Programming Language: **Python**

Datasets Will be provided to students.

Prerequisites: Channel: <https://www.youtube.com/@freecodecamp>

Playlist: www.youtube.com/playlist?list=PLWKjhJtqVAbkmRvnFmOd4KhDdlK1oIq23

**Introduction**

1. To implement data structures and different operators Python.

Data types: Vectors, Lists, Matrices, Arrays, Factors, Data Frames

Introduction to few libraries of Python

1. To read and write CSV file. To generate different graphs using **mathplotlib** library in Python
   1. Pie Chart
   2. Bar Chart
   3. Box Plot
   4. Histograms
   5. Line Graphs
   6. Scatter Plots
2. To perform time series, Precision, Recall, TP rate, FP rate and F-measure
3. To perform statistical operations on the dataset and data analysis. Perform initial preprocessing and data reduction using Principal Component Analysis (PCA).

**Association Rule Mining**

1. Association Rule Mining, Apriori algorithm based experiments and visualization of various rules.
2. ~~To perform~~ *~~linear and multiple regression~~* ~~and perform residual analysis.~~

**Classification**

1. To perform Decision Tree using Python
2. To perform K-nearest neighbor using Python
3. To perform Bayesian Network

**Clustering**

1. To perform K-means clustering
2. To perform hierarchical clustering and random forest