Machine Learning and Data Analytics Frameworks	L	P	C
	3		3

Discipline(s) / EAE / OAE	Semester	Group	Sub-group	Paper Code
EAE	7	MLDA-EAE	MLDA-EAE-5B	ML-469T

Marking Scheme:
1. Teachers Continuous Evaluation: 25 marks
2. Term end Theory Examinations: 75 marks

Instructions for paper setter:
1. There should be 9 questions in the term end examinations question paper.
2. The first (1st) question should be compulsory and cover the entire syllabus. This question should be objective, single line answers or short answer type question of total 15 marks.
3. Apart from question 1 which is compulsory, rest of the paper shall consist of 4 units as per the syllabus. Every unit shall have two questions covering the corresponding unit of the syllabus. However, the student shall be asked to attempt only one of the two questions in the unit. Individual questions may contain upto 5 sub-parts / sub-questions. Each Unit shall have a marks weightage of 15.
4. The questions are to be framed keeping in view the learning outcomes of the course / paper. The standard / level of the questions to be asked should be at the level of the prescribed textbook.
5. The requirement of (scientific) calculators / log-tables / data – tables may be specified if required.

Course Objectives :
1.	This course provides the fundamental concepts in data science.
2.	Learn the Basics of statistical data analysis with examples.
3.	Basics of Machine Learning and statistical measures.
4.	Compile and visualize data using statistical functions.

Course Outcomes (CO)
CO 1	Impart the knowledge of data classification, process of big data technology, user roles and skills in data science.
CO 2	Understand how data is analysed and visualized using statistic functions
CO 3	Analyze the methodologies of data science
CO 4	To Introduce the concepts of data modelling techniques using Machine Learning for Data Analytics

Course Outcomes (CO) to Programme Outcomes (PO) mapping (scale 1: low, 2: Medium, 3: High)

	PO01	PO02	PO03	PO04	PO05	PO06	PO07	PO08	PO09	PO10	PO11	PO12
CO 1	3	3	2	3	-	2	-	-	-	-	-	-
CO 2	-	3	-	2	-	-	-	-	-	-	2	-
CO 3	-	-	-	3	3	3	-	-	-	-	2	3
CO 4	-	-	3	2	-	3	-	-	-	-	2	2

UNIT-I

Introduction and Concepts, Differentiating algorithmic and model based frameworks, Regression: Ordinary Least Squares, Ridge Regression, Lasso Regression, Regression: Ordinary Least Squares, Ridge Regression, and Lasso Regression.

UNIT-II

Linear Discriminant Analysis Quadratic Discriminant Analysis, Support Vector Machine (SVM), Bias-Variance Dichotomy Model Validation Approaches, Neural Networks , Clustering, Association Rule Mining ,Deep learning Concepts.

UNIT-III

Data Analytics- Relation: Data Science, Analytics and Big Data Analytics. Data Science Components – Big data

technology – Data Science user- roles and skills- Data Science use cases. Statistical methods: Descriptive Statistics Probability Distributions (Binomial, Poisson, Normal) Sampling Distributions (Chi-squared, t, F), Estimation

UNIT - IV

Prescriptive analytics: Creating data for analytics through Active learning, Creating data for analytics through Reinforcement learning, .Test of Hypothesis, ANOVA.

Textbook(s):
1. Data analytics with R by Dr. Bharti Motwani , wiley publication
2. V. Bhuvaneswari (2016). Data Analytics with R, Bharathiar University.

References:
1. Modellind Techniuqes in Predictive Analytics, Thomas W Miller, Pearson
2. Introduction to Machine Learning with Python, A. C. Muller & S. Guido, O'Reilly