



**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA**  
**KAKINADA – 533 003, Andhra Pradesh, India**

**DEPARTMENT OF CSE - DATA SCIENCE**

| III B Tech I Sem            |   |   |   |     |
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| <b>MACHINE LEARNING LAB</b> |   |   |   |     |

**Course Objectives:**

This course will enable students to learn and understand different Data sets in implementing the machine learning algorithms.

**Course Outcomes (Cos):** At the end of the course, student will be able to

- Implement procedures for the machine learning algorithms
- Design and Develop Python programs for various Learning algorithms
- Apply appropriate data sets to the Machine Learning algorithms
- Develop Machine Learning algorithms to solve real world problems

**Requirements:** Develop the following program using Anaconda/ Jupiter/ Spider and evaluate ML models.

**Experiment-1:**

Implement and demonstrate the FIND-S algorithm for finding the most specific hypothesis based on a given set of training data samples. Read the training data from a .CSV file.

**Experiment-2:**

For a given set of training data examples stored in a .CSV file, implement and demonstrate the Candidate-Elimination algorithm to output a description of the set of all hypotheses consistent with the training examples.

**Experiment-3:**

Write a program to demonstrate the working of the decision tree based ID3 algorithm. Use an appropriate data set for building the decision tree and apply this knowledge to classify a new sample.

**Experiment-4:**

Exercises to solve the real-world problems using the following machine learning methods: a) Linear Regression b) Logistic Regression c) Binary Classifier

**Experiment-5:** Develop a program for Bias, Variance, Remove duplicates, Cross Validation

**Experiment-6:** Write a program to implement Categorical Encoding, One-hot Encoding

**Experiment-7:**

Build an Artificial Neural Network by implementing the Back propagation algorithm and test the same using appropriate data sets.

**Experiment-8:**

Write a program to implement k-Nearest Neighbor algorithm to classify the iris data set. Print both correct and wrong predictions.

**Experiment-9:** Implement the non-parametric Locally Weighted Regression algorithm in order to fit data points. Select appropriate data set for your experiment and draw graphs.



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**Experiment-10:**

Assuming a set of documents that need to be classified, use the naïve Bayesian Classifier model to perform this task. Built-in Java classes/API can be used to write the program. Calculate the accuracy, precision, and recall for your data set.

**Experiment-11:** Apply EM algorithm to cluster a Heart Disease Data Set. Use the same data set for clustering using k-Means algorithm. Compare the results of these two algorithms and comment on the quality of clustering. You can add Java/Python ML library classes/API in the program.

**Experiment-12:** Exploratory Data Analysis for Classification using Pandas or Matplotlib.

**Experiment-13:**

Write a Python program to construct a Bayesian network considering medical data. Use this model to demonstrate the diagnosis of heart patients using standard Heart Disease Data Set

**Experiment-14:**

Write a program to Implement Support Vector Machines and Principle Component Analysis

**Experiment-15:**

Write a program to Implement Principle Component Analysis