

18ECPE812	ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING	L	T	P	C
		3	0	0	3
Prerequisite					
<ul style="list-style-type: none"> Linear Algebra 					
Course Objectives:					
1.	To provide a strong foundation of fundamental concepts in Artificial Intelligence.				
2.	To enable the student to apply these techniques in applications which involve perception, reasoning and learning.				
3.	To enable Problem-solving through various searching techniques.				
Unit I	INTRODUCTION TO AI AND PRODUCTION SYSTEMS	9			0
Introduction to AI-Problem formulation - Problem Definition - Production systems - Control strategies - Search strategies - Problem characteristics - Production system characteristics - Specialized production system - Problem solving methods - Problem graphs – Matching - Indexing and Heuristic functions - Hill Climbing - Depth first and Breadth first - Constraints satisfaction - Related algorithms - Measure of performance and analysis of search algorithms.					
Unit II	REPRESENTATION OF KNOWLEDGE	9			0
Game playing - Knowledge representation - Knowledge representation using Predicate logic - Introduction to predicate calculus – Resolution - Use of predicate calculus - Knowledge representation using other logic - Structured representation of knowledge. .					
Unit III	KNOWLEDGE INFERENCE	9			0
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.					
Unit IV	PLANNING AND MACHINE LEARNING	9			0
Basic plan generation systems - Strips - Advanced plan generation systems - K strips - Strategic explanations - Why, Why not and how explanations - Learning - Machine learning - Adaptive Learning.					
Unit V	EXPERT SYSTEMS	9			0
Expert systems - Architecture of expert systems - Roles of expert systems - Knowledge Acquisition – Meta knowledge- Heuristics - Typical expert systems - MYCIN - DART - XOON - Expert systems shells.					
Total (L+T)= 45 Periods					
Course Outcomes:					
Upon completion of this course, the students will be able to:					
CO1	:	Provides a basic exposition to the goals and methods of Artificial Intelligence			
CO2	:	Study of the design of intelligent computational agents			
CO3	:	The knowledge acquired through learning can be used both for problem solving and for reasoning planning, natural language understanding, computer vision, automatic programming and machine learning.			
CO4	:	To enhance their knowledge in their Research works in future.			
Text Books:					
1.	Stuart Russell, Peter Norvig, “Artificial Intelligence: A Modern Approach”, Third Edition, Pearson Education / Prentice Hall of India, 2010.				
2.	Elaine Rich and Kevin Knight, “Artificial Intelligence”, Third Edition, Tata McGraw-Hill, 2010.				
Reference Books:					
1.	EthemAlpaydin, “Introduction to Machine Learning (Adaptive Computation and Machine Learning series)”, The MIT Press; Second edition, 2009.				
2.	Patrick H. Winston. "Artificial Intelligence", Third edition, Pearson Edition, 2006.				
3.	David L. Poole, Alan K. Mackworth, “Artificial Intelligence: Foundations of Computational Agents”, Cambridge University Press, 2010.				
4.	Machine Learning by Rajiv Chopra Khanna Publishing; First edition, 2018.				
E-References:					
1.	https://www.coursera.org/learn/machine-learning				
2.	https://www.coursera.org/courses?query=artificial%20intelligence				
3.	https://www.udemy.com/machine-learning-course-with-python/				