



National Computing Education Accreditation Council NCEAC



NCEAC.DOC.001-E

COURSE DESCRIPTION

NAME OF INSTITUTION	Lahore Garrison University
PROGRAM (S) TO BE EVALUATED	Computer Science , Fall 2022

Course Description : -

Course Code	CSC363																		
Course Title	Artificial Intelligence																		
Credit Hours	3+1																		
Prerequisites by Course(s) and Topics	Data Structures and Algorithms																		
Assessment Instruments with Weights (homework, quizzes, midterms, final, programming assignments, lab work, etc.)	SESSIONAL (Quizzes, Assignments, Presentations) =25 % Midterm Exam =25 % Final Exam = 50%																		
Course Coordinator	Arfa Hassan																		
URL (if any)	-																		
Current Catalog Description	-																		
Textbook (or Laboratory Manual for Laboratory Courses)	Artificial Intelligence: A Modern Approach by Stuart Russell and Peter Norvig, 3rd Edition, Prentice Hall, Inc.2010.																		
Reference Material	1.Simon Haykin, Neural Networks: a comprehensive foundation, 2nd ed., Prentice Hall, 1999. 2.Bishop, Christopher, Neural Networks for Pattern Recognition, Oxford University Press, 1995 o Ethem Alpaydin, Introduction to machine learning, MIT Press, 2004.																		
Course Goals	Acquire knowledge on intelligent systems and agents, formalization of knowledge, reasoning with and without uncertainty, machine learning and applications at a basic level.																		
Course Learning Outcomes (CLOs):	<table><tr><th>At the end of the course the students will be able to:</th><th>Domain</th><th>BT Level*</th></tr><tr><td>Gain an understanding of the key components within the realm of artificial intelligence</td><td>C</td><td>2</td></tr><tr><td>Put into practice conventional techniques of artificial intelligence</td><td>C</td><td>3</td></tr><tr><td>Examine methods of artificial intelligence for effective problem-solving in practical scenarios.</td><td>C</td><td>4</td></tr><tr><td>Cultivate a strong interest in the potential of AI to revolutionize multiple industries and society as a whole</td><td>A</td><td>4</td></tr><tr><td colspan="2">* BT= Bloom's Taxonomy, C=Cognitive domain, P=Psychomotor domain, A= Affective domain</td><td></td></tr></table>	At the end of the course the students will be able to:	Domain	BT Level*	Gain an understanding of the key components within the realm of artificial intelligence	C	2	Put into practice conventional techniques of artificial intelligence	C	3	Examine methods of artificial intelligence for effective problem-solving in practical scenarios.	C	4	Cultivate a strong interest in the potential of AI to revolutionize multiple industries and society as a whole	A	4	* BT= Bloom's Taxonomy, C=Cognitive domain, P=Psychomotor domain, A= Affective domain		
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Topics Covered in the Course, with Number of Lectures on Each Topic (assume 15-week instruction and one-hour lectures)	Week	Lecture	Topics Covered
	Week 1	1	Introduction to Artificial Intelligence.
		2	Foundations and history of AI. Types of AI, Basic components of AI.
	Week 2	3	Artificial agents, types of agents. Agent's environment, types of environments
		4	State space graphs and search trees, solving problems by searching, problem solving agents
	Week 3	5	Uniformed search
		6	Informed Search: Greedy search(best first search)
	Week 4	7	Informed Search: A* search
		8	Beyond classical search: Hill-climbing search.
	Week 5	9	Beyond classical search: local beam search
		10	Adversarial Search: Minimax algorithm
	Week 6	11	Adversarial Search: Efficiency of Minimax Algorithm, Optimal decisions in games
		12	Adversarial Search: alpha-beta pruning
	Week 7	13	Introduction to fuzzy logic
		14	Uncertainty in Fuzzy logic
	Week 8	1 hours	Mid Term
	Week 9	15	Type I Fuzzy Logic
		16	Type II Fuzzy Logic
	Week 10	17	Constraint satisfaction problem: Part I
		18	Constraint satisfaction problem: Part II
	Week 11	19	Logical agents: Knowledge-based agents
		20	Logical agents: Propositional logic
	Week 12	21	First-order logic: representation revisited, Knowledge engineering in first-order logic
		22	First-order logic: Knowledge engineering in first-order logic
	Week 13	23	Neural Networks
		24	Learning: Regression and Classification
	Week 14	25	Unsupervised Learning
		26	Reinforcement Learning
	Week 15	27	Natural Language Processing
		28	AI Application In Digital Image Processing
	Week 16	29	Advance Applications of AI Algorithm
		30	Case Study
	Week 17	2 hours	Final Term
Laboratory Projects/Experiments Done in the Course	Python Programming Language Basics, Solving search problems (Depth-First Search, Breadth-First, A*), Fuzzy logic type and applications, Learning: supervised learning (regression and classification), Unsupervised Learning (Clustering), Machine learning applications.		
Programming Assignments Done in the Course	Lab Project		

Instructor Name	Arfa Hassan
Instructor Signature	
Date	