

## Data Science using R Syllabus

**Duration:** - 30 Hrs (Time table will be designed in consultation with college)

**Mode:** Online

**Course Structure:**

Topics	Content
Basic of R	<ol style="list-style-type: none"> <li>1. R Syntax</li> <li>2. Working with different collection objects</li> </ol>
R IDE important Packages Basic Operation in R Various Data Types in R	<ol style="list-style-type: none"> <li>1. R Studio IDE</li> <li>2. Important Packages. And how to install / update them. Make a tabular representation for which package does what</li> <li>3. Run through various data types using example</li> </ol> <p>Special Focus: Dataframe. Also show them cut0 function.</p>
User Defined Function and Data Management in R	<ol style="list-style-type: none"> <li>1. Loop structure.</li> <li>2. Creating functions.               <ol style="list-style-type: none"> <li>a. Use apply0 for creating function using one example.</li> </ol> </li> <li>3. Difference between lapply(), sapply() and apply() built-in function (not covered in this ppt)</li> <li>4. Regex quick run through.</li> <li>5. Explain sub0, gsub0 and other string manipulation techniques. Use stringr() library.</li> </ol>
Data Science using R	<ol style="list-style-type: none"> <li>1. Hypothesis testing</li> <li>2. Explain ANOVA both one way and two way</li> <li>3. Probability and Distribution- Normal, Poisson.</li> <li>4. Correlation and Dimension Reduction</li> <li>5. Machine Learning Algorithms (Supervised and unsupervised) such as Linear regression, Naïve byes, Decision Tree, Ensemble algorithms using R</li> </ol>
Basic Graphics using R	<ol style="list-style-type: none"> <li>1. Show how to create bar graph, pie chart, scatter plot and BW Plot</li> <li>2. Use a .csv file (medical.csv) and show each types of graph accordingly</li> </ol>