# 23CA22P1 - MACHINE LEARNING LAB

(CSE(AI&ML))

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| Course Category: | Professional Core | Credits: | 1.5 |
| Course Type: | Practical | Lecture-Tutorial-Practical: | 0-0-3 |
| Prerequisite: | Familiarity with popular **ML libraries** such as scikit-learn, TensorFlow, or PyTorch for implementing and experimenting with ML algorithms. | Sessional Evaluation:  Univ. Exam Evaluation:  Total Marks: | 30  70  100 |
| Objectives: | **Students undergoing this course are expected:** | | |
| * To learn about computing central tendency measures and Data preprocessing techniques. * To learn about classification and regression algorithms. * To apply different clustering algorithms for a problem. | | |

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| Course Outcomes | **Upon successful completion of the course, the students will be able to:** | |
| CO1 | Apply a variety of machine learning algorithms, including supervised and unsupervised techniques, to real-world datasets. |
| CO2 | Demonstrate proficiency in pre-processing data and selecting appropriate models. |
| Course Content | Sample list of Experiments   1. Compute Central Tendency Measures: Mean, Median, Mode Measure of Dispersion: Variance, Standard Deviation. 2. Apply the following Pre-processing techniques for a given dataset.   a. Attribute selection  b. Handling Missing Values  c. Discretization  d. Elimination of Outliers   1. Apply KNN algorithm for classification and regression 2. Demonstrate decision tree algorithm for a classification problem and perform parameter tuning for better results 3. Demonstrate decision tree algorithm for a regression problem 4. Apply Random Forest algorithm for classification and regression 5. Demonstrate Naïve Bayes Classification algorithm. 6. Apply Support Vector algorithm for classification 7. Demonstrate simple linear regression algorithm for a regression problem 8. Apply Logistic regression algorithm for a classification problem 9. Demonstrate Multi-layer Perceptron algorithm for a classification problem 10. Implement the K-means algorithm and apply it to the data you selected. Evaluate performance by measuring the sum of the Euclidean distance of each example from its class center. Test the performance of the algorithm as a function of the parameters K. 11. Demonstrate the use of Fuzzy C-Means Clustering 12. Demonstrate the use of Expectation Maximization based clustering algorithm | |