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**MANIPAL INSTITUTE OF TECHNOLOGY**

Manipal University, Manipal

Karnataka -576104

**Course Plan**

**Department : Computer Science and Engineering**

**Course Name & code : Artificial Intelligence CSE 423**

**Semester & branch : VII Sem, CSE**

**Name of the faculty : Dr. Ashalatha Nayak**

**No of contact hours/week : 4**

**ASSESSMENT PLAN:**

1. **In Semester Assessments - 50 %**

* Written tests : 40 Marks
* Surprise quizzes : 10 Marks

1. **End Semester Examination - 50 %**

* Written examination of 3 hours duration (Max. Marks: 50 )

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| **Portions for Assignment** | |
| **Assignment no.** | **Topics** |
| **1** | **L1-L10** |
| **2** | L11-L19 |
| **3** | L20-L29 |
| **4** | L30-L39 |
| **5** | L40-L48 |
| **Portions for Sessional Test** | |
| **Test no.** | **Topics** |
| **1** | **L1- L17** |
| **2** | **L18-L34** |

**Course Plan**

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| **Lecture no.** | **Topic to be covered** |
| **1** | Artificial Intelligence : Introduction, what is AI? Acting Humanly: The Turing Test, Thinking Humanly: Cognitive Modelling, Thinking Rationally: Laws of Thought., Acting rationally: the rational agent approach |
| **2** | The foundations of AI, A brief history of AI, the state of the art |
| **3** | Intelligent Agents: Introduction, Agents and Environments, Rationality |
| **4** | Nature of Environments, PEAS(Performance measure, Environment, Actuators,Sensors) |
| **5** | Task environments and characteristics, Agent programs |
| **6** | Simple reflex agents, Model-based reflex agents, Goal-based agents. |
| **7** | Utility-based agents, Learning agents, how the components of agent programs work. |
| **8** | Solving problems by searching: Problem Solving Agents |
| **9** | Formulating Problems, Examples Problems |
| **10** | Searching for Solutions, Infra-structure for search algorithms |
| **11** | Uninformed search strategies: breadth first search and uniform cost search |
| **12** | Depth first search, Depth limited search and Iterative deepening |
| **13** | Bidirectional search, Greedy search |
| **14** | A\*search. |
| **15** | Discussions on Heuristic functions |
| **16** | Game Playing-Introduction, optimal decision in games |
| **17** | Minimax algorithm |
| **18** | Alpha-Beta Pruning |
| **19** | Logical agents, knowledge based agents |
| **Lecture no.** | **Topic to be covered** |
| **20** | Logic, Propositional logic |
| **21** | Knowledge base and inference procedure |
| **22** | Propositional theorem proving |
| **23** | Propositional theorem proving (contd) |
| **24** | Syntax and semantics of first order logic |
| **25** | Syntax and semantics of first order logic (contd…) |
| **26** | Using first order logic |
| **27** | Knowledge engineering in First order logic |
| **28** | Definition of classical planning |
| **29** | Examples |
| **30** | Algorithms for planning as state space search |
| **31** | Ontological Engineering |
| **32** | Categories and objects |
| **33** | Events |
| **34** | Mental events and Mental objects |
| **35** | Reasoning system for categories |
| **36** | Reasoning with default information |
| **37** | The Internet Shopping world |
| **38** | Acting under uncertainty |
| **39** | Inference using full joint distribution |
| **40** | Independence |
| **Lecture no.** | **Topic to be covered** |
| **41** | Representing knowledge in an uncertain domain |
| **42** | The semantics of Bayesian Networks |
| **43** | Introduction to Expert Systems |
| **44** | Fuzzy sets |
| **45** | Fuzzy set operations |
| **46** | Machine learning systems |
| **47** | Supervised and unsupervised learning |
| **48** | Artificial Neural networks |

**References:**

1. Stuart Russell and Peter Norvig – Artificial Intelligence A Modern Approach, Pearson Education, Third Edition, 2010.
2. Saroj Kaushik, “Artificial Intelligence”, Cengage Learning Publications, First Edition, 2011.
3. Don W. Patterson, “Introduction to Artificial Intelligence and Expert Systems”, PHI Publication,2006.
4. John Yen, Reza Langari,“ Fuzzy Logic Intelligence, Control, and Information”, Pearson Education, 2004.

**Submitted by:**

**(Signature of the faculty)**

**Date: 29-7-2015**

**Approved by:**

**(Signature of HOD)**

**Date:**

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