



Jordan University of Science and Technology
Faculty of Computer & Information Technology
Computer Science Department

CS762 Advanced Artificial Intelligence - JNQF Level: 9

Second Semester 2023-2024

Course Catalog

3 Credit Hours. The course provides AI concepts and methods for problem-solving, heuristic search, planning, hypothesis formation, modeling and knowledge representation, knowledge acquisition (learning), Machine learning, Deep Learning, AI programming methodologies, and tools. The course introduces applications of AI in several areas such as Computer vision, automatic programming, Theorem proving, game playing, machine vision, natural language systems, and robots. This course gives a graduate-level student a thorough grounding in the methodologies, technologies, mathematics, and algorithms currently needed by people who do research in machine learning. The research component is part of this course.

Teaching Method: Blended

Text Book

Title	Artificial Intelligence: A Modern Approach
Author(s)	Stuart Russell & Peter Norvig
Edition	3rd Edition
Short Name	Ref #1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref #2	Hands-On Machine Learning with Scikit-Learn and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems	Aurélien Géron	2nd Edition	
Ref #3	Deep learning	Ian Goodfellow, Yoshua Bengio and Aaron C. Courville	1st Edition	
Ref #4	Artificial Intelligence with Python	Alberto Artasánchez Prateek Joshi	2nd Edition	

Instructor	
Name	Dr. Qanita Bani baker
Office Location	-
Office Hours	
Email	qmbanibaker@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Mon : 11:30 - 13:30 Room: G2120

Tentative List of Topics Covered		
Weeks	Topic	References
Weeks 1, 2	Introduction	From Ref #1
Weeks 2, 3, 4	Solving problems by searching	From Ref #1
Weeks 4, 5	Adversarial Search & Constraint Satisfaction Problems	From Ref #1
Week 6	Logical agents & Uncertain knowledge	From Ref #1
Weeks 6, 7, 8, 9, 10	Machine learning	From Ref #2 , From Ref #4
Weeks 10, 11, 12, 13, 14	Neural Networks & Deep learning	From Ref #2 , From Ref #3 , From Ref #4
Weeks 11, 14, 15	AI Applications	From Ref #3 , From Ref #4
Weeks 15, 16	Paper reviews and presentations	

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Apply fundamental AI concepts in analyzing, designing, and implementing intelligent agents that solve AI problems. [1MSO1] [1L9K1]	20%	
Understand the concept of Machine Learning and how to apply it to solve practical problems. [1MSO2] [1L9S1]	15%	
Understand the concept of Deep Learning and how to apply it to solve practical problems. [1MSO2] [1L9S1]	15%	
Build a background / related works of state-of-the-art research on AI topics. [1MSO4] [1L9S2]	20%	
Conduct state-of-the-art research on AI topics that leads to a research paper. [1MSO2] [1L9C4]	30%	

Relationship to Program Student Outcomes (Out of 100%)										
SO1	SO2	SO3	SO4	SO5	SO6	MSO1	MSO2	MSO3	MSO4	MSO5
						20	60		20	

Relationship to NQF Outcomes (Out of 100%)			
L9K1	L9S1	L9S2	L9C4
20	30	20	30

Evaluation	
Assessment Tool	Weight
الإمتحان النصفى	25%
أعمال أخرى (Activities)	25%
Paper- based Final (25) +Final Project (25)	50%

Policy	
Attendance	Excellent attendance is expected. In accordance with university regulations, students missing more than 20% of total classes are subject to failure. No excuses will be accepted. If you miss class, it is your responsibility to find out about any announcements or assignments you may have missed. Attendance will be recorded at the beginning or end of each class.
Participation	You are expected to participate in class. Participation includes asking and answering questions, raising issues, and suggesting solutions to the discussed problems.
Project	Each student is expected to select a topic in the fields of AI and work on a research paper, which is expected to be submitted by the end of the term.
Exams	Exams are meant to test your UNDERSTANDING of the course NOT your ability to memorize.
Makeups	Makeup exam should not be given unless there is a valid excuse. Arrangements to take an exam at a time different than the one scheduled MUST be made prior to the scheduled exam time. In accordance with university regulations, students should bring a valid excuse authenticated through valid channels in JUST.
Workload	Students are expected to spend 15 hours/week to receive an A/A+ score.
Code of Conduct	Exams and Project need to be done individually. Copying of another student's work, even if changes are subsequently made, is inappropriate, and such work will not be accepted. Cheating or copying from neighbor on exam is an illegal and unethical activity and standard JUST policy will be applied. All graded works must be your own work.

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