



CSCI 4330: Artificial Intelligence

2022 Winter Session	
Total Class Sessions: 25	Instructor: Staff
Class Sessions Per Week: 6	Classroom: TBA
Total Weeks: 4	Office Hours: TBA
Class Session Length (Minutes): 145	Language: English
Credit Hours: 4	

Course Description:

Artificial intelligence (AI) is often used to describe machines (or computers) that mimic cognitive functions that humans associate with the human mind, such as learning and problem solving. In the twenty-first century, AI techniques have experienced a resurgence following concurrent advances in computer power, large amounts of data, and theoretical understanding; and AI techniques have become an essential part of the technology industry, helping to solve many challenging problems in computer science, software engineering and operations research. This course gives a fundamental introduction to the concepts, techniques, and applications of AI. Topics include problem solving, search, knowledge and reasoning, logical agents, first-order logic and inference, uncertain knowledge and reasoning, machine learning, natural language understanding and robotics.

Course Materials:

Textbooks:

S. Russell and P. Norvig, Artificial Intelligence: A Modern Approach, Pearson, 4th edition, 2020
or
S. Russell and P. Norvig: Artificial Intelligence: A Modern Approach. Pearson, 3rd Edition, 2010

Course Format and Requirements:

The sessions of this course are mainly lecturing and computer programming, and the materials of which will be assigned and handed out by the instructors before each class. Students are supposed to be present at each class, and there are chances for students to make in-class discussions towards certain topics and ask questions. To get a thorough understanding of the information presented, students are supposed to finish all required assignment before the class.

Attendance:

Students are supposed to be present at all class sessions. Notifications about absence reasons to the instructor should be done in advance if students are not able to attend classes. More than three absences will fail this course. Active participation in all class activities is very important



for students to achieve success in this course.

Course Assignments:

4 Homework Assignment:

There are 4 homework assignment in this course. Each assignment may include a written portion and a programming portion. The students are supposed to work individually on this assignment. No late work will be accepted. The homework consists of important programming tasks, so it accounts for 50% of the final grade.

Exams :

That will be one midterm exam and one final exam for the course throughout the semester, both are close-book and take place in class. The content of the exams is mainly covered in the lectures and required readings. Class before the midterm exam and the final exam will be left for review and Q&A.

Course Assessment:

Homework assignments	50%
Midterm Exam	20%
Final Exam	30%
Total	100%

Grading Scale (percentage):

A+	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
98- 100	93- 97	90- 92	88- 89	83- 87	80- 82	78- 79	73- 77	70- 72	68- 69	63- 67	60- 62	<60

Academic Integrity:

Students are encouraged to study together, and to discuss lecture topics with one another, but all other work should be completed independently.

Students are expected to adhere to the standards of academic honesty and integrity that are described in the Chengdu University of Technology's *Academic Conduct Code*. Any work suspected of violating the standards of the *Academic Conduct Code* will be reported to the Dean's Office. Penalties for violating the *Academic Conduct Code* may include dismissal from the program. All students have an individual responsibility to know and understand the provisions of the *Academic Conduct Code*.

Special Needs or Assistance:

Please contact the Administrative Office immediately if you have a learning disability, a medical issue, or any other type of problem that prevents professors from seeing you have learned the course material. Our goal is to help you learn, not to penalize you for issues which mask your learning.

**Course Schedule:**

Topics	Assignments
Module 1 Introduction (Class 1-2) Course Structures and Course Policy Introduction to AI Intelligent Agents	Textbook reading Homework Assignment 1
Module 2: Problem-solving by Search (Class 3-6) Uninformed Search Informed Search Adversarial Search and Games Constraints Satisfaction	
Module 3: Knowledge, Reasoning and Planning (Class 7-9) Logical Agents First-Order Logic Inference in First Order Logic	Textbook reading Homework assignment 2 Midterm exam
Module 4: Uncertain Knowledge and Reasoning (Class 10-13) Probabilistic Reasoning Probabilistic Reasoning over Time Probabilistic Programming Review for Midterm Exam	
Module 5: Machine Learning-Supervised Learning (Class 14-16) Introduction to Machine Learning Linear Regression Learning Decision Tree Learning	Textbook reading Homework assignment 3
Module 6: Machine Learning-Unsupervised Learning, Reinforcement learning (Class 17-19) K-means Clustering Reinforcement learning	
Module 7: Natural Language Processing (Class 20-22) Introduction to NLP Text Parsing Probabilistic Language Modeling	Textbook reading Homework assignment 4 Final exam



Information Retrieval Lexical Semantics and Lexical Resources	
Module 8: Robotics(Class 23-25) Introduction to Robotics Human-robot Interaction Review for Final Exam	