**Course Plan Format**  FF No. 182

Academic Year : 2023-24 Branch : IT\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Semester : 1\_\_\_\_\_\_\_\_\_\_\_

Subject Name: Artificial Intelligence\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Subject Code: IT3218 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Name of Course Incharge: Dr. Priyadarshan Dhabe\_

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| **Section No.** | **Lecture No.** | **Topic** | **Method** | **Media** | **Student Activity** | **Assessment Tool** | **Remarks** |
| I | 1 | **Fundamentals of Artificial Intelligence**  Introduction, A.I. Representation, Non-AI &AI Techniques, | Explanation with examples | PPTs | #  § | i) MSE - Paper  ii) HA - VOLP  iii) Lab- Exam  iv) Viva  v) ESE- Paper |  |
| 2 | Representation of Knowledge, | Explanation with examples | PPTs+video | #  § |
| 3 | Knowledge Based Systems, State Space Search | Explanation with examples | PPTs+video | #  § |
| 4 | Production Systems, Problem Characteristics, | Explanation with examples | PPTs+ Video | #  § |  |
| 5 | types of production systems, Intelligent Agents and Environments, | Explanation with examples | PPTs | #  § |  |
| 6 | concept of rationality, the nature of environments, | Explanation with examples | PPTs | #  § |  |
| 7 | structure of agents, problem solving agents  (**Action suggested- give more focus on Intelligent Agent architectures)** | Explanation with examples | PPTs+Video | #  § |  |
| 8 | problem formulation | Explanation with examples | PPTs | #  § |  |
| 9 | **Uninformed Search Strategies**  Formulation of real world problems | Explanation with examples | PPTs | #  § |  |
| 10 | Breadth First Search, Depth First Search, | Problems | PPTs | #  § |  |
| 11 | Depth Limited Search, Iterative Deepening Depth First Search, | Problems | PPTs | #  § |  |
| 12 | Bidirectional Search, Comparison of Uninformed search Strategies, | Problems | PPTs | #  § |  |
| 13 | **Informed Search Strategies**  Generate& test, Hill Climbing, | example | PPTs | #  § |  |
| 14 | Best First Search, A\* | Problems | PPTs | #  § |  |
| 15 | Game playing: Minimax Search, Alpha-Beta Cutoffs, Waiting for Quiescence, 8-puzzle using min-max | Explanation with examples | PPTs | #  § |  |
| II | 16 | **Knowledge Representation**  Knowledge based agents, Wumpus world. | Explanation | PPTs +videos | #  § |  |  |
| 17 | Propositional Logic: Representation, Inference, | Explanation | PPTs+videos | #  § |
| 18 | Reasoning Patterns, Resolution, Forward and Backward Chaining. | Explanation with examples | PPTs+videos | #  § |  |
| 19 | First order Logic: Representation, Inference, Reasoning Patterns, | Explanation with examples | PPTs | #  § |  |
| 20 | **Introduction to PROLOG and ANN** Basics of PROLOG: Representation, Structure, Backtracking.  Expert System: Case study of Expert System in PROLOG | Hands-0n | PPTs | #  § |  |
| 21 | ANN : Advantages, Applications of ANN, motivation | Explanation with examples | PPTs | #  § |  |
| 22 | Introduction to Neural networks:-basic, comparison of human brain and machine, biological neuron, | Explanation | PPTs | #  § |  |
| 23 | general neuron model, activation functions, Perceptron learning rule, | Explanation with formulae | PPTs | #  § |  |
| 24 | Brief introduction to single layer and multiplayer networks. | Explanation | PPTs | #  § |  |
| 25 | **Uncertainty**  Non Monotonic Reasoning, Logics for Non Monotonic Reasoning, | Explanation with examples | PPTs | #  § |  |
| 26 | Semantic Nets, Statistical Reasoning, | Explanation with examples | PPTs | #  § |  |
| 27 | Fuzzy logic: fuzzy set definition and types, | Explanation with examples | PPTs | #  § |  |
| 28 | Fuzzy membership function design and use , | Explanation with examples | PPTs | #  § |  |

Levels of Bloom’s Taxonomy applicable for the course – Knowledge / Comprehension / Application / Analysis / Synthesis / Evaluation (Strike out levels not applicable)

List of Reference Books and Text Books –

***Text Books***

*1. Elaine Rich and Kevin Knight: "Artificial Intelligence." Tata McGraw Hill*

*2. Stuart Russell & Peter Norvig : "Artificial Intelligence : A Modern Approach",*

*Pearson Education, 2nd Edition.*

***Reference Books***

*1. Ivan Bratko : "Prolog Programming For Artificial Intelligence" , 2nd Edition Addison Wesley, 1440.*

*2. Eugene, Charniak, Drew Mcdermott: "Introduction to Artificial Intelligence.", Addison Wesley*

*3. Patterson: ―Introduction to AI and Expert Systems‖, PHI*

*4. Nilsson : ―Principles of Artificial Intelligence‖, Morgan Kaufmann.*

*5. Carl Townsend, ―Introduction to turbo Prolog‖, Paperback, 1483*

*6. Jacek M. Zurada, Introduction to artificial neural systems, Jaico Publication*

# - Details of laboratory course student activity for experiments and course project based on appropriate Topic.

§ - Details of student activity based on appropriate Topic.

◘ - Mode of conduct of MSE is to be mentioned.

Name and Signature of Faculty executing the course plan

1) Dr. Priyadarshan Dhabe\_\_\_\_\_\_\_\_

Signature of Chairman – BOS Date : 26/06/2023