



**PARVATHANENI BRAHMAYYA
SIDDHARTHA COLLEGE OF ARTS & SCIENCE**
Autonomous
Siddhartha Nagar, Vijayawada-520010
Re-accredited at 'A+' by the NAAC

Course Code				22ANDSL303			
Title of the Course				Machine Learning			
Offered to:				MBA Business Analytics			
L	3	T	0	P	0	C	4
Year of Introduction:		2024-25		Semester:		3	
Course Category:		Domain Specific Elective		Course Relates to:		Global	
Year of Revision:		NA		Percentage:		NA	
Type of the Course:				Skill Development, Employability			
Crosscutting Issues of the Course :							
Pre-requisites, if any				Good Business Functionalities, Python Programming			

Course Description: This course introduces Machine Learning using Python, covering essential algorithms such as regression, classification, and clustering. Students will learn to apply popular libraries like scikit-learn and TensorFlow to real-world datasets. By course end, learners will understand data preprocessing, model building, evaluation, and deployment for practical applications.

Course Aims and Objectives:

S.NO	COURSE OBJECTIVES
1	Identify the characteristics of machine learning
2	Summarize the Model building and evaluation approaches
3	learn about the data and how to deal with different aspects of data processing .
4	Apply supervised learning algorithms to solve the real-world Problems
5	Apply unsupervised learning algorithms to solve the real-world Problems

Course Outcomes

CO NO	COURSE OUTCOME	BTL	PO	PS O
CO1	Identify the characteristics of machine learning	K1	PO1	1
CO2	Summarize the Model building and evaluation approaches	K2	PO2	2
CO3	To learn about the data and how to deal with different aspects of data processing .	K2, K3	PO3	1
CO4	Apply supervised learning algorithms to solve the real-world Problems	K3	PO3, PO1	2
CO5	Apply unsupervised learning algorithms to solve the real-world Problems	K3, K5	PO7	2

CO-PO MATRIX									
CO NO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	3	2						3	2
CO2							3	2	3
CO3	3	2						3	2
CO4			3				2	2	3
CO5	3	2						3	2

Use the codes 3, 2, 1 for High, Moderate and Low correlation Between CO-PO-PSO respectively

UNIT-I: Introduction to Machine Learning: Introduction to Machine Learning- Introduction, What is Human Learning? Types of Human Learning, What is Machine Learning? Types of Machine Learning, Reinforcement Learning, Problems Not To Be Solved Using Machine Learning, Applications of Machine Learning. **(15 Hours)**

Unit -II : Modelling & Evaluation: Basics of Feature Engineering , Modelling & Evaluation- Introduction, Selecting a Model, Training a Model (for Supervised Learning), Model Representation and Interpretability, Evaluating Performance of a Model. Basics of Feature Engineering- Introduction, Feature Transformation, CA. **(15 Hours)**

UNIT-III: Bayesian Concept Learning and Regression: Bayesian Concept Learning - Introduction, Why Bayesian Methods are Important?, Bayes' Theorem, Bayes' Theorem and Concept Learning, Bayesian Belief Network. Regression: Introduction, Regression Algorithms - Simple linear regression, Logistic Regression, Maximum Likelihood Estimation. **(15 Hours)**

UNIT-IV: Supervised Learning: Classification, Ensemble Learning, Classification- Introduction, Example of Supervised Learning, Classification Model, Classification Learning Steps, Common Classification Algorithms - k-Nearest Neighbour (KNN), Decision tree, Random Forest model, Support vector machines. Ensemble Learning- Boosting, Bagging, Semi-supervised Learning. **(15 Hours)**

UNIT-V: Unsupervised learning: Unsupervised Learning- Introduction, Unsupervised vs Supervised Learning, Application of Unsupervised Learning, Clustering –Clustering as a Machine Learning task, Different types of clustering techniques, Partitioning methods, Hierarchical clustering, Association Rules. **(15 Hours)**

References Books :

1. Raj, P. & Vijayakumar, V. (2020). Machine learning: A practical approach for beginners. CRC Press.

2. Mohri, M., Rostamizadeh, A., & Talwalkar, A. (2018). Foundations of machine learning (2nd ed.). MIT Press.
3. Natarajan, R. (2021). Artificial intelligence and machine learning for business. Wiley India.
4. Miller, T. (2015). Modeling techniques in predictive analytics: Business problems and solutions with R. FT Press.
5. Patil, P. K. (2019). Machine learning for business analytics. BPB Publications.



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MODEL QUESTION PAPER

**M.B.A. (Business Analytics) EXAMINATION
22ANDSL302: Machine Learning**

Duration: 3 hours

Maximum Marks: 70

SECTION- A

Answer the Following Questions

5×4=20 Marks

1. (a) Discuss various types of human learning. (CO1, K2)
OR
(b) Write about applications of machine learning. (CO1, K3)
2. (a) Write about the role of modelling in machine learning. (CO2, K3)
OR
(b) Describe about model training? (CO2, K1)
3. (a) Write a short note on maximum likelihood estimation. (CO3, K4)
OR
(b) Describe the need of Bayesian model. (CO3, K1)
4. (a) Discuss about supervised learning its business application (CO4, K3)
OR
(b) Briefly write about boosting. (CO4, K4)
5. (a) Discuss about unsupervised and supervised learning. (CO5, K2)
OR
(b) Write a short note on Clustering and its importance in business applications (K2)

Section- B

Answer the following questions

5X8=40 Marks

6. (a) Explain about types of machine learning. (CO1, K1)
OR
(b) Explain about data pre-processing. (CO1, K1)
7. (a) Summarize performance evaluation of a model. (CO2, K2)
OR
(b) Briefly feature transformation. (CO2, K2)
8. (a) Explain about polynomial regression model. (CO3, K1)
OR
(b) Describe Bayes theorem. (CO3, K1)
9. (a) Explain about random forest model with example. (CO4, K1)

OR

(b) Implement the k – nearest neighbor for given data. (CO4, K1)

10. (a) What are the applications of unsupervised learning. (CO5, K2)

OR

(b) Summarize various clustering techniques? (CO5, K2)

SECTION-C

(1 x 10=10 Marks)

Case study (Compulsory) Algorithm

11. Write the procedure to build a machine learning model (CO5, K5)

K-Mean Cluster analysis

- a. Procedure
- b. Packages used
- c. Write the Algorithm
