GANPAT UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

Programme	Diploma Engineering		Branch	COMPUTER ENGINEERING	
Semester	VI		Version	1.0.0.0	
Effective from Academic Year	2020-21		Effective for the batch Admitted in	JULY 2018	
Subject code	1MC2607	Subject Name	Machine Learning		

Teaching scheme						Examination scheme (Marks)			
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	0	2	0	5	Theory	40	60	100
Hours	3	0	4	0	7	Practical	60	40	100

Pre-requisites:
Python Programming

Course Learning Outcomes:
T1 Basic knowledge about Artificial Neural Network.
T2 Brief Knowledge about what is machine learning.
T3 To know about machine learning algorithms and classifiers.
T4 Knowledge about Python packages suitable for machine learning.

Course Content				
Name of UNIT	Unit Content	Unit Learning Outcomes	Marks	Hrs
UNIT – 1 ARTIFICIAL NEURAL NETWORK	1.1. What is Artificial Intelligence 1.2. Types of Neural Network 1.3. ANN 1.4. ANN architectures - Feed forward - Acyclic - Fully connected - Layered	1.a To understand the basic concepts of artificial neural network.	15	11
UNIT – 2 INTRODUCTION TO MACHINE LEARNING	2.1 What is machine learning? 2.2 Why machine learning is used? 2.3 When ML is used?	2.a Understanding of fundamental issues and challenges of Machine learning	10	10
UNIT – 3 MACHINE LEARNING SYSTEMS	3.1 Supervised Learning 3.2 Un-Supervised Learning 3.3 Semi-Supervised Learning 3.4 Reinforced Learning	3.a How and Why to train ANN	8	6
UNIT – 4 **REGRESSION**	4.1 What is Regression 4.2 Types - Linear - Non linear	4.a Why to use Regression in machine learning	13	8

UNIT – 5 CLASSIFICATION	5.1 What is classification 5.2 Types of classification - Binary - Multi-class 5.3 K-Nearest Neighbour 5.4 Support Vector Machine	5.a Application of Classification in Machine learning.	14	10

No.	Name of Practical
1	**Write programs for Vectors, Matrices, and Arrays to perform below operations.** • Creating a Vector • Creating a Matrix • Creating a Sparse Matrix • Selecting Elements • Describing a Matrix • Applying Operations to Elements • Finding the Maximum and Minimum Values • Calculating the Average, Variance, and Standard Deviation • Reshaping Arrays • Transposing a Vector or Matrix • Flattening a Matrix • Calculating the Determinant • Adding and Subtracting Matrices • Multiplying Matrices • Inverting a Matrix • Generating Random Values
2	**Write programs to Load below data sets.** • Loading a Sample Dataset • Creating a Simulated Dataset • Loading a CSV File • Loading an Excel File • Loading a JSON File • Querying a SQL Database
3	**Write programs to perform following manipulations on data.** • Creating a Data Frame • Describing the Data • Navigating DataFrames • Selecting Rows Based on Conditionals • Replacing Values • Renaming Columns • Finding the Minimum, Maximum, Sum, Average, and Count • Finding Unique Values • Handling Missing Values • Deleting a Column • Deleting a Row • Dropping Duplicate Rows • Grouping Rows by Values • Grouping Rows by Time • Looping Over a Column • Applying a Function Over All Elements in a Column

	• Applying a Function to Groups • Concatenating DataFrames • Merging DataFrames
4	**Write programs for Text Handling using the following operations.** • Cleaning • Text Parsing and Cleaning HTML • Removing Punctuation • Tokenizing Text • Removing Stop Words • Stemming Words • Tagging Parts of Speech • Encoding Text as a Bag of Words
5	**Write programs to perform below Image manipulations .** • Loading Images • Saving Images • Resizing Images • Cropping Images
6	Case Study about MINST data set and Classifier technique to get more than 90% accuracy

List of Reference Books			
No	Title of Reference Books	Authors	Publication
1	Machine Learning_ Step-by-Step Guide To Implement Machine Learning Algorithms with Python.	Rudolph Russell	Rudolph Russell Publications
2	Machine Learning with Python Cookbook_ Practical Solutions from Preprocessing to Deep Learning.	Chris Albon	O'Reilly Media, Inc.

Link of Learning Web Resource	
1	https://www.tutorialspoint.com/artificial_intelligence/artificial_intelligence_neural_networks.html
2	https://towardsdatascience.com/introduction-to-artificial-neural-networks-ann-1aea15775ef9