

Branch: B.Sc.(IT)	Semester-VI
Subject Code: 6104	Lecture: 04 Credit: 04
Course Opted	Discipline Specific Elective -4
Subject Title	MACHINE LEARNING

Course Objectives

- To introduce various statistical and machine learning concepts and methods.
- To introduce machine learning solutions to regression, classification and clustering problems.
- To evaluate and interpret the results of algorithm.

Learning Outcomes

- Perform end-to-end process of investigating data through a machine learning lens.
- Extract and identify best features of data.
- Evaluate the performance of machine learning algorithms.

Modules	Sr. No.	Topic and Details	No. of Lectures Assigned	Marks Weightage %
UNIT - I	1	Introduction: Introduction to Machine Learning, Types of Machine Learning, Application of Machine Learning, Steps in developing a Machine Learning Application.	5	10
	2	Introduction to Neural Network – Fundamental concept, Evolution of Neural Networks, Biological Neuron, Artificial Neural Networks, NN architecture	5	10
UNIT - II	3	Statistical Concepts: Formation of Mean, Median, Mode, Confusion Matrix, Bias and Variance Analytics Problem Solving, Inferential Statistics, Exploratory Data Analysis	5	10
	4	Regression basics: Relationship between attributes using Covariance and Correlation, Relationship between multiple variables: Regression (Linear, Multivariate) in prediction. Logistic Regression, Regularization, Regularized Linear Regression, Regularized Logistic Regression	5	10
UNIT -III	6	Types of Classification: Classification Predictive Modeling Binary Classification, Multi-Class Classification, Multi-Label Classification, Imbalanced Classification	5	10
	7	Types of Classification Algorithms: -Naïve Bayes, Support Vector Machine and k-nearest neighbor, Stochastic Gradient Descent Decision Tree, Random Forest, Support Vector Machine.	5	10
UNIT -IV	8	Unsupervised Learning: k-means Clustering, Hidden Markov Model, DBSCAN Clustering, Unsupervised Learning-Principal Component Analysis.	5	10
	9	Introduction to Deep learning, Architectures: Deep Neural Network, Deep Belief Network(DBN), Markov model,	5	10
	10	Applications of Machine Learning Algorithms. Deep Learning applications: Image Processing, Natural Language Processing, Speech Recognition, Video Analytics	5	10

		TOTAL	50	100
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Text Book:

1. Dr. A Krishna Mohan, Dr. T Murali Mohan, Karunakar, "Python with Machine Learning", S. Chand Prakashan, 2020, 1st Edition

Reference Books:

1. Introduction to Machine Learning, Ethem Alpaydin. —2nd Edition, The MIT Press, Cambridge, Massachusetts, London, England.
2. Introduction to Artificial Neural Systems, J. Zurada, St. Paul: West.
3. Machine Learning, Tom M Mitchell, McGraw Hill, 1st Edition, 2017
4. Dr. Nilesh Shelke, Dr. Narendra Chaudhari, Dr. Gopal Sakarkar "Introduction to Machine Learning", DAS GANU PRAKASHAN, 1st Edition.