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Module	Instructor	Office	Webpage
1	Dr. Lourdes Peña-Castillo (Coordinator)	ER-6034	<a href="http://www.cs.mun.ca/~lourdes">www.cs.mun.ca/~lourdes</a>
2	Dr. Todd Wareham	EN-2034	<a href="http://www.cs.mun.ca/~harold">www.cs.mun.ca/~harold</a>
3	Dr. Vinicius Prado da Fonseca	EN-2012	<a href="https://www.cs.mun.ca/~vpradodafons/">https://www.cs.mun.ca/~vpradodafons/</a>
4	Dr. Xianta Jiang	EN-2010	<a href="https://www.cs.mun.ca/~xiantaj/">https://www.cs.mun.ca/~xiantaj/</a>
5	Dr. Andrew Vardy	CSF-4128	<a href="https://bots.cs.mun.ca/author/andrew-vardy/">https://bots.cs.mun.ca/author/andrew-vardy/</a>

**Lectures:** Tuesday/Thursday 12:00-12:50 pm in EN1052  
Friday 1:00-1:50 pm in EN1051

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### Course Description:

This course provides an overview of the history of AI and its main areas, emphasizes the relevance of ethics considerations in AI research and application, and introduces a selection of the disciplines that constitute modern AI.

### Learning Goals:

Upon successful completion of this course, students should:

- Be able to narrate AI history
- Be aware of ethical issues in AI
- Have a broad perspective on AI
- Be familiar with selected AI areas
- Be able to describe current AI applications

### Course Activities:

1. Five assignments (one per module)
2. Five quizzes (one per module)

### Evaluation Scheme:

Assignments 50% (10% each)

Quizzes 50% (10% each) Students have to obtain at least 50% on each quiz to pass the course.

### Notes:

\* *Evaluation*

→ Assignments will be submitted in electronic format using the Assignments feature in Brightspace. **No late assignments will be accepted.**

→ All grades will be assigned according to the University Calendar (Section 6.9.2 under University Regulations).

- All written materials delivered must comply with the expectations of Good Writing set out in the University Calendar (Section 6.9.3 under University Regulations).
- In the event of university closure on the day of a test, the test will be given in the next class meeting.
- If, for special circumstances (such as medical or bereavement), you miss a deadline for a grade item, notify the instructor of the corresponding module as soon as possible and no later than 48 hours after the original deadline, providing any necessary related documentation (if documentation is required). Failure to do this might result in a mark of 0% for that grade item. For more information, please see Section 6.7.5 and Section 6.15.6 under University Regulations in the University Calendar or consult the Registrar's Office.

\* *Communication*

- Course cancellations will be announced in the course shell in Brightspace.
- Course materials, news and communications will be available in Brightspace.
- Although changes to this document are not intended at this time, any part of this course outline can be subject to change, particularly during the first two weeks of classes. Latest version of the course outline will be available through the Brightspace shell for the course.

\* *Academic conduct*

- From section 6.12 of the University Calendar: “A student is expected to adhere to those principles which constitute proper academic conduct. Academic misconduct cannot be condoned or even appear to be condoned. A student has the responsibility to know which actions, as described under [Academic Offences](#), could be construed as dishonest or improper.”. Students found guilty of an academic offence may be subject to a number of penalties commensurate with the offence including reprimand, reduction of grade, probation, suspension or expulsion from the University. If plagiarism and/or cheating occurs in a grade item, this item will receive a grade of zero. For more information regarding this policy, students should refer to the University Regulations for Academic Misconduct (Section 6.12) in the University Calendar.
- It is the responsibility of the instructor to determine, maintain and enforce the standards of behavior acceptable to preserving an atmosphere appropriate for teaching and learning. Students will be warned if their behavior is evaluated by the instructor as disruptive.

\* *Accommodation*

- Memorial University of Newfoundland is committed to supporting inclusive education based on the principles of equity, accessibility and collaboration. Accommodations are provided within the scope of the University Policies for the Accommodations for Students with Disabilities. Students who may need an academic accommodation are asked to initiate the request with the Glenn Roy Blundon Centre at the earliest opportunity ([www.mun.ca/blundon](http://www.mun.ca/blundon)).

\* *Course material copyright*

- The lectures and displays (and all material) delivered or provided in this course, including any visual or audio recording thereof, are subject to copyright owned by the instructor of the corresponding module. It is prohibited to record/copy and distribute by any means, in any format, openly or surreptitiously, in whole or in part, in the absence of express written permission from the instructor any of the lectures or materials provided or published in any form during or from the course.

\* *Covid-related*

- If Memorial University campus operations are required to change because of health concerns related to the COVID-19 pandemic, in-person lectures will transition to synchronous online meetings, following our normal class hours.
- To protect yourself and those around you, it is important to stay home if you feel unwell or if you are under quarantine. Note that you will not be penalized if you need to stay home for quarantine. Please keep the instructor of the corresponding module informed so alternatives can be arranged.

**Land acknowledgment:**

We respectfully acknowledge the territory in which we gather as the ancestral homelands of the Beothuk, and the island of Newfoundland as the ancestral homelands of the Mi'kmaq and Beothuk. We would also like to recognize the Inuit of Nunatsiavut and NunatuKavut and the Innu of Nitassinan, and their ancestors, as the original people of Labrador. We strive for respectful relationships with all the peoples of this province as we search for collective healing and true reconciliation and honour this beautiful land together.

**Topics per module**

- Module 1: Intro to AI
  - What is AI?
  - A brief history of AI
  - Sample AI applications
  - Ethical AI
- Module 2: Natural language processing (NLP)
  - What is NLP?
  - NLP: the view from linguistics
  - NLP implementation mechanisms (automata, grammars, neural networks)
  - NLP applications (e.g., information extraction, discourse systems, machine translation)
- Module 3: Robotic manipulation
  - Introduction to robotic manipulation
  - Forward and Inverse kinematics
  - Perception for manipulation
  - Robot programming languages and systems
- Module 4: Human/AI Collaboration
  - Introduction to Human AI Collaboration (HAC)
  - Theories of HAC
  - Collaborative teleoperation
  - Application and case studies
- Module 5: Swarm Intelligence
  - Introduction to Swarm Intelligence and Swarm Robotics
  - Introduction to Waggle, the online swarm robotics lab
  - Biological inspirations and principles
  - Case studies and applications

**Tentative Course Schedule**

Week	Monday	Tuesday	Wed.	Thursday	Friday
1	Jan 2			Jan 5 <i>Lectures begin</i> <b>Welcome and Intro</b>	<b>Module 1: Intro to AI</b>
2	Jan 9	<b>Intro to AI</b>		<b>Intro to AI</b>	<b>Intro to AI</b>
3	Jan 16	<b>Intro to AI</b>		<i>Last day to add courses</i> <b>Intro to AI</b>	<b>Intro to AI</b>
4	Jan 23	Jan 24 <b>Module 2: NLP</b>		<b>NLP</b>	<b>NLP</b>
5	Jan 30	<b>NLP</b>		<b>NLP</b>	<b>NLP</b>
6	Feb 6	<b>NLP</b>		Feb 9 <b>Module 3: Robot manipulation</b>	<b>Robot manipulation</b>
7	Feb 13	<b>Robot manipulation</b>		<b>Robot manipulation</b>	<b>Robot manipulation</b>
7	Feb 20 <i>Winter break</i>				
8	Feb 27	<b>Robot manipulation</b>		March 2 <i>Last day to drop courses</i> <b>Robot manipulation</b>	March 3 <b>Module 4: Human/AI collaboration</b>
9	March 6	<b>Human/AI collaboration</b>		<b>Human/AI collaboration</b>	<b>Human/AI collaboration</b>
10	March 13	<b>Human/AI collaboration</b>		<b>Human/AI collaboration</b>	<b>Human/AI collaboration</b>
11	March 20	March 21 <b>Module 5: Swarm Intelligence</b>		<b>Swarm Intelligence</b>	<b>Swarm Intelligence</b>
12	March 27	<b>Swarm Intelligence</b>		<b>Swarm Intelligence</b>	<b>Swarm Intelligence</b>
13	April 3	<b>Swarm Intelligence</b>		April 6 <i>Lectures end</i>	April 7 <i>Good Friday</i>
14	April 12 – April 21 Final examinations				