



Tulsiramji Gaikwad-Patil College of Engineering and Technology
Wardha Road, Nagpur-441108
NAAC Accredited (A+ Grade) & NBA Accredited
An Autonomous Institute affiliated to RTMNU Nagpur



Third Year (Semester-V) B.Tech. Information Technology

Semester	Course Code		Name of Course	
V	33512		Artificial Intelligence	
Teaching Scheme			Examination Scheme	
Lectures	3		CT-1	15 Marks
Tutorial	0		CT-2	15 Marks
Total Credit	3		CA	10 Marks
			ESE	60 Marks
			Total	100 Marks
			Duration of ESE :.03Hrs 00Min	
Course Objectives:				
1.	Understand the fundamental concepts, characteristics, and applications of Artificial Intelligence.			
2.	Analyze and apply various search strategies and problem-solving techniques used in intelligent systems.			
3.	Develop knowledge representation models and reasoning mechanisms for decision-making problems.			
4.	Understand the principles of machine learning and apply them to build intelligent solutions.			
5.	Explore Natural Language Processing techniques and emerging trends in Artificial Intelligence.			
Course Contents				
Unit I	Introduction to Artificial Intelligence and Intelligent Agents : Introduction to Artificial Intelligence, history and evolution of AI, characteristics of intelligent systems, applications of AI, categories of AI, intelligent agents and their architecture, types of agents, environment characteristics, performance measures of agents.			
Unit II	Problem Solving and Search Techniques : Problem formulation and state-space representation, production systems, uninformed search techniques: Breadth First Search (BFS), Depth First Search (DFS), Uniform Cost Search, Depth Limited Search, Iterative Deepening Search; informed search techniques: Greedy Best First Search, A* Algorithm, heuristic functions, local search algorithms, adversarial search and game playing, Minimax algorithm, Alpha-Beta pruning.			
Unit III	Knowledge Representation and Reasoning : Knowledge representation issues, propositional logic, predicate logic, inference rules, forward and backward chaining, semantic networks, frames, conceptual dependency, knowledge acquisition, reasoning under uncertainty, introduction to Bayesian networks.			
Unit IV	Machine Learning Fundamentals : Introduction to Machine Learning, types of learning, supervised learning, unsupervised learning, reinforcement learning, classification and regression concepts, decision trees, k-nearest neighbor algorithm, clustering techniques, performance evaluation metrics, applications of machine learning in AI.			
Unit V	Natural Language Processing and AI Applications : Introduction to Natural Language Processing (NLP), text preprocessing techniques, tokenization, stemming, language models, syntactic and semantic analysis, machine translation, chatbots and conversational agents, expert systems, robotics, ethical issues in AI, future trends and challenges in			

	Artificial Intelligence.
Text Books	
1	Stuart Russell and Peter Norvig, Artificial Intelligence: A Modern Approach, 4th Edition, Pearson Education.
2	Elaine Rich, Kevin Knight and Shivashankar B. Nair, Artificial Intelligence, 3rd Edition, McGraw Hill Education.
Reference Books	
1	George F. Luger, Artificial Intelligence: Structures and Strategies for Complex Problem Solving, 6th Edition, Pearson Education.
2	Nils J. Nilsson, Principles of Artificial Intelligence, Springer.

Useful Links		
MIT OpenCourseWare – Artificial Intelligence https://ocw.mit.edu		
NPTEL – Artificial Intelligence https://nptel.ac.in/courses/106105305		
Coursera – AI for Everyone https://www.coursera.org/learn/ai-for-everyone		
Course Code	Course Outcomes	CL
CO1	Explain the fundamental concepts, intelligent agents, and applications of Artificial Intelligence.	2
CO2	Apply search algorithms and problem-solving techniques to solve AI-related problems.	3
CO3	Demonstrate knowledge representation and reasoning techniques for intelligent decision-making.	3
CO4	Analyze machine learning approaches for developing intelligent systems.	4
CO5	Illustrate NLP concepts and evaluate emerging applications and ethical issues in Artificial Intelligence.	4