Princess Sumaya University for Technology
The King Hussein School for Computing Sciences
Data Science Department

Course Syllabus – Fall Semester 2024/2025
DS14330 Artificial Intelligence

1. Course Information

Catalog Description	Introduction to AI and its scope and applications. AI programming languages. Knowledge representation. Heuristic search and problem solving with different strategies. Introduction to knowledge based systems. Expert systems. Natural language processing machine learning. Other applications. Project is required.
Credit Hours	3
Level	7
ECTS	140 Hrs
Attendance Type	In class
Prerequisite	CS11212 Data structure
Course Type	Theoretical (Lectures + Tutorials)
Required/Elective	Required
Textbook	[Text 1] Artificial Intelligence: A Modern Approach, Stuart Russell and Peter Norvig, 4th Edition, 2016, ISBN: 978-0134610993 [Text 2] Fundamentals of Artificial Intelligence, K. R. Chowdhary, 2020, ISBN: 978-81-322-3970-3
References	[Ref 1] Artificial Intelligence: Foundations of Computational Agents 3rd Edition، David L. Poole, Alan K. Mackworth, ISBN 978-1009258197 [Ref 1] Artificial Intelligence: Structures and Strategies for Complex Problem Solving, George Luger, last edition, ISBN-13: 978-0321545893
Instructor	Dr. Tariq Bdair email: t.bdair@psut.edu.jo Dr. Abdullah Aref email: a.aref@psut.edu.jo

Class Schedule	Sec 1: Mon, Wen 11:00-12:30 Sec 2: Mon, Wen 12:30-2:00 Sec 3: Sun, Tus, Thu 9:00-10:00

2. Course Contents

Week	Topics	Chapter in Text
1	Introduction to AI	Text1 Ch1
2	Expert System	Text1 Ch16,17 Text2 Ch4
3,4	Solving Problems by Searching	Text1 Ch3
Quiz 1 (after week 3)		
5,6	Informed (Heuristic) Search Strategies and Local Search Algorithms	Text1 Ch3,4 Text2 Ch9
Quiz 2 (after week 6)		
7,8	Adversarial Search	Text1 Ch5 Text2 Ch11
Midterm Exam		
9	Evolutionary Algorithms	Text1 Ch4
Quiz 3 (after week 9)		
10	Learning by Examples	Text1 Ch18 Text2 Ch13
11	Reinforcement Learning	Text2 Ch2, 3 Ref1 Ch3
12	Explainable AI	Lecture notes
Quiz 4 (after week 12)		
13	Responsible AI	Lecture notes
14	Trends in AI	Lecture notes
15	Presentations of Projects	
Final Exam		

3. Course Objectives

1. Gain a historical perspective of AI and its foundations.
2. Provide knowledge of various AI techniques and applications.
3. Provide an understanding of the basic principles of AI toward problem solving.
4. Explore the current scope, potential, limitations, and implications of intelligent systems.

4. Course Outcomes

1. Explain the history of artificial intelligence (AI) and its foundations (K) **@6**
2. Demonstrate awareness of various applications of AI techniques in intelligent systems and expert systems (K) **@1**
3. Apply various AI algorithms to solve real problems (S) **@2**
4. Participate in discussions and debates on AI topics, their scope, and limitations especially from ethical perspectives (C) **@3**

5. Assessment Policy

Assessment Tool	Expected Due Date	Weight
Midterm Exam		30%
Quizzes		20%
Projects		10%
Final Exam		40%

6. Contribution of the Course to the Professional Component

Computer Science Topics	100%
General Education	10%
Mathematics & Basic Sciences	10%

7. Expected level of proficiency from students entering the course

Mathematics	Some
Physics	Not applicable
Technical writing	Not applicable
Computer programming	Good

8. Material available to students, instructors, TAs, and department at end of course

	Students	Department	Instructors	TA(s)
Course objectives and outcomes form	X	X	X	
Lecture notes, homework assignments, and solutions	X	X	X	
Samples of homework solutions from 3 students		X		
Samples of lab reports of 3 students		X		
Samples of exam solutions from 3 students		X		
Course performance form from student surveys		X	X	
End-of-course instructor survey		X	X	

9. Relationship to Program Objectives

The course supports the achievement of the program objectives 1 and 2.