AIT 315 FUNDAMENTALS OF ARTIFICIAL INTELLIGENCE 3(2+1)

Objective(s)

The purpose of this course is to impart concepts of Artificial Intelligence and Expert System. Artificial Intelligence includes problem solving, knowledge representation, reasoning, decision making, planning, perception & action, and learning.

UNIT I

Introduction to Artificial Intelligence (AI); Scope of AI: natural language processing, robotics, expert system, Games, theorem proving,

UNIT II

Knowledge: Acquisition of knowledge, Knowledge based system, Representation of knowledge, Knowledge organization and manipulation.

UNIT III

Symbolic approach: Syntax and Semantics for Prepositional Logic (PL) and First order predicates logic (FOPL), Conversion to clausal form, Inference rules, Non deductive inference methods

UNIT IV

Search and Control strategies: Blind search, Breadth first search, Depth first search, Hill climbing method, Best First search, Branch and Bound search.

UNIT V

Expert System: Introduction to expert system, Characteristics and features of expert system, Applications of Expert System, Importance of Expert system, Rule based system architecture; Software Agents.

Practical(s)

1. Search and Control strategies: Blind search, Breadth - first search, Depth First search, Hill climbing method, Best First search, Branch and Bound search.
2. **Programming in Prolog**
   Syntax and meaning of Prolog Programs. Using Data Structures. Controlling Back- tracking. Input and Output. Built-in Predicates. Using Prolog Grammar Rules. Higher level assignments/exercises for implementation using Prolog.
3. Expert system design: Using the Expert System Shell for development of an Expert System in areas like Financial, Industrial, Social or other Engineering problems, Case study of a rule based expert system.

Reference Book(s)

1. Rich, E. and Knight, K. 2002. Artificial Intelligence. Tata McGraw Hill.
2. Bratko, Prolog Programming for Arti cial Intelligence, Pearson.
3. Gonzalez, A. and Dankel, D. 2004. The Engineering of Knowledge -Based Systems. Prentice Hall.