



## Quantum Learnings & Knowledge Solutions India

# Data Science & Analytics

## Syllabus

### Online Course Information

## CODING

1. Basics of Coding:
  - 1.1 What are variables
  - 1.2 What are operators
  - 1.3 Data types in Python
  - 1.4 Print command
  - 1.5 If-else, loops introduction and small programs
2. Intermediate coding
  1. Conditional statements (if-else, elif)
  2. Nested conditions
  3. For loop
  4. While loop
  5. Break
3. Introduction to Functions
  - 3.1. Using prebuilt functions (min,max etc.)
  - 3.2. Writing user defined functions
  - 3.3. What is lambda function?
  - 3.4. Map, reduce & Filter functions in Python
4. Introduction to libraries
  1. NumPy
  2. Pandas
  3. Matplotlib
  4. Plotly

# Quantum Learnings

## **DATA ANALYSIS**

5. Data Analysis (Excel & Python)
  1. Measures of central tendency (Mean, Median & Mode)
  2. Measures of dispersion (Quartiles, Percentiles, Standard Deviation, Variance)
  3. Skewness & Kurtosis
  4. Univariate Data Analysis
    - 5.4.1. Summary statistics, distribution
    - 5.4.2. Data transformation (z-score, normalisation)
    - 5.4.3. Skewness & Kurtosis
  5. Bivariate Data Analysis
    - 5.5.1. How to treat missing values
    - 5.5.2. How to treat outliers
    - 5.5.3. Feature to feature relationship
    - 5.5.4. Correlation
    - 5.5.5. Seasonality and trends
6. Algorithms
  1. Clustering
  2. Linear Regression
  3. Multiple Regression
  4. Logistic Regression

## **DATA VISUALIZATION**

7. Visuals
  1. Types of charts
  2. Using Matplotlib
  3. Using Seaborn
  4. Using Plotly

## **DATA PREPROCESSING AND DATA WRANGLING**

1. Pandas
2. NumPy

## **MACHINE LEARNING ALGORITHMS**

8. Algorithms
  1. SVM
  2. Decision tree
  3. KNN
  4. K - means

## **MODEL EVALUATION**

- 9. Feature Engineering
- 10. Model Selection
- 11. Model Evaluation Metrics
  - 11.1. Accuracy
  - 11.2. RMSE
  - 11.3. ROC
  - 11.4. AUC
  - 11.5. Confusion Matrix
  - 11.6. Precision
  - 11.7. Recall
  - 11.8. F1 Score
  - 11.9. Overfitting
  - 11.10. Bias-Variance trade-off
  - 11.11. Cross Validation

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