**JSPM Narhe Technical Campus**

**Department: MCA**

**Academic Year – 2021-22**

**Teaching, Learning and Assessment tool Plan**

**Name of Faculty: - Prof. D.A.Sarwate Subject:- Artificial Intelligence and Knowledge Representation**

**Semester: III Year: 2021-22 Planned Duration: 45 Hr**

**Course outcome:**

CO1: Understand basic building block of Artificial Intelligence and Knowledge Representation.

CO2: Apply Propositional Logic for knowledge representation.

CO3: Design various models based on Machine Learning methodology

CO4: Design various models based on Deep Learning methodology

CO5: Understand various hardware and software aspect used for AI and its application.

**Unit - 1 Artificial Intelligence and Knowledge representation**

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| Sr. No | Content | Planned Date | Actual Date | Course outcome to fulfill | Teaching model | Teaching activity | Teaching material | References | Student activity | Student Learning material | Assessment tool |
| 1 | Introduction to Artificial Intelligence and its  evolution.  What is Intelligence and Artificial Intelligence | /11/21 |  | CO-1 | Inductive thinking & concept attainment Model | Direct instructions | Notes | R-1  R-2 | Reading Notes | Notes | Feedback |
|  | How AI is affecting on real life?  Different branches of AI | 18/11/21 |  |  |  |  |  |  |  |  |
| 2 | Limitations of AI  Need of knowledge Representation | 19/11/21 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes | R-1  R-2 | Reading Notes | Notes | Feedback |
|  | Knowledge Representation and Mapping schemes  Properties of good knowledge-based system | 24/11/21 |  |  |  |  |  |  |  |
| 3 | Types of knowledge  1.10.  Knowledge Representation issues  1.11. | 25/11/21 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes | Reading Notes | Notes,Assignments | Feedback |
| 4 | AND-OR Graph  ThImage Processing  6.4. Speech Recognition Wumpus World | 26/11/21 |  |  | Inductive thinking & concept attainment Model | Direct instructions | Notes |  | Reading Notes | Notes,Assignments | Feedback |

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| **Unit - 2 - Propositional Logic** | | | | | | | | | | | |
| Sr. No | Content | Planned Date | Actual Date | Course outcome to fulfill | Teaching model | Teaching activity | Teaching material | References | Student activity | Student Learning material | Assessment tool |
| 1 | Mathematical Logic and Inference  2.2. First Order Logic: Syntax and Semantic, Inference in  FOL | 01/12/21 |  | CO-2 | Inductive thinking & concept attainment Model | Direct instructions | Notes, | R-3 | Reading Notes | Notes,Assignments | Feedback |
| 2 | Forward chaining, backward Chaining  2.4. Language | 2/12/21 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes, youtube Videos | Practical | Notes,Assignments | Feedback |
| 3 | Semantics and Reasoning  2.6. Syntax and Truth Values, | 3/12/21 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes, youtube Videos | Practical | Notes,Assignments | Feedback |
| 4 | **Valid Arguments and Proof Systems**  **2.8. Rules of Inference and Natural Deduction** | 08/12/21 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes, youtube Videos | Practical | Notes,Assignments | Feedback |
| 5 | Axiomatic Systems and Hilbert Style Proofs | 9/12/21 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes, youtube Videos | Practical | Notes,Assignments | Feedback |
| 6 | The Tableau Method  2.11.  The Resolution RImage Processing  6.4. Speech Recognitionefutation Method | 10/12/21 |  | Inductive thinking & concept attai | Direct instructions | Notes, | Reading Notes | Notes | Feedback |

**Unit - 3 - Machine Learning**

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| Sr. No | Content | Planned Date | Actual Date | Course outcome to fulfill | Teaching model | Teaching activity | Teaching material | References | Student activity | Student Learning material | Assessment tool |
| 1 | Machine Learning  3.1. History of Machine Learning  3.2. Machine Learning Vs Statistical Learning | 15/12/21 |  | CO-3 | Inductive thinking & concept attainment Model | Direct instructions | Notes, youtube Videos | R-4 | Reading Notes | Notes | Feedback |
| 2 | 3Type of Machine Learning - Supervised,  Unsupervised Learning, Reinforcement Learning | 16/12/21 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes, youtube Videos | Reading Notes | Notes,Assignments | Feedback |
| 3 | Linear Regression  3.3.2. Logistic Regression | 17/12/21 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes, youtube Videos | Practical | Notes,Assignments | Feedback |
| 4 | Support Vector Machines  3.3.4. Random Forest | 22/12/21 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes, youtube Videos | Notes,Assignments | Feedback |
| 5 | Naïve Bayes Classification  3.3.6. Ordinary Least Square Regression | 23/12/21 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes, youtube Videos | Notes,Assignments | Feedback |
| 6 | K-means  3.4. Essentials of Data and its analysis | 24/12/21 |  |  | Inductive thinking & concept attainment Model | Direct instructions | Notes, youtube Videos |  |  | Notes,Assignments | Feedback |
| 7 | Framework of Data AnaImage Processing  6.4. Speech Recognitionlysis | 29/12/21 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes, youtube Videos |  |  | Notes,Assignments | Feedback |

**Unit - 4 - Deep Learning**

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| Sr. No | Content | Planned Date | Actual Date | Course outcome to fulfill | Teaching model | Teaching activity | Teaching material | References | Student activity | Student Learning material | Assessment tool |
| 1 | Deep Learning | 30/12/21 |  | CO-4 | Inductive thinking & concept attainment Model | Direct instructions | Notes, youtube Videos | R-4 | Reading Notes | Notes | Feedback |
| 2 | Fundamentals of Deep networks and Defining Deep  learning | 31/12/21 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes, youtube Videos | Reading Notes | Notes,Assignments | Feedback |
| 3 | Deep learning Problem types | 05/01/22 |  | Inductive thinking & concept attain. | Direct instructions | Notes, youtube Videos | Practical | Notes,Assignments | Feedback |
| 4 | ANN | 06/01/22 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes, youtube Videos | Notes,Assignments | Feedback |
|  | Discussion on Algorithm for ANN | 07/01/22 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes | Notes,Assignments | Feedback |
| 5 | CNN | 12/01/22 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes, youtube Videos | Notes,Assignments | Feedback |
| 6 | Discussion on Algorithm for CNN | 13/01/22 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes | Notes,Assignments | Feedback |
| 7 | RNN | 14/01/22 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes, youtube Videos | Notes,Assignments | Feedback |
| 8 | Discussion on Algorithm for RNN | 19/01/22 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes |  | Reading Notes | Notes,Assignments | Feedback |
| 9 | GAN  Discussion on Algorithm for GAN | 20/01/22 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes, youtube Videos |  |  | Notes,Assignments | Feedback |
| 10 | NLP | 21/01/22 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes, youtube Videos |  |  | Notes,Assignments | Feedback |
| 11 | mage Processing  6.4. Speech Recognition | 26/01/22 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes |  | Reading Notes | Notes,Assignments | Feedback |
| 12 | Building blocks of Deep learning | 27/01/22 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes, youtube Videos |  |  | Notes,Assignments | Feedback |
| 13 | Classification and Detection | 28/01/22 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes, youtube Videos |  |  | Notes,Assignments | Feedback |

**Unit - 5 - Hardware and Software for AI**

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| 1 | Data Center  5.2. Gateway edge computing | 02/02/22 |  | CO-5 | Inductive thinking & concept attainment Model | Direct instructions | Notes,online tutorial | R-6 | Reading Notes | Notes,Assignments | Feedback |
| 2 | Keyprocessor for AI  5.4. CPU and GPU | 03/02/22 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes,online tutorial | Reading Notes | Notes,Assignments | Feedback |
| 3 | 5.5. Field Programmable Gate Array (FPGA) | 04/02/22 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes,online tutorial |  | Reading Notes | Notes,Assignments | Feedback |
|  | Unit-06 Application of AI | | | | | | | | | | |
| 1 | Robotics Process Automation – Chatbot  6.2. NLP | 09/02/22 |  | CO-5 | Inductive thinking & concept attainment Model | Direct instructions | Notes,Nptel video | R-6 | Practical | Notes,Assignments | Feedback |
| 2 | Image Processing  6.4.Image Processing | 10/02/22 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes, youtube Videos |  | Reading Notes | Notes,Assignments | Feedback |
| 3 | 6.4. Speech Recognition Speech Recognition | 11/02/22 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes, youtube Videos |  | Reading Notes | Notes,Assignments | Feedback |
| 4 | 6.4. Speech Recognition Speech Recognition | 16/02/22 |  | Inductive thinking & concept attainment Model | Direct instructions | Notes, youtube Videos |  | Reading Notes | Notes,Assignments | Feedback |

Name and Signature: Faculty Program Coordinator HOD

Role: (Prepared By) (Reviewed by) (Approved by)

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Copy To: (Soft copy of Signed document be provided)

1. Program Coordinator
2. Website coordinator

Reference Book : 1. HTML5 & CSS3 , Castro Elizabeth 7th Edition

2.Node.js in Action, 2ed by Alex Young, Bradley Meck

3. Mastering Node.js by Pasquali Sandro

4. Angular Essentials by Kumar Dhananjay

5. Complete Ref. PHP