**MACHINE LEARNING**

**UNIT-1**

Introduction - Well-posed learning problems, designing a learning system, Perspectives and issues in machine learning Concept learning and the general to specific ordering – introduction, a concept learning task, concept learning as search, find-S: finding a maximally specific hypothesis, version spaces and the candidate elimination algorithm, remarks on version spaces and candidate elimination, inductive bias, Gradient Descent Algorithm and its variants.

**UNIT-2**

Supervised Learning- Regression: Linear-Simple, Multiple, Logistic Regression. Classification- Naive Bayes Classifier, k-NN classifier, Support Vector Machines -Linear, Non Linear Ensemble Techniques I-Decision Trees-ID3(Iterative Dichotomiser3), CART(Classification and Regression Tree)

**UNIT-3**

Ensemble Techniques II- C4.5, CHAID (Chi-Square Automatic Interaction Detection), Random Forest Algorithm Unsupervised Learning-Clustering: Measures of distance, k-means, Gaussian Mixture Model Clustering, Hierarchical Learning- Divisive, Agglomerative Clustering

**UNIT-4**

Artificial Neural Networks-1– Introduction, neural network representation, appropriate problems for neural network learning, perceptions, multi layer networks and the back-propagation algorithm.

Artificial Neural Networks-2- Remarks on the Back-Propagation algorithm, An illustrative example: face recognition, advanced topics in artificial neural networks.

**UNIT-5**

Genetic Algorithms – Motivation, Genetic algorithms, an illustrative example, hypothesis space search, genetic programming, models of evolution and learning, parallelizing genetic algorithms. Reinforcement Learning – Introduction, the learning task, Q–learning, non-deterministic, rewards and actions, temporal difference learning, generalizing from examples, relationship to dynamic programming.