| Sr No | Topics to be Covered | Duration (hours) |

**Unit-1**

1 Introduction to Machine Learning 1 hr

2 Basic Concepts and Terminology 1 hr

3 Developing a Learning System 1 hr

4 Learning Issues and Challenges 1 hr

5 Supervised Learning 1 hr

6 Unsupervised Learning 1 hr

7 Reinforcement Learning 1 hr

8 Feature Selection Mechanisms 1 hr

9 Applications of Machine Learning 1 hr

| 10 Wrap-up, Recap, and Final Q&A 1 hr

Unit-2

11 Introduction to Supervised Learning 1 hr

12 Linear Regression 1 hr

13 Basics of Classifier Models 1 hr

14 K Nearest Neighbors (KNN) 1 hr

15 Support Vector Machines (SVM) 1 hr

16 Random Forest 1 hr

17 Hands-on with Linear Regression 1 hr

18 Hands-on with Classifier Models 1 hr

19 Hands-on with KNN, SVM, and Random Forest 1 hr

20 Applications and Case Studies 1 hr

2 1 Introduction to Unsupervised Learning 1 hr

2 2 Dimensionality Reduction 1 hr

2 3 Clustering Techniques 1 hr

2 4 K-Means Clustering 1 hr

2 5 Fuzzy C-Means Clustering 1 hr

2 6 Expectation-Maximization (EM) Algorithm 1 hr

2 7 Association Analysis Introduction 1 hr

28 Apriori Algorithm for Association Rule Mining 1 hr

29 Hidden Markov Models (HMMs) 1 hr

30 Applications, Case Studies, and Review 1 hr

**UNIT-IV**

3 1 Introduction to Reinforcement Learning 1 hr

32 Methods and Elements of Reinforcement Learning 1 hr

3 3 Bellman Equation 1 hr

3 4 Markov Decision Process (MDP) 1 hr

3 5 Q Learning 1 hr

36 Value Function Approximation 1 hr

37 Temporal Difference Learning 1 hr

38Concept of Neural Networks 1 hr

3 9 Deep Neural Network (DQN) 1 hr

40 Applications of Reinforcement Learning 1 hr