



Ganpat University

॥ विद्यया समाजोत्कर्षः ॥

Faculty of
Computer Applications



Programme	B.Sc. IT Honours (Data Science)				Branch	Department of Computer Science						
Semester	VI				Version	1.0.0.0						
Effective from Academic Year	2026-27				Effective for the batch Admitted in	June 2024						
Subject code	U76A3ML1		Subject Name	MACHINE LEARNING – I								
Teaching scheme					Examination scheme(Marks)							
(Per week)	Lecture (DT)		Practical (Lab.)		Total		CE	SEE	Total			
	L	TU	P	TW								
Credit	2	-	2	-	4	Theory	50	50	100			
Hours	2	-	4	-	6							
Objective:												
The course will cover theoretical basics of broad range of machine learning concepts and methods with practical applications to sample datasets via programming assignments												
Pre-requisites:												
Basic understanding of probability, linear algebra, and computational algorithms, Basic facility in programming in Python												
Learning Outcome:												
Name of CO Description												
CO1 To understand how to collect, clean, transform, and segment data from various sources												
CO2 To understand about machine learning techniques												
CO3 To understand how to use supervised machine learning for prediction and classification problems												
CO4 To understand how to use un-supervised machine learning techniques												
CO5 To understand how to use an open-source tool for data import, visualization, analysis, and modeling												
Mapping of CO and PO:												
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	0	2	0	1	2	1	3	1	1	0
CO2	1	1	0	1	0	1	1	0	3	2	2	0
CO3	1	1	0	2	0	1	2	0	3	2	2	0
CO4	1	1	0	2	0	1	2	0	3	1	2	0
CO5	1	1	1	2	1	1	2	0	3	1	1	1
Content:												
Unit	Content											Hrs.

1	Data Acquisition, Pre-processing, and Preparation: Gather information from different sources, Web APIs, Open Data Sources, Data APIs, Web Scrapping, Data Cleaning: Consistency checking, Heterogeneous and missing data, Data Transformation, and segmentation.	06
2	Foundations for ML: Machine learning and its real-world applications, Types of machine learning: supervised, unsupervised, reinforcement. Basic concepts: features, labels, predictions. Feature Reduction/Dimensionality reduction, Principal components analysis	06
3	Supervised Learning Basics: Linear regression: predicting outcomes based on input features. Logistic regression: classification problems and binary outcomes. Decision trees: making decisions based on data. Support Vector Machines: finding decision boundaries.	06
4	Unsupervised Learning and Evaluation: Clustering: grouping data based on similarity. Dimensionality reduction: simplifying complex datasets. Cross-validation and avoiding overfitting. Case-study on Unsupervised Learning.	06
5	Data Modeling using Tools: Install and Understand the Open-source tool. Importing Data and formats supported. Data Pre-processing, Data visualization. Co-relation & Regression Analysis and statistical method support. Apply any Classification model, apply any Cluster based model.	06
Practical Content:		
List of programs specify by subject teacher based on above mention topics		
Reference Books:		
1	Python Machine Learning: Machine Learning and Deep Learning with Python, scikit learn, and TensorFlow 2, Third Edition, Sebastian Raschka and Vahid Mirjalili, Packt Publishing, 2020.	
2	Introduction to Machine Learning, Third Edition By Ethem Alpaydın, Publisher: The MIT Press	
3	Machine Learning By Tom Mitchell, McGraw Hill	
Web Reference:		
1	https://www.geeksforgeeks.org/machine-learning/	
MOOC/Certificate Course:		
1	Swayam Portal: Introduction to Machine Learning By Prof. Balaraman Ravindran, IIT Madras https://onlinecourses.nptel.ac.in/noc24_cs51/preview	
2	Machine Learning Specialization By Andrew Ng, Stanford University https://www.coursera.org/specializations/machine-learning-introduction?	
Question Paper Scheme:		
End Semester Examination Duration: (2 Hours Theory Examination)		
Note for Examiner: - Q-1 Any Five out of Seven (25 Marks) Q-2 Any Two out of Three (06 Marks) Q-3 Mandatory question (05 Marks) Q-4 Any Two out of Three (08 Marks) Q-5 Any Two out of Three (06 Marks)		
*The question paper must comprehensively address all Course Outcomes (COs), align with Bloom's Taxonomy levels, and ensure complete syllabus coverage		