**Curriculum Plan(Odd Semester 2025-26)**

**(Department of Computer Science)**

Name of the Faculty : Ms kanishka

Name of the Course : BSc(Physical Science)

Semester : 7th sem

Title of the Paper : Machine Learning (Theory + Practical)

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| **S No** | **Topic** | **References/content** | **schedule** |
| 1. | **Unit 1: Introduction**  Basic definitions and concepts, key elements, supervised and unsupervised learning, introduction to reinforcement learning, applications of ML.  **Unit 2: Preprocessing**  Feature scaling, feature selection methods, dimensionality reduction (Principal Component Analysis). | [3]  [2] | August |
| 2. | **Unit 3: Regression**  Linear regression with one variable, linear regression with multiple variables, gradient descent, over-fitting, regularization, Regression evaluation metrics.  Assignment Submission | [2] | September |
| 3. | **Unit 4: Classification**  Decision trees, Naive Bayes classifier, logistic regression,  k-nearest neighbour classifier, perceptron, multilayer perceptron, neural networks, Support Vector Machine (SVM), Classification evaluation metrics.  Test 1 | [1], [2], [3] | October |
| 4. | **Unit 5: Clustering**  Approaches for clustering, distance metrics, K-means clustering, hierarchical clustering.  Test 2  Revision | [2] | November |

**Essential/recommended readings**

1. Mitchell, T.M. Machine Learning, McGraw Hill Education, 2017.
2. James, G., Witten. D., Hastie. T., Tibshirani., R. An Introduction to Statistical Learning with Applications in Python, Springer, 2023.
3. Alpaydin, E. Introduction to Machine Learning, MIT press, Third Edition.