NIRMA UNIVERSITY

Institute:	Institute of Technology
Name of Programme:	Integrated B.Tech.(CSE)-MBA
Course Code:	CSI0701
Course Title:	Artificial Intelligence
Course Type:	Core
Year of Introduction:	2021-22

Credit Scheme

L	T	Practical Component				C
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Course Learning Outcomes (CLO):

At the end of the course, students will be able to –
1. explain the significance of Artificial Intelligence and knowledge representation,
2. demonstrate the design concepts of control and search strategies in AI Applications,
3. compare different search strategies for a given scenario
4. design applications using Artificial Intelligence.

Syllabus: Total Teaching hours: 20

Unit	Syllabus	Teaching hours
Unit-I	**Introduction to Artificial Intelligence Overview:** Knowledge: General concepts, definition and importance of knowledge, knowledge-based system, representation, organization, manipulation and acquisition of knowledge.	02
Unit-II	**Problems, Problem Spaces and State Space Search:** The AI Problems, The Underlying Assumption, What Is an AI Techniques. Defining the Problems as a State Space Search, Production Systems, Production Characteristics, Production System Characteristics, and Issues in The Design of Search Programs. **Search and Control Strategies:** Uninformed (Blind) and informed search, DFS, BFS, Heuristic **Search Techniques:** Generate-And-Test, Hill Climbing, Best-First Search, A*, AO*, Problem Reduction, Constraint Satisfaction.	07
Unit-III	**Knowledge Representation:** Knowledge Representation Issues, Representations and Mappings, Approaches to Knowledge Representation, Using Predicate Logic Representation Simple Facts in Logic, Resolution. Representing Knowledge Using Rules, Procedural versus Declarative Knowledge, Logic Programming, Forward Versus Backward Reasoning.	05
Unit-IV	**Weak Slot-And-Filler Structure:** Semantic Nets, Frames **Reasoning:** Symbolic Reasoning under Uncertainty, Introduction to Non-monotonic Reasoning, Logics for Non-monotonic Reasoning. Statistical Reasoning, Probability and Bay's Theorem, Certainty Factors and Rule-Base Systems, Bayesian Networks, Dumpster-Shafer Theory.	03
Unit-V	**Game Playing:** Overview and Example Domain, Min-max Search, Adding Alpha-Beta Cutoffs. Introduction of Expert system.	03

Self-Study:	The self-study contents will be declared at the commencement of semester. Around 10% of the questions will be asked from self-study contents
Suggested Readings/ References:	1. Russel and Norvig, Artificial Intelligence: A modern approach, prentice Hall
	2. Elaine Rich And Kevin Knight, Artificial Intelligence, Tata McGraw-Hill
	3. D.W.Patterson, Artificial Intelligence And Expert Systems, Prentice Hall
	4. D.W.Rolston, Artificial Intelligence And Expert System Development, Mcgraw-Hill
	5. Ivan Bratko, PROLOG Programming for Artificial Intelligence, Addison-Wesley
Suggested List of Experiments:	-NA-
Suggested Case List:	-NA-