

Get Certified with Microsoft*
Exam 98-381 : Introduction to
Programming Using Python



Microsoft
Technology
Associate

Course: Data Analytics with Python

Duration: 2 Months (Weekend)

Microsoft Technology Associate Certificate Voucher would be given to every participant

Introduction to Python Programming

- Why do we need Python?
- Program structure in Python

Execution steps

- Interactive Shell
- Executable or script files.
- User Interface or IDE
- Introduction to Jupyter Editor

Data Types and Operations

- Numbers
- Strings
- List
- Tuple
- Dictionary
- Other Core Types

Statements and Syntax in Python

- Assignments, Expressions and prints
- If tests and Syntax Rules
- While and For Loops
- Iterations and Comprehensions

Functions in Python

- Function definition and call
- Function Scope
- Arguments
- Function Objects
- Anonymous Functions

File Operations

- Opening a file

- Using Files
- Other File tools

Data Analysis with pandas

- Using Series, DataFrame, Panels
- Data wrangling
- Sorting and filtering data
- Aggregate operations
- Analyzing time series
- Visualization with Pandas

Vectorizing Data in Numpy

- Creating Numpy arrays
- Common operations on matrices
- Using Analytics functions
- Views and broadcasting on Numpy arrays
- Optimizing performance by avoiding loops

Python: Data Manipulation – cleansing

- Cleansing Data with Python
- Data Manipulation steps(Sorting, filtering, duplicates, merging, appending, subsetting, derived variables, sampling, Data type conversions, renaming, formatting etc)
- Data manipulation tools(Operators, Functions, Packages, control structures, Loops, arrays etc)
- Python Built-in Functions (Text, numeric, date, utility functions)
- Python User Defined Functions
- Stripping out extraneous information
- Normalizing data
- Formatting data
- Important Python Packages for data manipulation (Pandas, Numpy etc)

Python: Accessing/Importing and Exporting Data

- Importing Data from various sources (Csv, txt, excel, access etc)
- Database Input (Connecting to database – MySQL, MS SQL, Oracle, Teradata)
- Viewing Data objects - subsetting, methods
- Exporting Data to various formats

Python: Data Analysis – Visualization

- Introduction exploratory data analysis
- Descriptive statistics, Frequency Tables and summarization
- Univariate Analysis (Distribution of data & Graphical Analysis)
- Bivariate Analysis(Cross Tabs, Distributions & Relationships, Graphical Analysis)
- Creating Graphs- Bar/pie/line chart/histogram/boxplot/scatter/density etc)
- Important Packages for Exploratory Analysis(NumPy Arrays, Matplotlib, Pandas and scipy.stats etc)

Python: Basic statistics

- Basic Statistics - Measures of Central Tendencies and Variance
- Building blocks - Probability Distributions - Normal distribution - Central Limit Theorem
- Inferential Statistics -Sampling - Concept of Hypothesis Testing
- Statistical Methods - Z/t-tests (One sample, independent, paired), Anova, Correlation and Chi-square

Introduction to other Python libraries for data analysis

- scikit-learn [Linear Regression, Logistic Regression etc.]