

Course : IT 804 : Artificial Intelligence

Course Code	804
Course Title	Artificial Intelligence
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Last Review / Revision	June 2019
Purpose of Course	This course makes students learn to develop solutions for solving various artificial intelligence based problem using PROLOG
Course Objective	To provide background knowledge of AI and to prepare students for further studies in AI
Pre-requisite	Significant experience in programming , knowledge of data structures and mathematical concepts
Course Outcome	After learning this course, students will be able to understand, identify and solve artificial intelligence problems, understand NLP and ML
Course Content	<p>Unit : 1 : Introduction to AI and Intelligent Agent</p> <ol style="list-style-type: none"> 1.1 Introduction to AI 1.2 History of AI 1.3 Emergence of Intelligent Agents 1.4 PEAS Representation for an agent 1.5 Agent Environment 1.6 Concept of Rational Agent 1.7 Structure of Intelligent Agents 1.8 Types of Agents 1.9 Communication as Action 1.10 Types of Communicating Agents <p>Unit : 2 : Search Algorithms and Optimization</p> <ol style="list-style-type: none"> 2.1 Solving Problems by Searching 2.2 Problem Formulation 2.3 Uninformed Search Methods - DFS, BFS, Iterative Deepening, Comparing Different Techniques, Search DFID 2.4 Informed Search Methods- Heuristic Functions, Hill Climbing, Simulated Annealing, A*, Performance Evaluation, AO*, Beam Search, Tabu Search, Dijkstra's Algorithm 2.5 Constraint Satisfaction Problems, Map Coloring, Crypt Arithmetic, Backtracking for CSP, Local Search <p>Unit : 3 : Gaming</p> <ol style="list-style-type: none"> 3.1 Game Playing 3.2 Game Playing - Minimax Search 3.3 Game Playing - AlphaBeta 3.4 Game Playing - SSS* <p>Unit : 4 : Planning</p> <ol style="list-style-type: none"> 4.1 Planning FSSP, BSSP 4.2 Goal Stack Planning, Sussman's Anomaly 4.3 Non-linear planning 4.4 Plan Space Planning 4.5 Graph Plan 4.6 Game Playing Algorithms 4.7 Planning as constraint Satisfaction <p>Unit : 5 : Knowledge Representation</p> <ol style="list-style-type: none"> 5.1 A knowledge based Agents 5.2 Logic and Inferences

	<ul style="list-style-type: none"> 5.2.1 Formal Logic 5.2.2 Logic and knowledge 5.2.3 Propositional Logic 5.2.4 Resolution Method and Refutation for PL 5.2.5 First-Order Logic (FOL) 5.2.6 Incompleteness of forward chaining 5.2.7 Forward and backward chaining , Resolution 5.2.8 Horn Clauses and SLD resolution 5.2.9 Overview of Second Order Logic 5.3 Genetic Algorithms 5.4 Fuzzy Logic 5.5 Expert System Life Cycle 5.6 States in Expert System Development 5.7 RETE Algorithm for Pattern Matching 5.8 Introduction to Ontology and its applications 5.9 Rule Based Programs using PROLOG <ul style="list-style-type: none"> 5.9.1 Facts 5.9.2 Objects 5.9.3 Predicates and Rules 5.9.4 PROLOG Variable and its Type 5.9.5 Arithmetic and Relational Operators 5.9.6 I/O Predicates 5.9.7 Fail & ! Predicates 5.9.8 Recursion & repeat predicates
Teaching Methodology	Black Board Teaching, power point presentation for theory &, practical
Evaluation Method	30% Internal Exam 70% External Exam