TOPS TECHNOLOGIES
Training Outsourcing Placement Study Abroad

Data Analytics with Python Lectureflow

Module 1) DA - Introduction to Python	14

- Why Python?, Features of Python Programming, Style Installation, Print Function, Comments
- Variable and data types
- Operators in python
- Arithmetic, Assignment, Logical, Comparison, Identity , Membership
- collections
- List, Tuple, Set, Dictionary
- Conditional Statements
- If, If-else, If-elif-else, Nested If-else
- Looping Statements
- for loop, while Loop, Nested loops, Range Function
- Control Statements
- break , Continue, pass
- Functions
- Definition, Types of Function, Defining a Function, Calling a Function, Function Arguments, Lambda function
- Scope Of Variables
- Global, Local
- Modules
- Introduction, How to import?, Math module, Random Module, Packages
- Input - Output
- Reading Input from Keyboard, Printing Output
- Files and Exceptions Handling
- File Operations: Opening and Closing, Read and Writing , Exceptions: try except finally
- OOPS Concepts
- Class, Objects, Inheritance, Polymorphism, Overloading

Module 2) DA - SQL - Introduction and Getting started with sql	10

• SQL - Introduction and Getting started with sql
• Introduction to SQL Database and DBMS System Practical Example 1) MYSQL system installation SQL Database
• Database Normalization, RDBMS Query , Practical Example : 1) Write a statement to create database
• PL SQL - Filtering, Sorting, and Calculating Data with SQL Commands
• SQL Keys 1) Primary keys 2) Candidate keys 3) Super key 4) Unique key 5) Foreign key
• SQL Constraints 1) Not null 2) Unique 3) Check 4) Default 5) index
• Types of SQL Commands 1) DDL 2) DQL 3) DML 4) DCL
• SQL DDL commands 1) Create 2) Alter 3) Truncate 4) Drop 5) Rename Query 6) comment 7) Difference between truncate and drop
• Practical Example 1 Write a statement to create table inside the database 2. Write a statement to add fields inside the table 3. Write a statement to alter that fields 4. Write a statement to add and drop fields 5. Write statements to demonstrate sql keys 6. Write statements to demonstrate sql constraints 7. Write a statement to truncate table 8. Write a statement to drop table
• SQL DML Commands 1) insert 2) Update 3) delete
• Practical Example 1 Write a statement to insert records into the table 2. Write a statement to modify the records already exist in table table 3. Write a statement to delete existing records from the table
• SQL DQL Commands 1) Select statement 2) WHERE clause
• Practical Example 1) Write a statement to demonstrate aggregate functions 2) Write a statement to retrieve records from table using select statement
• SQL Operators 1) Arithmetic 2) Comparison
• Logical operators1) ORDER BY 2) GROUP BY 3) HAVING clause 4) INTO 5) DISTINCT keyword 6) SQL dates functions 7) SQL auto increments
• Practical Example 1) Write a statement to retrieve records via orderby and group by using select statements 2) Write a statement to demonstrate nested queries 3) Write statements to demonstrate logical operator with select statement
• SQL Aggregate functions 1) Sum 2) Max 3) Min 4) Avg 5) count
• SQL DCL commands: 1) GRANT 2) REVOKE
• SQL TCL commands 1) COMMIT 2) ROLLBACK 3) SAVEPOINT : SQL Nested Queries, SQL stored procedures
• Practical Example 1) Write statements to demonstrate DCL commands 2) Write statements to demonstrate TCL commands.
• SQL joins 1) INNER join 2) FULL join 3) LEFT join 4) RIGHT join
• Practical Example Write a statement to demonstrate inner join 2. Write a statement to demonstrate full join 3. Write a statement to demonstrate left join 4. Write a statement to demonstrate right join

Module 3) DA - Getting started with Excel	**7**

• Introduction to Excel
• About Excel, Importance of Excel, Excel vs Tableau
• Introduction to Excel, Interface Cell Reference, and Cell Range Formula and Functions
• Excel Functions
• COUNT, COUNTIF, COUNTIFS SUM, SUMIF AVERAGE,AVERAGEIF, AVERAGEIFS
• IFERROR, LOOKUP, PIVOT TABLE
• Excel Charts
• Column, Chart Bar, Chart Pie Chart
• Scatter, Chart Line, Chart Area,
• Chart Pareto Chart

Module 4) DA - Statistics	**15**

• Introduction to Statistics,Introduction, Population, Sample Statistic and Parameter
• Descriptive Statistics,Measures of Central Tendency Mean, Median, Mode Measures of Spread Range Quartiles, Standard deviation, Variance
• Probability,Terminology, Types of Probability,Probability Distribution, Bernoulli, Binomial, Geometric Uniform,Exponential and Normal
• Inferential Statistics,Introduction, Estimation and errors, Point estimation Confidence, Interval Hypothesis and its types,Hypothesis Testing,One Sample ttest,Two sample ttest,Anova

Module 5) DA - Analyzing Data with Python	**13**

• Python Packages,Numpy,Pandas,Scipy,Matplotlib,EDA
• Data Manipulation,Data Visualization,What is Data Analytics,Importance of Data Analytics
• Types of Data Analytics in brief Descriptive Analytics, Diagnostic Analytics, Predictive Analytics , Prescriptive Analytics

Module 6) - DA - Machine Learning	**50**

• Intro to Machine learning,Intro to types of Algorithms
• Supervised, UnSupervised , Reinforcement Learning Applications Regression,Linear Regression,Ridge Regression,Lasso Regression,Polynomial Regression
• SVM Regressor,Classification,Logistic Regression,kNearest Neighbors Decision Tree Classifier,Naive bayes Classifier,SVM Classifier
• Dimensionality Reduction Techniques,Introduction Method PCA, LDA Clustering,Introduction, Kmean Clustering, Hierarchical Clustering
• Model Selection and Hyperparameter Tuning,Hyper-parameters vs Parameters Cross validation techniques kfold, LOOCV,Bootstrap, Grid Search, CV Random, Search CV
• Ensemble Learning with case study,Introduction, Bagging, random forest Boosting , AdaBoost ,XGBoost,Associate Rules Mining and Recommendations with case study
• Introduction Apriori Algorithm,Recommendation, Content Based recommendation Collaborative Based recommendation,Time Series Forecasting with case study
• Introduction Timeseries , Components of time series in brief Handling Time Series in Pandas,Stationarity of a Time Series, Time series models
• AR, MA ,ARMA ,ARIMA ,SARIMA,Introduction to Reinforcement Learning Introduction, Applications,Process of Reinforcement Learning, Elements of Reinforcement Learning
• Bandit Algorithm,MultiArm Bandits, Greedy Approach Epsilon, Greedy Approach, Upper Confidence, Bound Selection,Q Learning Introduction, Rewards and Episodes, Algorithm, Influence of Variables, Q learning Practical

Module 7: DA - Deep Learning	**8**

• What Is DL and why do we require that?,Components of Deep Learning Forward Propagation And Backward Propagation,Build Artificial Neural Network
• Problem With ANN And How To Overcome That

Module 8) DA - Data Visualization	**10**

• Learn Basics of Data Visualization and what is Data Visualization? Real use cases from real world Businesses For DV,Some Real World Data Visualization tools.
• Why Tableau?,Some Examples Using Tableau In Businesses Installing Tableau,Tableau Interfaces , Connecting to Discourses , Data Types Of Tableau
• Connecting to dataset,Data Preparation,Joins,Working with filters Charts And Graphs,Dashboard and Report Making,Story Making