letslearn analytics

Analytics with R

Self-paced Online Course

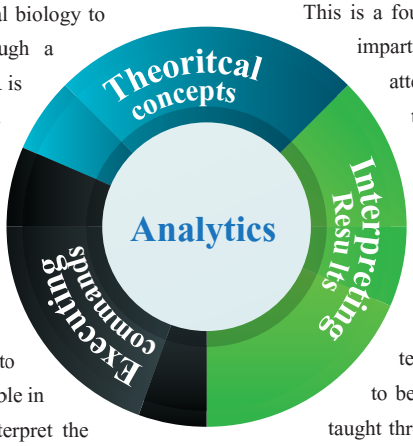
About R

A programming language for statistical computing, R is one most widely used software environments for computational statistics, data science and visualisation. Millions of analysts and data scientists use R for problems ranging from quantitative finance and computational biology to market research and behavioural studies. Though a freeware, recent surveys show that the adoption of R is fast outpacing legacy, proprietary data analysis software, which continue to lag behind it in features and functionalities.

Why this course?

Compared to other programming languages, learning R presents a unique challenge. It is not sufficient learn to code in R. It is more important to learn the theory behind the various techniques available in R, where and how to apply them, and how to interpret the results that they produce. This course builds a foundation for R by teaching,

- The theories and concepts behind the techniques.
- The way these techniques need to be applied in R.
- Interpreting and drawing conclusions from the outcomes.



Who is this course for?

This is a foundation course meant to introduce you to R, as well impart fundamental data analysis skills. If this is your first attempt to learn R, or you would like to apply the analytical techniques of R to your core area of work, this course is for you. It will give you all the skills necessary for using R for analysis of your data with the most fundamental R techniques.

How is this course taught?

We believe that to be practical and useful, learning techniques need to closely follow the steps that are likely to be used while actually working. The course is therefore taught through an unique simulated interface, where you will be taught the details of R commands, how they are to be executed from the R user interface, and finally how to interpret the results that R produces. Keep R running in another window, follow the steps as training demonstrates, and in no time you will learn how the start using R on your own.

Coverage

Introduction to R

- **Background and Resources**
  History behind R and online resources for R.
- **Installing R**
  Installing R in windows.
- **R Console**
  R window to edit and execute R commands.
- **Commands and Syntax**
  R Commands and R Syntax.
- **Packages and Libraries**
  Install and load a package in R.
- **Help in R**
  Getting help about R commands.
- **Workspace in R**
  Save and load R file in workspace.

Data Structures

- **Introduction To Data Structures**
  Why data structures. Types of data structures in R.
- **Vectors**
  Types of Vectors and their creation procedures. Assigning created Vector to an object. Basic vector operations. Operations between vectors.
- **Matrices**
  Creating a matrix.Extracting elements rows or columns from a matrix. Combining two matrices, Basic matrix operations.
- **Arrays**
  Creating an Array. Finding type and dimension of Array.
- **Lists**
  Creating a List. Extracting a specific component from a list. Extracting a component from a sublist.
- **Factors**
  Creating a factor. Unordered and ordered factors.
- **Dataframes**
  Creating a Dataframe. Examining different parts of a dataframe. Editing and saving a dataframe.
- **Importing and Exporting data**
  Import from and export to CSV, SPSS, text file and Excel.
- **Data types**
  Numerical, nominal and ordinal data types. Modifying data types.

Graphical Analysis

- **Creating a Simple Graph**
  Using plot() command.
- **Modifying the Points and Lines of a Graph**
  Using type, pch, font, cex, lty, lwd, col arguments in plot() command.
- **Modifying Title and Subtitle of a Graph**
  Using main, sub, col.main, col.sub, cex.main, cex.sub, font.main, font.sub arguments in plot() command.
- **Modifying Axes of a Graph**
  Using xlab, ylab, col.lab, cex.lab, font.lab, xlim, ylim, col.axis, cex.axis, font.axis arguments and axis() command.
- **Adding Additional Elements to a Graph**
  Using points(), text(), abline(), curve() commands.
- **Adding Legend on a Graph**
  Using legend() command.
- **Special Graphs**
  Using pie(), barplot(), hist() commands.
- **Multiple Plots**
  Using mfrow or mfcol arguments in par() command and layout command.

Frequencies

- **Frequencies**
  Frequencies, Frequency table and their graphical presentation, Relative frequency, Frequency curve.

Descriptive Statistics

- **Measures of Central Tendency**
  Mean, Median and Mode.
- **Measures of Positions**
  Quartiles, Deciles, Percentiles and Quantiles.
- **Measures of Dispersion**
  Range, Median, Absolute deviation about median.Variance and Standard deviation.
- **Measures of Distribution**
  Skewness and Kurtosis.
- **Box and Whisker Plot**
  Box Plot and its parts, Using Box Plots to compare distribution.

Comparing Populations

- **Test of Hypothesis**
  Concept of Hypothesis testing. Null Hypothesis and Alternative Hypothesis.
- **Cross Tabulations**
  Contigency tables and their use.Chi-Square test. Fisher's exact test.
- **One Sample t test**
  Concept, Assumptions, Hypothesis, Verification of assumptions, Performing the test and interpretation of results.
- **Independent Samples t test**
  Concept, Type, Assumptions, Hypothesis, Verification of assumptions, Performing the test and interpretation of results.
- **Paired Samples t test**
  Concept, Assumptions, Hypothesis, Verification of assumptions, Performing the test and interpretation of results.
- **One way ANOVA**
  Concept, assumptions, hypothesis, verification of assumptions.Model fit, hypothesis testing. Post hoc tests: Fisher's LSD, Tukey's HSD.

Relationship Between Variables

- **Correlation**
  Concept, Measures of correlation and corresponding tests: Pearson's r, Spearman's p.
- **Simple Linear Regression**
  Definition, assumptions, hypothesis.Model fit, verification of assumptions, hypothesis testing. Prediction.
- **Multiple Linear Regression**
  Definition, assumptions, hypothesis Testing. Model fit: Manual and Automatic.

Time Series Analysis

- **Time Series Analysis**
  Time series data and their graphical representation .Timec index. Decomposition of time series data. Simple exponential smoothing, Holt's linear trend model, Winter's seasonal method.

letslearn analytics

Brought to you by:
Predictive Analytics Solutions Pvt. Ltd. # 5, 1st Cross, 1st Floor, P&T Colony. Horamavu, Bangalore 5600043
+91-80-41129374 training@predictiveanalytics.in