MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NAAC with 'A' Grade & Recognized Under Section 2(f) & 12(B) of the UGC act,1956

COURSE CONTENT

MACHINE LEARNING LAB								
IV Semester: CSD / CSE / CSM								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maximum Marks**		
2540584	**Core**	**L**	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
		0	0	2	1	40	60	100
Contact Classes: Nil	**Tutorial Classes: Nil**	**Practical Classes: 30**				**Total Classes: Nil**		
Prerequisites: Python Programming								

Course Overview:

This lab explores core data mining and machine learning techniques using Python. It includes algorithms like Bayes' Rule, Decision Trees, KNN, K-Means, Naïve Bayes, Genetic Algorithms, and Neural Networks. The lab emphasizes classification, regression, clustering, and knowledge extraction from databases

Course Objectives:

The objective of this lab is to get an overview of the various machine learning techniques and can demonstrate them using python

Course Outcomes: After Completion of the Course, Students should be able to

1. Perform statistical analysis and compute central tendency and dispersion measures using Python programming.
2. Utilize Python libraries such as NumPy, SciPy, Pandas, and Matplotlib for data manipulation, visualization, and analysis.
3. Implement and evaluate supervised learning algorithms including Linear Regression, Logistic Regression, Decision Trees, and K-Nearest Neighbors.
4. Apply unsupervised learning techniques such as K-Means clustering to extract patterns from datasets.
5. Analyze and compare the performance of machine learning models on real-world datasets to draw meaningful insights.

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 BOOKS:

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

REFERENCE BOOKS:

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

ELECTRONIC RESOURCES:

1. https://www.scribd.com/document/891358955/ml
2. https://www.cse.iitb.ac.in/~sunita/cs725/calendar.html
3. https://www.analyticsvidhya.com/blog/2018/12/guide-convolutional-neural-network-cnn/
4. https://cs.nyu.edu/~mohri/mlu11/
5. https://ece.iisc.ac.in/~parimal/2019/ml.html
6. https://www.springer.com/gp/book/9780387848570

MATERIALS ONLINE:

1. Lab Manual
2. Open-ended experiments