

 Estd 1984	KONGU ENGINEERING COLLEGE (Autonomous) PERUNDURAI – 638060 INTERNAL QUALITY ASSURANCE CELL		 CERT No. 99-100-20788 ISO 9001 : 2015
	Approval for Value Added Course (Two Credits)		

Academic Year: 2021-2022 EVEN Semester

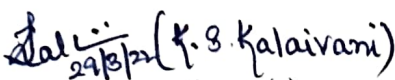
DEPARTMENT OF CSE

Date: 29.03.2022

1.	Academic Year	:	2021-2022	Semester: EVEN			
2.	Course Title	:	Data Analytics using R	Credit(s): Two			
3.	Type of Course	:	Already Offered Course				
	• If “Already offered course”,	:	Course Code: 18VAC71	Version:			
4.	Course Coordinator(s)	:	1. Dr.K.Nirmaladevi 2. Dr.K.S.Kalaivani				
5.	Course offered by	:	Internal faculty				
6.	Name and designation of external resource persons	:	NA				
7.	Details about external organization	:	NA				
8.	Course fee for external experts		Max. number of students/Batch			Course fee / student	
	NIL		20			NIL	
9.	No. of days	Period		No. of hours			Venue/ Meet ID
		From	To	Lecture	Practical	Total	
	25	11.04.2022	31.05.2022	30	20	50	
10.	Pre-requisites for offering the course	:	-				
11.	Course offered to	:	Programme		Branch		Year/Semester
		:	BE/B.Tech		All Branches		III and IV year
12.	Course Main Contents	:	Day 1	R Installation, Environment and Commands			
		:	Day 2	Objects and Functions			
		:	Day 3	Data Structures in R			
		:	Day 4	Practical - Simple programs using R			
		:	Day 5	Operators and Logical statements			
		:	Day 6	Practical - Array operations, Functions and Loops in R			
		:	Day 7	Installing packages & Importing and Exporting Data sets			
		:	Day 8	Practical - Create, load, import and export dataset in R			

		Day 9	Graphics in R		
		Day 10	Practical - Create histogram, Q-Q plot, Box plot, Scatter plot and Bar graphs		
		Day 11	Plots in R		
		Day 12	Practical - Different frequency distributions for a given dataset		
		Day 13	Measure of central tendency and dispersion		
		Day 14	Practical - Measure the central tendency and dispersion of the given data		
		Day 15	Statistical Analysis in R-1		
		Day 16	Practical - Find the correlation between different features in a dataset		
		Day 17	Statistical Analysis in R-2		
		Day 18	Practical - Load datasets and perform statistical tests		
		Day 19	Regression in R		
		Day 20	Practical - Regression		
		Day 21	Classification in R		
		Day 22	Decision tree in R		
		Day 23	Clustering in R		
		Day 24	Practical – Classification and Clustering		
		Day 25	Case Study		
			Assessment 1 - Multiple Choice Questions		
			Assessment 2 – Mini Project		
13.	Course Outcomes	:	After completing the course, the student will be able to: • create simple programs in R • analyze data by representing it in different visualization forms • develop and test the model using statistical methods • apply supervised and unsupervised machine learning algorithms		
14.	Course Assessment (Min. 2)	:	S. No.	Type	Max. Marks
			1.	Multiple Choice Questions	50
			2.	Mini Project	50
				Total	100 Marks
15.	Verified that the content of this course is not offered to students partially/fully in regular curriculum of respective programme of the student. Certify that the course content, credits and grade are approved in the BOS meeting or approved by internal BOS members and will be ratified in the next BOS meeting			 (Signature of the HoD after verification)	
16.	Any other details	:	-		

The above proposal may kindly be approved.


 29/3/22 (K. S. Kalaiivani)
 Course co-ordinator(s)


 HOD

Chief Coordinator/Academic

Encl:

1. Copy of the syllabus of the course

L	T	P	Credit
2	0	1	2

Preamble This course provides an overview of Data analytics and how to analyze data using R Programming

Unit - I R Programming

10

Installing R - R Environment - R Commands - Objects - Functions - Numbers and Vectors - Matrices and Arrays - Factors - Lists - Data Frames - Function Creation - Scripts - Logical operators - Conditional statements Loops in R - switch statement - Installing and Loading Packages - Saving and Loading R Objects - Importing and Exporting Data sets

Unit - II Statistical Analysis using R

10

Graphics and Plotting: Axes - Colors - Fonts - Size - symbols - Histogram - Q-Q plots - Box Plot - Scatter Plot - Bar Graphs - Mosaic plots - Frequency distribution - Measure of central tendency and dispersion - Correlation - Hypothesis testing : Test statistics - ANOVA - F-Test - T-Test - Chi-square test

Unit - III Machine Learning using R

10

Regression & Types in R : Simple, Linear and Stepwise Regression in R – Classification Tree : Decision Tree in R – Random forest in R – K means Clustering in R - Case Study

List of Exercises / Experiments:

1. Write simple programs using R
2. Write R programs to perform array operations
3. Implement R programs with functions and loops
4. Write programs to create, load, import and export dataset in R
5. Write programs to create histogram, Q-Q plot, Box plot, Scatter plot and Bar graphs
6. Write programs to demonstrate different frequency distributions for a given dataset
7. Develop programs to measure the central tendency and dispersion of the given data
8. Develop programs to find the correlation between different features in a dataset
9. Implement programs to load datasets and perform statistical tests
10. Implement regression to predict a quantity for a given variable using R
11. Implement classification algorithms in R
12. Implement clustering algorithms in R

Lecture:30, Practical:20, Total: 50

REFERENCES:

1. Sandip Rakshit, "R for Beginners", McGraw Hill Education, 2017
2. Murray Logan, "Biostatistical Design and Analysis Using R - A Practical Guide", A John Wiley & Sons, Inc. Publication, 2010.
3. <https://www.rstudio.com>

COURSE OUTCOMES:

On completion of the course, the students will be able to

CO1 Create simple programs in R

**BT Mapped
(Highest Level)**

Applying (K3),
Precision (S3)

CO2 Analyze data by representing it in different visualization forms

Applying (K3),
Precision (S3)

CO3 Develop and test the model using statistical methods

Applying (K3),
Precision (S3)

CO4 Apply supervised and unsupervised machine learning algorithms in R

Applying (K3),
Precision (S3)

Mapping of COs with POs and PSOs

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	1	1	1								3	1
CO2	3	2	1	1	1								3	1
CO3	3	2	1	1	1								3	1
CO4	3	2	1	1	1								3	1

1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total %
MCQ (50 marks)	20	40	40				100
Miniproject (50 marks)			100				100
							100

KONGU ENGINEERING COLLEGE, PERUNDURAI, ERODE – 638 060.

(AUTONOMOUS)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

TWO CREDIT COURSE – ATTENDANCE DETAILS

Academic Year : 2021-22(EVEN)

Course Code: 18VAC71

Course Name: Data Analytics using R

YEAR & SEM: III & VI SEM - Auto,Mech,EEE

S.No	Roll No.	Name of the student	01.05.2022	02.05.2022	08.05.2022	09.05.2022	10.05.2022	11.05.2022	21.05.2022	22.05.2022	05.06.2022	11.06.2022	Total Hours	Total Hours Attended	Total Hours Absent	Attendance %
			Hours: 8	8	8	2	2	2	2	8	8	2	50			
		Session No:	1	2	3	4	5	6	7	8	9	10				
1	19AUR008	GANGADHARAN B	P	P	P	P	A	P	P	P	P	P	50	48	2	96
2	19EEL113	ARUL MOZHI VARMAN M	P	P	P	A	P	P	A	P	P	P	50	46	4	92
3	19EEL125	YUVARAJ B	P	P	P	P	P	P	A	P	P	A	50	46	4	92
4	19EEL112	AKSHAYAN M	P	P	P	P	P	P	P	P	P	A	50	48	2	96
5	19EEL118	MURALIDHARAN R	P	P	P	P	A	P	A	P	P	P	50	46	4	92
6	19EER075	RAVI SHANKAR D	P	P	P	P	P	A	P	P	P	P	50	48	2	96
7	19EER098	SUDHARSAN L	P	P	P	P	P	A	P	P	P	P	50	42	8	84
8	19EEL114	KARTHEEPAN S	P	A	P	P	P	P	P	P	P	P	50	48	2	96
9	19EER104	SURENDHARAN R	P	P	P	A	P	P	A	P	P	A	50	46	4	92
10	19EER105	TAMIZH KANAL R	P	P	P	P	P	P	P	P	P	A	50	44	6	88
11	19EER108	VIJAYAN MC	P	P	P	A	A	P	P	P	P	P	50	48	2	96
12	19EER058	NIRANJAN R S	P	P	P	P	P	P	A	P	P	P	50	42	8	84
13	19EER078	SABARIABISHEK S	P	A	P	P	P	P	P	P	P	P	50	46	4	92
14	19EER072	RAGUL PRASATH K	P	P	P	A	P	P	P	P	P	A	50	48	2	96
15	19MEL232	JEEVANKUMAR A S	P	P	P	P	A	P	P	P	P	P	50	42	8	84
16	19MEL253	SARAVANAKUMAR S	A	P	P	P	P	P	P	P	P	P	50	48	2	96
17	19MER028	DAVID SANTHOSE SNEKAN J	P	P	P	P	A	P	P	P	P	P	50	42	8	84
18	19MER037	DHARANIDHARAN M	A	P	P	P	P	P	P	P	P	A	50	48	2	96
19	19MER038	DHARNISH R S	P	P	P	P	P	P	P	P	P	P	50	42	8	84
20	19EER014	CHARAN A	P	P	P	P	P	P	P	A	P	P	50	42	8	84
21	19EER063	PADMESH K	P	A	P	P	P	P	P	P	P	P	50	42	8	84
22	19EER079	SAIBARATHI RAVI	P	P	A	P	P	P	P	P	P	P	50	42	8	84
23	19EER087	SIBIKKRISHNA N	P	P	P	P	P	A	P	P	P	P	50	48	2	96

24	19EER039	KARTHIKEYAN K	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	50	42	8	84
25	19EER109	VIMAL P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	50	42	8	84
26	19MER076	L.R.KAMALNATH	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	50	48	2	96
27	19MEL231	A.JASHIMAHMED	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	50	48	2	96
28	19CER108	SRINIVASAGAM V	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	50	48	2	96
29	19MEL214	AKASH S	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	50	48	2	96
30	19MER016	ASHOK KUMAR M	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	50	48	2	96
31	19MEL224	DINESHKUMAR N	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	50	48	2	96
32	19MEL233	JEGAN R	P	P	P	P	A	A	P	P	P	P	P	P	P	P	P	50	46	4	92
33	19MEL228	GOWTHAM PRASATH A	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	50	42	8	84
34	19MEL230	JAGANATHAN C	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	50	48	2	96
35	19MER030	DEEPAK G	P	P	P	P	A	P	P	P	P	P	P	P	A	P	P	50	46	4	92
36	19EER020	GOKULNATH K	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	50	42	8	84
37	19MEL235	KARTHIK M	P	P	P	P	P	P	A	A	P	P	P	P	P	P	P	50	46	4	92
38	19MER144	RAJBALAN B	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	50	48	2	96
39	19MEL234	KALAISELVAN N	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	50	42	8	84
40	19EEL116	MANODEEPAN M	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	50	42	8	84
41	19EER061	NITHISH KUMAR K	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	50	48	2	96
42	19EER095	SRI LAKSHMANAR V	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P	50	42	8	84
			P	P	P	P	A	A	P	P	P	P	P	P	P	P	P	50	46	4	92

Kongu Engineering College, Perundurai, Erode - 638060
Department of Computer Science and Engineering
Two Credits Course on 18VAC71-Data Analytics using R - Assessment Marks
2021-2022 (Even Sem)

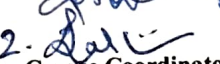
S.No.	Roll No.	Name	Total No. of hours	Hours Attended	Attendance Percentage
1	19AUR008	GANGADHARAN B	50	48	96
2	19EEL113	ARUL MOZHI VARMAN M	50	46	92
3	19EEL125	YUVARAJ B	50	46	92
4	19EEL112	AKSHAYAN M	50	48	96
5	19EEL118	MURALIDHARAN R	50	46	92
6	19EER075	RAVI SHANKAR D	50	48	96
7	19EER098	SUDHARSAN L	50	48	96
8	19EEL114	KARTHEEPAN S	50	42	84
9	19EER104	SURENDHARAN R	50	48	96
10	19EER105	TAMIZH KANAL R	50	46	92
11	19EER108	VIJAYAN MC	50	44	88
12	19EER058	NIRANJAN R S	50	48	96
13	19EER078	SABARIABISHEK S	50	42	84
14	19EER072	RAGULPRASATH K	50	46	92
15	19MEL232	JEEVANKUMAR A S	50	48	96
16	19MEL253	SARAVANAKUMAR S	50	42	84
17	19MER028	DAVID SANTHOSE SNEKAN J	50	48	96
18	19MER037	DHARANIDHARAN M	50	42	84
19	19MER038	DHARNISH R S	50	48	96
20	19EER014	CHARAN A	50	42	84
21	19EER063	PADMESH K	50	42	84
22	19EER079	SAIBARATHI RAVI	50	42	84
23	19EER087	SIBIKKRISHNA N	50	48	96
24	19EER039	KARTHIKEYAN K	50	42	84
25	19EER109	VIMAL P	50	42	84
26	19MER076	L.R.KAMALNATH	50	48	96
27	19MEL231	A.JASHIMAHMED	50	48	96
28	19CER108	SRINIVASAGAM V	50	48	96
29	19MEL214	AKASH S	50	48	96
30	19MER016	ASHOK KUMAR M	50	48	96
31	19MEL224	DINESHKUMAR N	50	48	96
32	19MEL233	JEGAN R	50	46	92
33	19MEL228	GOWTHAM PRASATH A	50	42	84
34	19MEL230	JAGANATHAN C	50	48	96
35	19MER030	DEEPAK G	50	46	92
36	19EER020	GOKULNATH K	50	42	84
37	19MEL235	KARTHICK M	50	46	92
38	19MER144	RAJBALAN B	50	48	96
39	19MEL234	KALAISELVAN N	50	42	84
40	19EEL116	MANODEEPAN M	50	42	84
41	19EER061	NITHISH KUMAR K	50	48	96
42	19EER095	SRI LAKSHMANAR V	50	42	84
43	19AUR009	HARISH KUMAR R	50	46	92

1. *[Signature]* (K. Nirmale Devi)
2. *[Signature]* (K. Kalavani)
Course Coordinators

[Signature]
28/12/22
HoD/CSE

Kongu Engineering College, Perundurai, Erode - 638060
Department of Computer Science and Engineering
Two Credits Course on Data Analytics using R - Assessment Marks
2021-2022 (Even Sem)

S.No.	Roll No.	Name	MCQ	Mini Project	Total
1	19AUR008	GANGADHARAN B	38	39	77
2	19EEL113	ARUL MOZHI VARMAN M	42	41	83
3	19EEL125	YUVARAJ B	40	38	78
4	19EEL112	AKSHAYAN M	42	40	82
5	19EEL118	MURALIDHARAN R	41	42	83
6	19EER075	RAVI SHANKAR D	43	41	84
7	19EER098	SUDHARSAN L	45	43	88
8	19EEL114	KARTHEEPAN S	40	36	76
9	19EER104	SURENDHARAN R	43	39	82
10	19EER105	TAMIZH KANAL R	41	41	82
11	19EER108	VIJAYAN MC	43	42	85
12	19EER058	NIRANJAN R S	46	43	89
13	19EER078	SABARIABISHEK S	44	40	84
14	19EER072	RAGULPRASATH K	44	41	85
15	19MEL232	JEEVANKUMAR A S	45	42	87
16	19MEL253	SARAVANAKUMAR S	42	36	78
17	19MER028	DAVID SANTHOSE SNEKAN	36	34	70
18	19MER037	DHARANIDHARAN M	45	43	88
19	19MER038	DHARNISH R S	45	44	89
20	19EER014	CHARAN A	38	30	68
21	19EER063	PADMESH K	44	42	86
22	19EER079	SAIBARATHI RAVI	43	34	77
23	19EER087	SIBIKKRISHNA N	46	42	88
24	19EER039	KARTHIKEYAN K	43	36	79
25	19EER109	VIMAL P	38	36	74
26	19MER076	L.R.KAMALNATH	37	32	69
27	19MEL231	A.JASHIMAHMED	41	31	72
28	19CER108	SRINIVASAGAM V	41	34	75
29	19MEL214	AKASH S	38	38	76
30	19MER016	ASHOK KUMAR M	43	40	83
31	19MEL224	DINESHKUMAR N	42	40	82
32	19MEL233	JEGAN R	44	40	84
33	19MEL228	GOWTHAM PRASATH A	44	41	85
34	19MEL230	JAGANATHAN C	45	41	86
35	19MER030	DEEPAK G	39	45	84
36	19EER020	GOKULNATH K	44	43	87
37	19MEL235	KARTHICK M	43	39	82
38	19MER144	RAJBALAN B	29	34	63
39	19MEL234	KALAISELVAN N	43	39	82
40	19EEL116	MANODEEPAN M	40	36	76
41	19EER061	NITHISH KUMAR K	45	39	84
42	19EER095	SRI LAKSHMANAR V	39	30	69
43	19AUR009	HARISH KUMAR R	43	34	77

1.  (K. Nirmala Devi)
2.  (K. S. Kalaiivani)
Course Coordinators


HoD/CSE

Kongu Engineering College, Perundurai, Erode - 638060

Department of Computer Science and Engineering

Two Credits Course on 18VAC71-Data Analytics using R - Test Attendance
2021-2022 (Even Sem)

S.No.	Roll No.	Name	Test Attendance
1	19AUR008	GANGADHARAN B	PRESENT
2	19EEL113	ARUL MOZHI VARMAN M	PRESENT
3	19EEL125	YUVARAJ B	PRESENT
4	19EEL112	AKSHAYAN M	PRESENT
5	19EEL118	MURALIDHARAN R	PRESENT
6	19EER075	RAVI SHANKAR D	PRESENT
7	19EER098	SUDHARSAN L	PRESENT
8	19EEL114	KARTHEEPAN S	PRESENT
9	19EER104	SURENDHARAN R	PRESENT
10	19EER105	TAMIZH KANAL R	PRESENT
11	19EER108	VIJAYAN MC	PRESENT
12	19EER058	NIRANJAN R S	PRESENT
13	19EER078	SABARIABISHEK S	PRESENT
14	19EER072	RAGULPRASATH K	PRESENT
15	19MEL232	JEEVANKUMAR A S	PRESENT
16	19MEL253	SARAVANAKUMAR S	PRESENT
17	19MER028	DAVID SANTHOSE SNEKAN J	PRESENT
18	19MER037	DHARANIDHARAN M	PRESENT
19	19MER038	DHARNISH R S	PRESENT
20	19EER014	CHARAN A	PRESENT
21	19EER063	PADMESH K	PRESENT
22	19EER079	SAIBARATHI RAVI	PRESENT
23	19EER087	SIBIKKRISHNA N	PRESENT
24	19EER039	KARTHIKEYAN K	PRESENT
25	19EER109	VIMAL P	PRESENT
26	19MER076	L.R.KAMALNATH	PRESENT
27	19MEL231	AJASHIMAHMED	PRESENT
28	19CER108	SRINIVASAGAM V	PRESENT
29	19MEL214	AKASH S	PRESENT
30	19MER016	ASHOK KUMAR M	PRESENT
31	19MEL224	DINESHKUMAR N	PRESENT
32	19MEL233	JEGAN R	PRESENT
33	19MEL228	GOWTHAM PRASATH A	PRESENT
34	19MEL230	JAGANATHAN C	PRESENT
35	19MER030	DEEPAK G	PRESENT
36	19EER020	GOKULNATH K	PRESENT
37	19MEL235	KARTHICK M	PRESENT
38	19MER144	RAJBALAN B	PRESENT
39	19MEL234	KALAISELVAN N	PRESENT
40	19EEL116	MANODEEPAN M	PRESENT
41	19EER061	NITHISH KUMAR K	PRESENT
42	19EER095	SRI LAKSHMANAR V	PRESENT
43	19AUR009	HARISH KUMAR R	PRESENT

Signature of (K. Nirmaladevi)
Date: 28/12/2021
Course Coordinators

Signature of (K. S. Kalairani)
28/12/2021
HoD/CSE