CERTIFICATION IN PYTHON

Course Code : OCIT0007

Python is a powerful high-level, object-oriented programming language. It has wide range of applications from Web development, scientific and mathematical computing. The syntax of the language is clean and length of the code is relatively short. It allows you to think about the problem rather than focusing on the syntax. SQLite is one free lightweight database commonly used by Python programmers to store data. Many highly trafficked websites, such as YouTube, are created using Python.

Curriculum

Module 1:
Basic concepts in python, Calculations in python, Variable assignment, Function, Conditions, Data structures - List, Dictionaries, Numpy array, Slicing, Splicing, Subsetting, Functions, Conditions, Loops, Keys, Values, Datatypes.

Module 2:
Statistics / Plotting - Seaborn vs Matplotlib, Univariate analysis - Import from csv, Plot histograms, Distribution, Mean, Data with same mean but different standard deviation, Data with same mean and standard deviation but different kurtosis, Bootstrapping and subsetting - making samples, Mean of sample, Central limit theorem, Plotting, Hypothesis testing, Bivariate analysis- correlation, Scatter plots, Stratified samples, Categorical, Class variable.

Module 3:
Series - Datatypes, Index, Data frame - series to data frame, Reindex, Grouping, Pandas shortcuts, Reading from different sources, Missing data treatment, Merge, Join, Writing to file, Database operations.

Module 4:
Regression- Data Aggregation, Filtering, Lamda functions, Map, Filter, Visualization, Matplotlib, Pyplot, Scatterplot, Histogram, Heatmaps.
Regression – Linear, Lasso, Ridge, Variable selection, Forward & Backward regression, Polynomial regression.

Module 5:
Logistics regression, Naïve Bayes.

Module 6:
Unsupervised learning, Distance concepts, Classification, k-nearest, Clustering, k-means, Multidimensional scaling.

Module 7:
Decision Trees, Random Forest, Boosted Trees, Gradient Boosting.

Learning Outcomes

- Understand the core programming concepts of Python Programming Language.
- Know the Looping and condition statements in Python Programming Language
- Understand the different options in Data Management in Python Programming Language.
- Understand the importance of data transformation and its need in Python Programming Language
- Know elementary to advanced statistical methods in Python Programming environment.