MACHINE LEARNING LABORATORY

Course Code: KG23ACM302	L	T	P	C
	0	0	2	1

B.Tech. III Year I Sem.

Prerequisites

No Prerequisites

Course Objectives: The objectives of this course for the student are to:

1. Introduce students to core Python libraries such as NumPy, Pandas, matplotlib, and Scikit-learn used in data analysis and machine learning.
2. Develop the ability to implement basic statistical and mathematical operations including measures of central tendency and dispersion.
3. Enable students to build and evaluate regression models, including simple and multiple linear regression.
4. Implement classification algorithms such as decision trees, KNN, and logistic regression using Python.
5. Apply clustering techniques and analyze model performance on real-world datasets through mini projects.

Course Outcomes: After completion of this course, the students will be able to:

CO1: Apply Python libraries like NumPy, SciPy, Pandas, and matplotlib for data analysis. **(K3)**

CO2: Examine basic statistical measures and visualizations using Python. **(K4)**

CO3: Investigate regression models such as simple and multiple linear regression. **(K5)**

CO4: Develop classification models using Decision Trees, KNN, and Logistic Regression. **(K6)**

CO5: Perform clustering and **analyze** ML Model performance on real-world datasets. **(K4)**

List of Experiments

1. Write a python program to compute Central Tendency measures: mean, median, mode measure of Dispersion: Variance, Standard Deviation

2. Study of Python Basic Libraries such as Statistics, math, Numpy and Scipy

3. Study of Python Libraries for ML application such as Pandas and matplotlib

4. Write a Python program to implement Simple Linear Regression

5. Implementation of Multiple Linear Regression for House Price Prediction using sklearn

6. Implementation of Decision tree using sklearn and its parameter tuning

7. Implementation of KNN using sklearn

8. Implementation of Logistic Regression using sklearn

9. Implementation of K-Means Clustering

10. Performance analysis of Classification Algorithms on a specific dataset (Mini Project)

TEXT BOOK:

1. Machine Learning – Tom M. Mitchell, - MGH.

REFERENCE BOOK:

1. Machine Learning: An Algorithmic Perspective, Stephen Marshland, Taylor & Francis.

CO-PO Mapping

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	2		3	2		3	2		3	3			2	3
CO2	3	3		3	3		3	3		3	3			2	2
CO3	3	2		3	2		3	2		2	3			2	3
CO4	3	3		3	2		3	2		2	3			2	2
CO5	3	2		3	2		3	2		1	1			2	3

HIGH=3, **MEDIUM**=2, **LOW**=1