

SCHEME OF COURSE WORK

**Department of CSE
GVPCE(A)**

Course Details:

COURSE TITLE	DATA SCIENCE LAB			
COURSE CODE	22CD1102	L T P C	0 0 3 1.5	
PROGRAM	B.Tech			
SPECIALIZATION	Data Science			
SEMESTER	3rd Semester			
PRE REQUISITES	R Programming			
COURSES TO WHICH IT IS A PRE REQUISITE	N/A			

Course Outcomes (COs):

1	Manipulate data within R and perform simple mathematical operations.
2	Perform and interpret different distributions using R.
3	Construct plots for data visualizations.
4	Perform linear regression models for data analysis.
5	Apply the knowledge of R gained to data Analytics for real life applications.

Course Outcome versus Program Outcomes

Course outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	M		M						S	M	
CO2	S	M									M	
CO3		M										
CO4	M			M	M					M	S	S
CO5	M	S		S	S	M	M	M	M	S	S	S

S - Strongly correlated, M - Moderately correlated, Blank - No correlation

Assessment Methods	Day-to-Day Analysis, Internal Exams
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Teaching- Learning & Evaluation

Week	Topic/ Contents	Course Outcomes	Teaching learning strategy	Assessment method & schedule
1	<ul style="list-style-type: none"> Introduction to R Programming: Download and install R- Programming environment and install basic packages and Libraries in R. Getting Help in R 	CO1	Lecture Programming	Day-to-Day Analysis
2	Basic Calculations: <ul style="list-style-type: none"> Find missing values in data and perform R as Calculator Explore Built in functions in R 	CO1	Lecture Programming	Day-to-Day Analysis
3	Matrix and array implementation: <ul style="list-style-type: none"> Implement of matrix operations, array and factors in R 	CO1	Lecture Programming	Day-to-Day Analysis
4	Data Handling: <ul style="list-style-type: none"> Import CSV and Tabular Data Files Construct data frames in R 	CO1	Lecture Programming	Day-to-Day Analysis
5	Getting Used to R: Describing Data <ul style="list-style-type: none"> Consider any dataset and construct basic plots like histograms, scatter plots, box plots 	CO3	Lecture Programming	Day-to-Day Analysis
6	Visualizing Data <ul style="list-style-type: none"> Consider any dataset and present data in Tables, charts Visualize Measures of Central Tendency, Variation and Shape for any dataset. 	CO3	Lecture Programming	Day-to-Day Analysis
7	Visualizing Data <ul style="list-style-type: none"> Create Pareto diagrams in R. Find the mean, median, standard deviation and 	CO3	Lecture Programming	Day-to-Day Analysis

	quantiles of a set of observations			
8	Lab Internal - I			
9	Probability Distributions <ul style="list-style-type: none"> • Generate and Visualize Discrete and continuous distributions using the statistical environment. 	CO2	Lecture Programming	Day-to-Day Analysis
10	Probability Distributions. <ul style="list-style-type: none"> • Demonstrate Cumulative Distribution Function, Probability Density Function, uniform, normal 	CO2	Lecture Programming	Day-to-Day Analysis
11	Functions in R <ul style="list-style-type: none"> • Illustrate rnorm(), dnorm(), pnorm(), and qnorm() functions in R 	CO2	Lecture Programming	Day-to-Day Analysis
12	Perform Tests of Hypotheses <ul style="list-style-type: none"> • Perform tests of hypotheses about the mean when the variance is known. Compute the p-value. 	CO5	Lecture Programming	Day-to-Day Analysis
13	Correlation <ul style="list-style-type: none"> • Calculate the correlation between two variables by constructing scatter plots. 	CO5	Lecture Programming	Day-to-Day Analysis
14	Estimating a Linear Relationship <ul style="list-style-type: none"> • Construct a Statistical Model for a Linear Relationship 	CO4	Lecture Programming	Day-to-Day Analysis

15	Estimating a Linear Relationship <ul style="list-style-type: none"> Explore The R Function lm and Plot the residual of the simple linear regression model of the data set 	CO4	Lecture Programming	Day-to-Day Analysis
16	Logistic Regression <ul style="list-style-type: none"> Demonstrate the use of logistic Regression 	CO4	Lecture Programming	Day-to-Day Analysis
17	Decision Trees <ul style="list-style-type: none"> Implement Decision tree 	CO5	Lecture Programming	Day-to-Day Analysis
18	LAB INTERNAL II			
19	LAB EXTERNAL EXAM			