University of North Texas
Department of Computer Science and Engineering
CSCE 5210 – Fundamentals of Artificial Intelligence
Session: Fall/2023

Classes:

5210-002 (10900)
MoWe 5:00 PM - 06:20PM - Life A204

Instructor:
Dr. Moawia Eldow
Office: E250E
 Email: moawia.eldow@unt.edu
Office hours: TuTh 12:00 to 1:00 pm, 2:30 to 3:30 pm

TAs/IAs:

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Description:
A broad understanding of the basic techniques for building intelligent computer systems and how AI is applied to solve problems. The emergent nature of intelligent behavior through robust and efficient sensation, knowledge representation, and decision making are demonstrated through a series of hands-on demonstrations and tutorials. Ethical implications of automation and autonomy of machines are discussed through case studies.

Prerequisites: None. Good backgrounds on **programming languages**, **discrete math** and **data structures** can help overcome many fundamentals covered in the class.

Learning Outcomes:
By the end of the course, students will
1. Be familiar with types of agents and basic concepts of artificial intelligence.
2. Be familiar with search algorithms including informed search and heuristic search.
3. Be able to design and use agents for constraint satisfaction problems
4. Be able to use propositions and inference techniques.
5. Be able to use basic algorithms in supervised machine learning.
6. Be familiar with neural networks and deep learning
7. Be familiar with reasoning under uncertainty.
8. Be familiar with ethical and social impacts of artificial intelligence.

Primary Text (required):
Artificial Intelligence: Foundations of Computational Agents, 3rd Edition,
David L. Poole and Alan K. Mackworth,
Cambridge University Press, 2023. ISBN: 9781009258197 (print), 9781009258227 (digital).
Available online at: **https://artint.info/3e/html/ArtInt3e.html**

Grading:

		Grading Scale:	
Participation	**5%**	for score x in 90 _ x	**A**
Homework Assignments	**20%**	80 _ x < 90	**B**
Programming Assignments	**20%**	70 _ x < 80	**C**
Project	**15%**	60 _ x < 70	**D**
Midterm Exam	**20%**	x < 60	**F**
Final Exam	**20%**		

Homework Assignments:
Written homework assignments/exercises _**will be due at 11:59 pm on Wednesdays.**_
Assignments may be turned in using the dropbox on canvas. Please use a high resolution black and white scan for hand written exercises.

Programming Assignments:
The program may be written in any language as long as the TA and the professor are able to build and execute from source code. If in doubt, contact the instructor to verify that the programming environment is acceptable. Assignments may require using modifying the textbook's python code from AI Python. Programs may be turned in using the dropbox on canvas. _**Programming assignments will be due at 11:59 p.m. on Fridays.**_

Late Submission Policy:
Assignments may be turned in late, but not more than two weeks. All the late submissions may lose a percentage of their graded point values according to the following schedule:

> On time : **0%**
> 1-3 days : **10%**
> 4-7 days : **20%**
> 8-14 days : **40%**
> > 14 days : **100%**

Project:
Each group of 3 to 5 students need to work in one project through the term. Components of the project may include a proposal, milestone first report, and final project code and report. Projects may be turned in using the dropbox on canvas before the due date.

Exams:
There will be one **midterm exam** during the semester at the normal lecture time, which will cover the first half of the class topics. There will also be a **final exam** during finals week, which will cover the second half of the class topics.

Collaboration:
for homework and programming assignments, discussion of concepts, ideas, and techniques are allowed. After discussion, each student must write up his/her own solution. Copying another person's work, in part or whole, is not allowed. Giving another student your work, in part or whole, is considered cheating as well. Any violation of academic integrity would result in a non-droppable grade of zero for that assignment and an additional reduction of one letter grade in the course and a report to the university administration. Major violations will result in a grade of F!.

Academic Policies
No cheating or plagiarism is allowed in assignments and exams. Academic dishonesty will result in a final course _grade of "F"._ "Sharing/reuse" of solutions to assignment problems is strictly prohibited. All work turned in with your name on it must be your own work.

Other Policies:
Students should refer to any other polices from university, college and department.

Course Outline (*Tentative Schedule on 10 week-session of Summer 2023*):

Weeks	Reading chapters and Topics	Homework (H), Program (P) (Due date)
Aug 21 - 25	Overview of Class Ch1 – Artificial Intelligence & Agents	
Aug 28-Sep 1	Ch1 – Artificial Intelligence & Agents (cont.)	**H1 (09/06/2023)**
Sep 4-8	Sep 4, **Labor Day -No Classes** Ch3 – Searching of Solutions	***Project Proposal due on Sep 8, 2023***
Sep 11-15	Ch3 – Searching of Solutions (cont.)	**H2 (09/20/2023),** **P1 (09/22/2023),**
Sep 18-22	Ch4 – Reasoning with Constraints	
Sep 25-29	Ch4 – Reasoning with Constraints (Cont.)	**H3 (10/04/2023),** **P2 (10/06/2023)**
Oct 2-6	Ch5 – Propositions and Inference	***Project milestone first report due on Oct 6th, 2023***
Oct 9-13	**Mid-Term Exam (*Monday 10/09/23*)**	
Oct 16-20	Ch15 – Individuals and Relations	**H4 (10/25/2023),** **P3 (10/27/2023)**
Oct 23-27	Ch7 – Supervised Machine Learning	**H5 (11/01/2023),** **P4 (11/03/2023)**
Oct 30-Nov 3	Ch8 – Neural Networks & Deep Learning	**H6 (11/08/2023),** **P5 (11/10/2023)**
Nov 6-10	Ch9 – Reasoning with Uncertainty	**H7 (11/15/2023)**
Nov 13-17	Ch18 – Ethical & Social Impacts of AI	***Project final report due on Nov 17th, 2023***
Nov 20-24	***Thanksgiving Break - No Classes***	
Nov 27-Dec 1	**Project Presentations: Discussion Forum** **(**Posting presentation videos, sending questions to other groups, and replying to questions from another groups/instructor/TAs)	
Dec 4-8	Review Week	
Dec 11-15	**Final Exam (*Monday 12/11/2023*)**	