Course Code CSE3007	ARTIFICIAL INTELLIGENCE	Course Type	LT
		Credits	3

Course Objective
- To understand the applications of Artificial Intelligence in solving real world problems
- To learn about artificial intelligence (AI) principles and approaches.
- To acquire knowledge of machine learning techniques and ANN.

Course Outcome:
- Compare AI with human intelligence and traditional information processing, and discuss its strengths and limitations and its application to complex and human-centered problems
- Analyze the structures and algorithms selection in Artificial Intelligence techniques related to searching, reasoning and inference
- Analyze the Importance of machine learning techniques, training models and its types
- Apply and evaluate regression, classification and clustering models to given real time dataset
- Understand the structures of Neural Networks and discuss its applications

Student Learning Outcomes (SLO) :a, b, i.

Module No.	Module Description	Hrs.	SLO
1	**INTRODUCTION TO AI** Problem formulation, Problem Definition -Production systems, Control strategies, Search strategies. Problem characteristics, - Problem solving methods - Problem graphs, Matching, Indexing and Heuristic functions - Hill Climbing-Depth first and Breath first, Constraints satisfaction - Related algorithms.	9	a, b,i
2	**KNOWLEDGE REPRESENTATION AND INFERENCE** Game playing - Knowledge representation, Knowledge representation using Predicate logic. Inference -Backward chaining, Forward chaining, Rule value approach, Fuzzy reasoning	8	a, b,i
3	**MACHINE LEARNING INTRODUCTION** Definition of learning systems. Goals and applications of machine learning. Aspects to develop a Learning system: training data, concept representation, function approximation. Learning Techniques Supervised learning, unsupervised learning and Reinforcement learning	9	a, b,i
4	**MACHINE LEARNING ALGORITHMS** Regression- Simple Linear Regression, Logistic Regression, Mean Square Error. Classification - Decision Tree Information Gain and Entropy. Support Vector Machines, Clustering - K Means, Hierarchical Agglomerative Clustering	8	a, b,i
5	**ARTIFICIAL NEURAL NETWORKS** Eneurons and biological motivation. Linear threshold units. Perceptrons: representational limitation and gradient descent training. Multilayer networks and backpropagation. Hidden layers and constructing intermediate, distributed representations. Overfitting, learning network structure, recurrent networks	9	a, b,i
6.	Guest Lecture on Contemporary Topics	2	
	Total	45	

Mode of Teaching and Learning:
Flipped Class Room, Activity Based Teaching/Learning, Digital/Computer based models, wherever possible to augment lecture for practice/tutorial and minimum 2 hours lectures by industry experts on contemporary topics

Mode of Evaluation:
The assessment and evaluation components may consist of unannounced open book examinations, quizzes, student's portfolio generation and assessment, and any other innovative assessment practices followed by faculty, in addition to the Continuous Assessment Tests and Term End Examination.

Text Books:
1. Deepak Khemani, Artificial Intelligence, Tata McGraw Hill Education 2013

Reference Books:
1. Mishra R B, Artificial Intelligence, PHI Learning Pvt. Ltd., New Delhi, 2013
2. Kevin P. Murphy, Machine Learning: A Probabilistic Perspective, MIT Press, 2012
3. Christopher M.Bishop, Pattern Recognition and Machine Learning, Springer, 2006

Recommendation by the Board of Studies on	**June 2019**
Approval by Academic council on	**June 2019**
Compiled by	**Dr. Sountharrajan S**