

INTRODUCTION TO INTELLIGENT SYSTEMS

I Semester: CSE

Course Code	Category	Hours / Week			Credits	Maximum Marks		
BCSB05	Elective	L	T	P	C	CIA	SEE	Total
		3	0	0	3	30	70	100
Contact Classes: 45	Total Tutorials: Nil	Total Practical Classes: Nil			Total Classes: 45			

I.COURSE OVERVIEW:

The course covers the concepts of Artificial Intelligence (AI) with fuzzy logic, reasoning and learning techniques and methodologies for developing systems that demonstrate intelligent behavior including dealing with uncertainty, learning from experience and following problem solving strategies found in nature.

II.OBJECTIVES:

The students will learn to:

- I. The aim of the course is to introduce to the field of Artificial Intelligence (AI) with emphasis on its use to solve real world problems for which solutions are difficult to express using the traditional algorithmic approach.
- II. The essential theory behind methodologies for developing systems that demonstrate intelligent behavior including dealing with uncertainty, learning from experience and following problem solving strategies found in nature.

III.COURSE OUTCOMES:

After successful completion of the course, students should be able to:

CO 1	Explain a wireless sensor network for given sensor data using microcontroller, transceiver, middleware and operating system.	Knowledge
CO 2	Categorize the performance of schedule based and random Medium Access Control protocols for power consumption, fairness, channel utilization and control packet overhead.	Analyze
CO 3	Construct the performance of Geographic routing protocols for power consumption, scalability and latency parameters.	Apply
CO 4	Evaluate the performance of transport control protocols for congestion detection and avoidance, reliability and control packet overhead parameters	Evaluate
CO 5	Distinguish the design issues and different categories of MAC protocols	Analyze

IV. SYLLABUS:

UNIT-I	INTRODUCTION	Classes: 09
Biological foundations to intelligent systems I: Artificial neural networks, Back propagation networks, Radial basis function networks, and recurrent networks.		
UNIT-II	FUZZY LOGIC	Classes: 09
Biological foundations to intelligent systems II: Fuzzy logic, knowledge Representation and inference mechanism, genetic algorithm, and fuzzy neural networks.		
UNIT-III	SEARCH METHODS	Classes: 09

<p>Search Methods Basic concepts of graph and tree search. Three simple search methods: breadth first search, depth-first search, iterative deepening search.</p> <p>Heuristic search methods: best-first search, admissible evaluation functions, hill climbing search. Optimisation and search such as stochastic annealing and genetic algorithm.</p>		
UNIT-IV	KNOWLEDGE REPRESENTATION	Classes: 09
<p>Knowledge representation and logical inference Issues in knowledge representation. Structured representation, such as frames, and scripts, semantic networks and conceptual graphs. Formal logic and logical inference. Knowledge-based systems structures, its basic components. Ideas of Blackboard architectures.</p>		
UNIT-V	REASONING AND LEARNING TECHNIQUES	Classes: 09
<p>Reasoning under uncertainty and Learning Techniques on uncertainty reasoning such as Bayesian reasoning, Certainty factors and Dempster-Shafer Theory of Evidential reasoning, A study of different learning and evolutionary algorithms, such as statistical learning and induction learning.</p>		
Text Books:		
<ol style="list-style-type: none"> 1. Luger G.F. and Stubblefield W.A. (2008). Artificial Intelligence: Structures and strategies for Complex Problem Solving. Addison Wesley, 6th Edition 2010. 2. Russell S. and Norvig P. (2009). Artificial Intelligence: A Modern Approach. Prentice-Hall, 3rd Edition 2010. 		
Web References:		
<ol style="list-style-type: none"> 1. http://www.yiritech.com/en/products/71.html? . 2. https://www.pearsonhighered.com/product/Stallings-Wireless-Communications-Networks-2ndEdition. 3. http://nptel.ac.in/video.php?subjectId=117102062 		
E-Text Books:		
<ol style="list-style-type: none"> 1. http://www.cwins.wpi.edu/publications/pown/. 2. http://keshi.ubiwna.org/2015IoTComm/Wireless_Communications_&_Networking_Stallings_2nd.pdf 		