodation will be made available to students with documented disabilities (physical, mental, learning) in order to give them the opportunity to successfully meet the essential requirements of the course. The accommodation will not alter academic standards or learning outcomes, although the student may be allowed to demonstrate knowledge and skills in a different way. It is not necessary for you to reveal your disability and/or confidential medical information to the course instructor. If you believe that you may require accommodation, the course instructor can provide you with information about confidential resources on campus that can assist you in arranging for appropriate accommodation. Alternatively, you may want to contact the Centre for Accessible Learning located in the Campus Services Building.

The University of Victoria is committed to promoting, providing, and protecting a positive, and supportive and safe learning and working environment for all its members.

**Course Lecture Notes:** Unless otherwise noted, all course materials supplied to students in this course have been prepared by the instructor and are intended for use in this course only. These materials are NOT to be re-circulated digitally, whether by email or by uploading or copying to websites, or to others not enrolled in this course. Violation of this policy may in some cases constitute a breach of academic integrity as defined in the UVic Calendar.

### **Sexualized Violence Prevention and Response at UVic**

UVic takes sexualized violence seriously, and has raised the bar for what is considered acceptable behaviour. We encourage students to learn more about how the university defines sexualized violence and its overall approach by visiting [www.uvic.ca/svp](http://www.uvic.ca/svp). If you or someone you know has been impacted by sexualized violence and needs information, advice, and/or support please contact the sexualized violence resource office in Equity and Human Rights (EQHR). Whether or not you have been directly impacted, if you want to take part in the important prevention work taking place on campus, you can also reach out:

**Where:** Sexualized violence resource office in EQHR; Sedgewick C119

**Phone:** 250.721.8021

**Email:** [svpcoordinator@uvic.ca](mailto:svpcoordinator@uvic.ca)

**Web:** [www.uvic.ca/svp](http://www.uvic.ca/svp)