Branch: Computer Science and Engineering

Course Code	CS 503
Course Title	**ARTIFICIAL INTELLIGENCE**
Type of Course	Core
L T P	3 1 0
Credits	4
Course Assessment Methods End Semester Assessment (University Exam.) Continuous Assessment (Sessional, Assignments, Quiz)	 50 50
Course Prerequisites	Discrete Structures (CS 303), Analysis and Design of Algorithms (CS 401)
Course Objectives (CO)	1. To introduce the AI techniques to solve problems and search strategies to find optimal solution paths from start to goal state. 2. To introduces different knowledge representation methods in AI Programs. 3. To introduce different design techniques for Game Playing Programs. 4. To introduce the AI Agents their design, planning and learning techniques. 5. To introduce the natural language processing and expert systems.
Course Outcome	1. Understand fundamental AI concepts and and identify a range of symbolic and non-symbolic AI techniques. 2. Demonstrate an understanding of various searching algorithms such as adversarial search and game-playing commonly used in artificial intelligence software. 3. Use different knowledge representation techniques used in AI Applications. 4. Demonstrate an understanding of agent-based AI architectures and an understanding of Planning and logic-based agents.

SYLLABUS

Note for Examiner- *Examiner will set 7 questions of equal marks. First question will cover whole syllabus, having 10 conceptual questions of 1 mark each or 5 questions of 2 mark each and is compulsory. Rest of the paper will be divided into two parts having three questions each and the candidate is required to attempt at least two questions from each part.*

SECTION-A

Introduction:
Artificial Intelligence and its applications, Artificial Intelligence Techniques, criteria of success.

(4 hours)

Problem solving techniques:

State space search, control strategies, heuristic search, problem characteristics, production system characteristics., Generate and test, Hill climbing, best first search, A* search, AO* search, Constraint satisfaction problem, Agenda Driven Search, Mean-end analysis, Min-Max Search, Alpha-Beta Pruning, Iterative Deepening.

(9 hours)

Knowledge representation:

Mapping between facts and representations, Approaches to knowledge representation, procedural vs declarative knowledge, Forward vs. Backward reasoning, Matching, conflict resolution, Weak and Strong filler structures, semantic nets, frame, conceptual dependency, scripts.

(8 hours)

SECTION-B

Non Monotonic and Statistical Reasoning

Non monotonic Logic, Default Logic, Circumscription, Bayes Theorem, Bayesian Network, Dempster Shafer Theory, Fuzzy sets, Fuzzy Logic, Defuzzification.

(8 hours)

Planning and Learning Agents:

Intelligent Agents, Nature and structure of Agents, Learning Agents, Introduction to different Forms of Learning,

The Planning problem, planning with state space search, partial order planning, planning graphs, planning with propositional logic, Analysis of planning approaches, Hierarchical planning, conditional planning, Continuous and Multi Agent planning.

(9 hours)

Introduction to Learning and Expert system:

Expert systems, Expert system examples, Expert System Architectures, Rule base Expert systems, Non Monotonic Expert Systems, Decision tree base Expert Systems.

(7 hours)

TEXT BOOKS

S. No.	NAME	AUTHOR(S)	PUBLISHER
1.	AI: A Modern Approach	Stuart J. Russel, Peter Norvig	Pearson Education Latest Edition, 2012
2	Artificial Intelligence	Elaine Rich, Knight	McGraw Hill Third Edition2010
3	Artificial Intelligence,	Saroj Kaushik	Cengage Learning, First Edition2011
4	Artificial Intelligence,	Partick Henry Winston	Addison Wesley Latest Edition2012
5	Artificial Intelligence	George Luger	Pearson Education Latest Edition2010
6	Introduction to AI and Expert Systems, ,	DAN, W. Patterson	PHI Latest Edition2011
7	Principles of AI,	A.J. Nillson	Narosa publications Latest Edition, 2010

UNIVERSITY INSTITUTE OF ENGINEERING & TECHNOLOGY
PANJAB UNIVERSITY, CHANDIGARH
(Ph. 2541242, 2534995)

Minutes of the meeting of the Board of Studies in Computer Science & Engineering held on **06.10.2016 at 3.00 p.m.** in the office of the Director, UIET.

Present:

1. Prof. Renu Vig, Director, UIET
2. Dr. Naveen Aggarwal, UIET
3. Dr. Harish Kumar, UIET
4. Mr. Makhan Singh, UIET

Item No.1:

Item No.1 regarding schedule of Teaching, Scheme of Examination and syllabi of BE (Computer Science & Engineering) 3rd to 8th semesters and ME (Computer Science & Engineering) Ist to 4th semesters was discussed by the Board and **approved syllabus for the examination 2017-18 alongwith CD is enclosed.**

Renu Vig
DIRECTOR

A.R. (General)