DATA ANALYSIS USING R	
Course Code: CSAEC49	**Credits: 1:0:0**
Pre – requisites: Nil	**Contact Hours: 14L**
Course Coordinator: -	

Course Content

Unit I

Introduction to R programming: What is R? - Installing R and R Studio – R Studio Overview - Working in the Console - Arithmetic Operators - Logical Operations - Using Functions - Getting Help in R and Quitting R Studio- Installing and loading packages. Data structures, variables, and data types in R: Creating Variables - Numeric, Character and Logical Data - Vectors - Data Frames - Factors -Sorting Numeric, Character, and Factor Vectors - Special Values.

- Pedagogy/Course delivery tools: Chalk and talk, Power point presentation,Videos
- Lab Component / PracticalTopics:https://cran.r-project.org/doc/contrib/Owen-TheRGuide.pdf

Unit II

Data Visualization using R: Scatter Plots - Box Plots - Scatter Plots and Boxand-Whisker Plots Together -Customize plot axes, labels, add legends, and add colours.

- Pedagogy/Course delivery tools: Chalk and talk, Power point presentation,Videos
- Lab Component / PracticalTopics:https://sphweb.bumc.bu.edu/otlt/MPH-Modules/BS/R/R-Manual/R-Manual2.html

Unit III

Descriptive statistics in R: Measures of central tendency - Measures of variability - Skewness and kurtosis - Summary functions, describe functions, and descriptive statistics by group.

- Pedagogy/Course delivery tools:Chalk and talk, Power point presentation,Videos
- Lab Component / PracticalTopics: https://smac-group.github.io/ds/

Unit IV

Testing of Hypothesis using R: T-test, Paired Test, correlation, Chi Square test, Analysis of Variance and Correlation.

- Pedagogy/Course delivery tools:Chalk and talk, Power point presentation,Videos
- Lab Component / PracticalTopics:https://www.geeksforgeeks.org/predictive-analysis-in-rprogramming/#:~:text=Predictive%20analysis%20in%20R%20Language,are%20used%20in %20predictive%20analysis /

Unit V

Data querying: SQL and R: Writing SQL statements in R • Using the Select, From, Where, Is, Like, Order By, Limit, Max, Min SQL functions

- Pedagogy/Course delivery tools: Chalk and talk, Power point presentation,Videos
- Lab Component / PracticalTopics: https://www.geeksforgeeks.org/predictive-analysis-in rprogramming/#:~:text=Predictive%20analysis%20in%20R%20Language,are%20used%20in %20predictive%20analysis /

Suggested Learning Resources

Text Books:

1. Crawley, M. J. (2006), "Statistics - An introduction using R", John Wiley, London 32.
2. Purohit, S.G.; Gore, S.D. and Deshmukh, S.R. (2015), "Statistics using R", second edition. Narosa Publishing House, New Delhi.
3. Shahababa B. (2011) , "Biostatistics with R", Springer, New York.
4. Braun & Murdoch (2007), "A first course in statistical programming with R", Cambridge University Press, New Delhi.

Course Outcomes (COs):

At the end of the course, the students will be able to:

1. Apply R programming and understand different data sets
2. Apply R Programming and construct graphs and charts
3. Analyze the data and know descriptive statistics by using R Programming
4. Apply R Programming to test the hypothesis of the study
5. Apply R functions within SQL queries to enhance analytical capabilities.

Course Assessment and Evaluation

Continuous Internal Evaluation (CIE) : 50 Marks		
Assessment Tools	**Marks**	**Course Outcomes (COs) addressed**
Internal Test-I (CIE-I)	30	CO1,CO2 and CO3
Internal Test-II CIE-II)	30	CO4 and CO5
Average of the two CIE will be taken for 30 marks		
Other Components		
Quiz -I	10	CO1,CO2 and CO3
Assignment -I	10	CO4 and CO5
The Final CIE out of 50 Marks = Average of two CIE tests for 30 Marks+ Marks scored in Quiz-I +Marks scored in Assignment -I		
Semester End Examination (SEE)		
Course End Examination (Answer One full question from each Unit-Internal Choice)	100	CO1, CO2, CO3, CO4 and CO5