" حيث تصبح الرؤية واقعاً"
"When Vision Becomes Reality"

" عراقة وجودة"
Tradition and Quality

Detailed Course Description - Course Plan Development and Updating Procedures/ ……………………. Department	QF01/0408-3.0E

Faculty	Faculty of Science & Information Technology	Department	CS
Course number	0114487	Course title	Artificial Intelligence
Number of credit hours	3	Pre-requisite/co-requisite	Algorithms 0114313

Brief course description

This course introduces the basic principles in artificial intelligence. It covers simple representation schemes, problem solving paradigms, constraint propagation, and search strategies. Areas of application such as knowledge representation, natural language processing, expert systems, vision and robotics are explored. The PROLOG programming language is also introduced.

	Course Goals and Learning Outcomes
Goal 1	**Presenting the concepts and Benefits of AI.**
Learning Outcomes	**1.1** Understanding the basic concepts and techniques of AI. **1.2** Learning how to represent AI knowledge in both theory and practice with careful attention to underlying principles of logic, search, and probability.
Goal 2	**Describing concepts of state space search and its strategies.**
Learning Outcomes	**2.1** Learning the state space search and its strategies. **2.2** Learning the concepts of blind search algorithms. **2.3** Learning Depth -first search and Breadth -first search algorithms. **2.4** Learning the concepts of heuristic search algorithms. **2.5** Learning how to use algorithms for problem solving and how to select appropriate search paradigms for problems.
Goal 3	**Describing the concepts of production systems.**
Learning Outcomes	**3.1** Understanding the concepts of production systems. **3.2** Learning the main components of production systems.
Goal 4	**Presenting basic concepts and roles of AI programming (PROLOG).**
Learning Outcomes	**4.1** Learning the concepts of PROLOG language. **4.2** Learning the statements, rules and queries of Prolog language.
Goal 5	**Describing Expert Systems and Machine learning.**
Learning Outcomes	**5.1** Learning the concepts of expert systems and applications. **5.2** Learning the concepts of Knowledge Based Systems. **5.3** Learning the concepts of machine learning.
Textbook	Artificial Intelligence: Building Intelligent Systems. (1st edition) by P. Kulkarni and P. Joshi, PHI Learning Private Limited, 2015. ISBN: 978-81-203-5046-5
Supplementary References	**1.** Russell and Norvig, Artificial Intelligence: A Modern Approach, 3rd edition, Pearson Education, Inc., Prentice-Hall-Series, **2010**.

جامعة الزيتونة الأردنية **Al-Zaytoonah University of Jordan** **كلية العلوم وتكنولوجيا المعلومات** **Faculty Of Science & IT**	

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	2. Jeff Heaton, Artificial Intelligence for Humans, Volume.1, Fundamental Algorithms, Kindle Edition, 2013. **3.** Alan Mackworth and David Poole, Artificial Intelligence: Foundations of Computational Agents, Cambridge Canada Press, 2010. **4.** Robots Are People Too: How Siri, Google Car, and Artificial Intelligence Will Force Us to Change Our Laws by John F. Weaver. Praeger,Nov. 2013. ISBN: 1440829462, 9781440829468

	Course timeline			
Week	**Number of hours**	**Course topics**	**Pages (textbook)**	**Notes**
01	1 1 1	**1. Introduction to artificial intelligence** Artificial intelligence history and foundation Birth of artificial intelligence Artificial intelligence techniques Problem solving with AI	TXT: 1-7	
02	1 1	**2. Problem solving** Problem solving process Formulating problems Problem types and characteristics	TXT: 15-20	
02–03	2 2	**3. Uniformed search** General search algorithms Uniformed search methods (Breadth first search, Depth first search)	TXT:39-47	
04–05	1 1 2 3	**4. Informed search** Generate and test Best first search Greedy search A* search Local search algorithms and optimization problems (hill climbing search, genetic algorithms)	TXT- 56-65, 69-83	
06		**Revision** **First exam 20%**		

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07	1 1 1	**5. Intelligent agents** What is an intelligent agents Rationality and rational agent Performance measure	TXT: 95-99	
08–10	1 1 1 1 1 2 2	**6. Knowledge and reasoning** Knowledge representation Knowledge-based agents The Wumpus world Logic Prepositional logic Predicate logic Unification and lifting inference in FOL Representing knowledge using rules Prolog	TXT: 134-160, 477-483	
11–12	1 2 1 1 1	**7. Uncertain Knowledge and reasoning** Uncertainty and methods Probabilistic reasoning Perception Other techniques in Uncertainty and reasoning process **Second Exam 20%**	TXT:170,171, 176, 182, 190-192	
13	1 1 1	**8. Planning** Planning problem Simple planning agent Planning as a state space search	TXT: 199-202, 210-212	
14	1 1 1	**9. Learning** What is machine learning Learning paradigms	TXT: 233-238	
15	1 1 1	**10. Experts systems** Architecture of experts systems Existing experts systems Rule based expert systems	TXT:267-270, 271, 276-277	
16		**Final Exam 50%**		

Theoretical course evaluation methods and weight	Participation = 10% First exam 20% Second exam 20% Final exam 50%	**Practical (clinical) course evaluation methods**	Semester students' work = 50% (Reports, research, quizzes, etc.) Final exam = 50%

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Approved by head of department	Dr. Adnan Ahmed Hunaif	Date of approval	

Extra information (to be updated every semester by corresponding faculty member)

Name of teacher	Nagham Azmi Al-Madi	Office Number	**320**
Phone number (extension)	/	Email	nagham.a@zuj.edu.jo
Office hours			