

Course Code:CSE3002	Course Title: Artificial Intelligence	TPC	3	2	4
Version No.	1.1				
Course Pre-requisites/ Co-requisites	CSE1004/CSE1001				
Anti-requisites (if any).	None				
Objectives:	<ul style="list-style-type: none"> • To have a thorough understanding of classical and modern AI applications; • To implement a wide range of AI concepts; • To understand non-classical AI approaches such as genetic algorithms and neural networks; • To be able to assess the potential of AI in research and real-world environments; 				

CO's Mapping with PO's and PEO's

Course Outcomes	Course Outcome Statement	PO's / PEO's
CO1	Understand the basics of AI	PO1,PO2,PO5,PO8
CO2	Implement and debug core AI algorithms in a clean and structured manner	PO2,PO6,PO7
CO3	Describe AI algorithms and representations and explain their performance, in writing and orally	PO4,PO6,PO9
CO4	Analyze and design a real world AI application	PO1,PO2,PO6,PO7,PO12
		TOTAL HOURS OF INSTRUCTIONS: 45

Module No. 1	Introduction To AI And Production Systems	7 Hours
Introduction to AI-Problem formulation, Problem Definition -Production systems, Control strategies, Search strategies. Problem characteristics, Production system characteristics -Specialized production system-		
Module No. 2	Problem Solving methods	8 Hours
Problem graphs, Matching, Indexing and Heuristic functions -Hill Climbing-Depth first and Breath first, Constraints satisfaction - Related algorithms, Measure of performance and analysis of search algorithms.		
Module No. 3	Knowledge Representation	8 Hours
Knowledge based agents- Propositional Logic- First Order logic- Inferences		
Module No. 4	Knowledge Inference	8 Hours
Knowledge representation -Production based system, Frame based system. Inference - Backward chaining, Forward chaining, Rule value approach, Fuzzy reasoning - Certainty factors, Bayesian Theory-Bayesian Network-Dempster - Shafer theory.		
Module No. 5	Planning And Learning	8 Hours

Basic plan generation systems - Strips -Advanced plan generation systems – K strips -Strategic explanations – Explanation bases Learning- Machine learning, adaptive Learning. Reinforcement learning- Genetic algorithms		
Module No. 6	Communicating, perceiving, and acting and Expert Systems	7 Hours
Natural Language Processing- Data aquistation –Perception-Data quality and transformation -Expert systems -Typical expert systems – MYCIN, DART, XOON, Expert systems shells.		
Text Books <ul style="list-style-type: none"> Stuart Russell and Peter Norvig, “Artificial Intelligence: A Modern Approach” Prentice Hall, Fourth Edition, 2020 		
References <ul style="list-style-type: none"> Deepak Khemani, “A First Course in Artificial Intelligence”, McGraw Hill Education (India), 2017. Nick Bostrom, “Superintelligence:Paths,Dangers,Strategies”, 1st edition, 2015. David Poole,Alan Mackworth, “Artificial Intelligence:Foundations of Computational Agents”, 2nd edition, 2017. Elaine Rich and Kevin Knight. “Artificial Intelligence”, Tata McGraw Hill, Third Edition,2019. 		
<p style="text-align: center;">Lab Exercises</p> <ol style="list-style-type: none"> Introduction to LISP and PROLOG programming languages. Write a program to solve any 2 player game scenarios (Eg:8 Queens, 8 Puzzle) Search a list of items using best first search. Write a program for min max problem Write a program to find the minimal moves in a 8 queens problem. Write a program for greedy search. Solve 8-puzzle problem using best first search. Solve Robot (traversal) problem using means End Analysis Solve traveling salesman problem. Write a program to solve “Water Jug Problem” Write a program to maintain family tree. Program for bayes rule. Design an expert system scenario with learning and planning capability of AI. Write a program using genetic algorithm for roulette wheel selection. Write a program to construct a Bayesian network considering medical data. Use this model to demonstrate the diagnosis of heart patients using standard Heart Disease Data Set. 		
Mode of Evaluation	Continuous Assessment Test-1	20%
	Continuous Assessment Test-2	20%

	Continuous Assessment Test-3 20% Cumulative Lab Exercises 20% Practical Assessment (Mini Project) 20%
Modified by	Prof.Ajith Jubilson E
Recommended by the Board of Studies on	07.01.2021
Date of Approval by the Academic Council	5 th Academic council 02.03.2021