GUJARAT TECHNOLOGICAL UNIVERSITY
Syllabus for Bachelor of Vocation (B.Voc.), 5th Semester
Branch: Information Technology
Subject Name: Machine Learning Lab
Subject Code: 1150505

Type of subject: Practical

Prerequisite: Python Programming

Rationale: Machine learning practices enhance the learning experience by providing students with the skills, experiences, and insights needed to succeed in the rapidly evolving field of machine learning. They offer a dynamic and engaging way for students to apply theoretical knowledge and gain a deeper understanding of the challenges and opportunities in the concerning field.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Marks				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE (E)	PA (M)	ESE (V)	PA (I)	
0	0	4	2	0	0	30	20	50

L- Lectures; T- Tutorial/Teacher Guided Student Activity; P- Practical; C Credit; ESE- End Semester Examination; PA- Progressive Assessment

Course Details:

Suggested List of Exercise / Practical:

Sr. No.	Practical/Exercises	Hrs.
1	Understand installation and configuration of python libraries used for machine learning programming.	6
2	Explore the following python packages for machine learning pandas, matplotlib, numpy, scikit-learn	4
3	Write a Numpy program to display one dimensional array elements.	4
4	Implement a Numpy program to convert a list of numeric values into a one-dimensional NumPy array.	4
5	Create 3*3 matrix using numpy libraries.	4
6	Write a NumPy program to implement the following operation. a) To add, subtract, multiply, divide arguments element-wise. b) To round elements of the array to the nearest integer. c) To calculate mean across dimensions, in a 2D numpy array.	6
7	Write a Pandas program to implement the following operation. a) To convert an array to a series. b) To convert the first column of a DataFrame as a Series.	4
8	Write a Pandas program to perform following operations. a) Add, subtract, multiple and divide Pandas Series. b) Compare the elements of the Pandas Series. c) Convert a dictionary to a Pandas series.	8
9	Write a Python program using Scikit-learn to print the keys, number of rows-columns, feature names and the description of the given data.	4
10	Write a Pandas program to implement following operation	4

	a) to find and drop the missing values from the given dataset b) to remove the duplicates from the given dataset	
11	Implement a Pandas program to create a line plot of the opening, closing stock prices of a given company between two specific dates.	4
12	Implement a Pandas program to create a plot of Open, High, Low, Close, Adjusted Closing prices and Volume of given company between two specific dates.	4
Total		**56**

Reference Book:

1. Machine Learning by Saikat Dull, S. Chandramouli.
2. Machine Learning Using Python by Pradhan Manaranjan, U Dinesh Kumar.
3. Introduction to Machine Learning by Jeeva Jose
4. Machine Learning_ Step-by-Step Guide To Implement Machine Learning Algorithms with Python by Rudolph Russell

Course Outcomes:

Sr. No.	CO Statement	Weightage %
CO-1	To understand the basic concepts of machine learning and its type. Also you can understand how to set up and configure the python libraries.	**20**
CO-2	Apply various python Numpy and Matplotliblibrary's inbuilt functions to work with linear sets of data like arrays.	**15**
CO-3	Perform data Wrangling with Scikit-learn and Pandas for applying exploratory data analysis and outcomes.	**20**
CO-4	Understand to handling missing values, encoding categorical variables, and preparing those data sets in machine learning algorithms for predicting the outcomes.	**25**
CO-5	The learner should grasp the basic concept of supervised learning and unsupervised learning to handle labeled and unlabeled data set.	**20**

Learning Of Open Source Software/Learning Websites:

1. https://www.geeksforgeeks.org/machine-learning/
2. https://www.tutorialspoint.com/machine_learning_with_python/index.htm
3. https://www.javatpoint.com/machine-learning
4. https://nptel.ac.in/
5. https://www.coursera.org/
6. https://scikit-learn.org/
7. https://www.w3resource.com/python-exercises/pandas/index.php
8. https://machinelearningforkids.co.uk/
9. https://monkeylearn.com/machine-learning/
10. https://www.w3resource.com/python-exercises/pandas