ARTIFICIAL INTELLIGENCE

Course Code	23EC6401	**Year**	II	**Semester**	II
Course Category	HONORS	**Branch**	ECE	**Course Type**	Theory
Credits	4	**L-T-P**	3-1-0	**Prerequisites**	Neural networks
Continuous Internal Evaluation	30	**Semester End Evaluation**	70	**Total Marks**	100

Course Outcomes	
After successful completion of the course, the student will be able to	
CO1	Understand the basic principles of Artificial Intelligence L2
CO2	Apply different approaches to Intelligent Agents. L3
CO3	Make use of various Search Algorithms to solve real time applications. L3
CO4	Analyse different Search Algorithms and Constraint Satisfaction Problems L4

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3-High, 2: Medium, 1:Low)

COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO 10**	**PO 11**	**PO 12**	**PSO 1**	**PSO 2**
CO1	2									2				
CO2	2				2					2				2
CO3	3				3					3				3
CO4		3			3					3				3
Average* (Rounded to nearest integer)	**2**	**3**			**3**					**3**				**3**

Syllabus		
UNIT No.	**Contents**	**Mapped COs**
I	**Artificial Intelligence**: **Introduction** What is AI: - Acting humanly: The Turing Test approach, Thinking humanly: The cognitive modeling approach, Thinking rationally: The "laws of thought" approach, Acting rationally: The rational agent approach. The Foundations of Artificial Intelligence.:***Philosophy ,Mathematics, Economics, Neuroscience, Psychology, Computer engineering, Control theory and Cybernetics, Linguistics***	CO1, CO2

II	**Intelligent Agents:** Agents and Environments, Good Behavior: ***The Concept of Rationality, Performance measures, Rationality, Omniscience. Learning and autonomy***, The Nature of Environments: ***Specifying the task environment, Properties of task environments***, The Structure of Agents: ***Agent programs, Simple reflex agents, Model- based reflex agents, Goal-based agents, Utility-based agents, Learning agents.***	CO1, CO2
III	**Solving Problems by Searching:** Problem-Solving Agents: ***Well-defined problems and solutions, Formulating problems***, Example Problems: ***Toy problems***, ***Real-world problems,*** Searching for Solutions: ***Measuring problem-solving performance***, Uninformed Search Strategies: ***Breadth-first search, Uniform-cost search, Depth-first search, Depth-limited search, Iterative deepening depth-first search, Bidirectional search***	CO1, CO3,CO4
IV	**Informed Search and Exploration:** Informed (Heuristic) Search Strategies: ***Greedy best-first search, A* search: Minimizing the total estimated solution cost, Memory-bounded heuristic search, Learning to search better,***Heuristic Functions: ***The effect of heuristic accuracy on performance, Inventing admissible heuristic functions, Learning heuristics from experience,***Local Search Algorithms and Optimization Problems: ***Hill-climbing search, Simulated annealing search, Local beam search, Genetic algorithms,***, Local Search in Continuous Spaces: ***Evolution And Search***	CO1, CO3,CO4
V	**Constraint Satisfaction Problems:** Constraint Satisfaction Problems, Backtracking Search for CSPs: ***Variable and value ordering, Propagating information through constraints,- Forward checking, Constraint propagation, Intelligent backtracking: looking backward,***Local Search for Constraint Satisfaction Problems, The Structure of Problems.	CO1, CO4

Learning Recourses
Text Book(s)
1. Stuart Russell Peter Norving, Artificial Intelligence A Modern Approch, 2nd Ed, Prentice Hall. 2. Elaine Rich, Kevin Knight, Shivasankar B Nair, Series in Artificial Intelligence, Tata Mc-Graw Hill publishing Company Limited.
References
1. Ela Kumar, Artificial Intelligence, , 3rd Ed., Pearson
E-Resources :
1. www.learnartificialIntelligence.com