

COURSE CODE	COURSE TITLE	L	T	P	C
1152CS173	ARTIFICIAL INTELLIGENCE AND FUZZY LOGIC	3	0	0	3

Course Category: Program Elective

A. Preamble:

Artificial intelligence and fuzzy logic is deals with the development of intelligent information systems that can be used to solve well-defined problems such as Knowledge Acquisition and Machine Learning, Genetic programming, natural language processing Systems and fuzzy Logic and fuzzy control expert systems.

B. Pre-requisites:

SI No	Course Code	Course Name
1	1151CS106	Design and Analysis of Algorithms
2	1151CS119	Introduction to Design and Analysis of Algorithms
3	1150CS201	Problem Solving Using C.

C. Related Courses:

SI No	Course Code	Course Name
1	1152CS110	Knowledge based decision support systems
2	1152CS124	Soft Computing

D. Course Outcomes:

Students undergoing this course are able to:

CO Nos	Course Outcomes	Knowledge Level (Based on revised Bloom's Taxonomy)
CO1	Understand the fundamental concepts of AI and its applications and to familiarize the knowledge representation for solving agent based critical problems.	K2
CO2	Understand the concepts of rule based expert systems, Genetic programming and understand the overview of Natural language processing and its applications	K2
CO3	Apply the concepts of NLP algorithm and AI techniques using PROLOG and LISP	K3
CO4	Understand the overview of advanced fuzzy sets based on genetic algorithm and neural networks applications	K2
CO5	Understand the fundamental concepts of Evolutionary and Stochastic techniques for AI and Fuzzy set applications.	K2

E. Correlation of COs with POs :

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	H	M	M	M	M		M						M		
CO2	H	M	M	M	M		M						M		
CO3	H	H	H	H	H				M				H	M	M
CO4	M	H	M	H	M		H						M		M
CO5	M	H	M	H	M		M						M		M

H- High; M-Medium; L-Low

F. Course content:

- Unit-I Introduction to Artificial Intelligence** **9**
Artificial Intelligence: History and Applications-Knowledge representation - Propositional calculus, Predicate Calculus, Theorem proving by Resolution, Answer Extraction, AI Representational Schemes- Semantic Nets, Conceptual Dependency, Scripts, Frames, Introduction to Agent based problem solving.
- Unit- II Introduction to Genetic Algorithm and NLP** **9**
Machine Learning- Symbol based and Connectionist, Social and Emergent models of learning, The Genetic Algorithm- Genetic Programming, Overview of Expert System Technology- Rule based Expert Systems, Introduction to Natural Language Processing - Applications of NLP.
- Unit-III PROLOG and LISP** **9**
Languages and Programming Techniques for AI- Introduction to PROLOG and LISP, Search strategies and Logic Programming in LISP, Production System examples in PROLOG – 8 Queens Problem, Travelling Salesman Problem, Robot Traversal Problem.
- UNIT-IV Introduction to advanced Fuzzy Sets** **9**
Fuzzy sets and Fuzzy logic: Introduction- Neuro -fuzzy systems -Fuzzy-GA systems-Support Vector Machines- Fuzzy belief networks - Artificial Immune Systems - particle swarm optimization .
- Unit-V Evolutionary and Stochastic techniques** **9**
Evolutionary and Stochastic techniques: Genetic Algorithm (GA), different operators of GA, analysis of selection operations, Hypothesis of building blocks, Schema theorem- Simulated annealing and Stochastic models, Boltzmann Machine, Applications- case studies.

G. Learning Resources

i. Text Book

1. George.F.Luger, Artificial Intelligence- Structures and Strategies for Complex Problem Solving, 4/e, Pearson Education, 2002.
2. Goerge J Klir and Bo Yuan , Fuzzy sets and Fuzzy logic: Theory and Applications. Prentice Hall of India, 1997.

ii. Reference Book:

1. E. Rich, K.Khight, Artificial Intelligence, 2/e, Tata McGraw Hill
2. Winston. P. H, LISP, Addison Wesley.
3. Ivan Bratko, Prolog Programming for Artificial Intelligence, 3/e, Addison Wesley, 2000.
4. H.J. Zimmerman, Fuzzy Set theory and its Applications, 4th Edition, Kluwer Academic Publishers, 2001