GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: 1

Instrumentation and Control Engineering

(Applied Instrumentation)

Subject Name: ARTIFICIAL INTELLIGENCE

Sr.No	Course content
1.	Introduction Introduction, historical background, Current state of the art
2.	Intelligent Agents Agents and Environments, Behavior, The Nature of Environments, The Structure of Agents
3.	Solving Problems by Searching Problem-Solving Agents, Searching for Solutions, Uninformed Search Strategies, Avoiding Repeated States, Searching with Partial Information
4.	Informed Search and Exploration Informed (Heuristic) Search Strategies, Heuristic Functions, Local Search Algorithms and Optimization Problems, Local Search in Continuous Spaces, Online Search Agents and Unknown Environments
5.	Constraint Satisfaction Problems Constraint Satisfaction Problems, Backtracking Search for CSPs, Local Search for Constraint Satisfaction Problems, The Structure of Problems
6.	Adversarial Search Games,. Optimal Decisions in Games, Alpha-Beta Pruning, Imperfect, Real-Time Decisions, Games That Include an Element of Chance, State-of-the-Art Game Programs
7.	Logical Agents Knowledge-Based Agents, Logic, Propositional Logic, Reasoning Patterns in Propositional Logic, Effective propositional inference, Agents Based on Propositional Logic
8.	First-Order Logic Representation Revisited, Syntax and Semantics of First-Order Logic,

	Using First-Order Logic, Knowledge Engineering in First-Order Logic
9.	Inference in First-Order Logic Propositional vs. First-Order Inference, Unification and Lifting, Forward Chaining, Backward Chaining, Resolution
10.	Knowledge Representation Ontological Engineering, Categories and Object, Actions, Situations, and Events, Mental Events and Mental Objects, Reasoning Systems for Categories, Semantic networks, Description logics, Reasoning with Default Information, Truth Maintenance Systems
11.	Planning The Planning Problem, Planning with State-Space Search, Partial-Order Planning, Planning Graphs, Planning with Propositional Logic, Analysis of Planning Approaches
12.	Planning and Acting in the Real World Time, Schedules, and Resources, Hierarchical Task Network Planning, Planning and Acting in Nondeterministic Domains, Conditional Planning, Execution Monitoring and Replanning, Continuous Planning, MultiAgent Planning

Reference Books:

1. Artificial Intelligence: A modern approach, Russel and Norving, Prentice – Hall India Publication
2. Artificial Intelligenc; P. H. Witson; Addison Wesley Publication.