DATA SCIENCE WITH
PYTHON PROGRAMMING

TECH
BRIDGE

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Program **Overview**

Python is one of the most popular programming languages for high level data processing, due to its simple syntax, easy readability, and easy comprehension. Python's learning curve is low, and due to its many data structures, classes, nested functions and iterators, besides the extensive libraries, this language is the first choice of data scientists for analyzing, extracting information and making informed business decisions through big data.

Why **Make Africa Tech Challenge** with **TechBridge?**

- We are a credible virtual training school partnering with the University of Ibadan and other standard organizations. Guess what? Our certification is globally recognized!

- With a vision to train 10 million youths in advanced IT & programming skills for global innovation, we place emphasis on the quality of training provided in all cohorts.

- We do not only equip participants with advanced IT skills but with soft skills that would make you stand out from among your peers and position you for opportunities with Top firms globally.

Course **Curriculum**

Week 1 - Introduction to Python

- Basic programming terms
- Brief introduction of python and its interpreter
- Areas of application of python programming language
- Installation of necessary tools
- First python code
- Basics of working with files
- Variables and Data Types
- Python syntax
- Variable assignment
- Simple operation

Week 2 - Operations with Data Types

- Data Types and types conversion
- Intro and usage of popular python functions
- Assignment
- Looping Constructs
- Use of IF/ELSE/ELIF statements
- For/while loop statement
- Iterators, Iterables & generators
- Map, Filter & reduce
- List comprehensions
- Assignment: Project: Build a Python Project

Week 3 - Data Structures

- A brief introduction to data structure
- List and list operations (creating, replace, slicing, delete, list of list)
- Dictionary and common Dictionary operations
- Tuples, and sets

- Zip () method and zipping collections
- Assignment

Week 4 - Functional Programming

- Functions & Methods
- Function declaration and calling
- Return statement
- Function arguments
- Function nesting
- Recursion, how & when to use
- *Args and **kwargs (argument types)
- Lambda functions
- Pythonic Decorators are fun
- Assignment
- Project: Write a simple Note library.

Week 5 - Object Oriented Programming

- Introduction to Object Oriented Programming (OOP)
- Classes & objects in Python
- Constructors in Python
- Class and Instance Attributes
- Adding Attributes to a Python Class
- Adding Methods to a Python Class
- Deleting Attributes and Objects
- Assignment

Week 6 - OOP Principles

- Inheritance in OOP
- Method Overriding in Python
- Polymorphism, Abstraction
- Operator overloading

- Assignment
- Project
- Examination: Add Users to Notepad Using OOP.

Week 7 - Web Scraping

- Working with CSV files
- Getting started with requests and endpoints in python
- Understanding the python requests module
- Web scrapping with python
- Understanding the Beautiful soup module

Week 8 - Database Programming

- Database: MYSQL
- Introduction to Structured Query Language (SQL)
- Getting started with SQL server
- Covering database design with single tables
- Database Normalization
- Database design with multiple tables,
- SQL relations, foreign keys, and the JOIN operation
- Pymysql – Operating MYSQL from python
- Examination: Make a simple migration module with python FILE – MYSQL, API – MYSQL.
- Move notepad storage from file to MYSQL

Week 9 - Introduction to Data Science

- Data science: Numpy
- Getting started with Anaconda and jupyter Notebooks
- Introduction to Data Science
- Numpy arrays
- 2D Numpy arrays
- 3D Numpy arrays (Playing with images)
- Numpy basic statistics
- Assignment

- Project

Week 10 - Data Processing

- Pandas
- Intro to DataFrames object
- Pandas Series object
- Shared Methods and Attributes between Series and DataFrames
- Working Columns and rows in a DataFrame
- Useful methods in pandas
- Grouping
- Dropping Null
- Sorting
- Cross tabbing
- Working with Time series and the time object
- Working with strings and string methods
- Fast plotting
- Basic statistics with pandas
- Regular Expressions
- Understanding Regular Expressions
- Regular Expressions in Python
- Tips and tricks for Python
- Examination: Run an analysis on a time series data (Loan performance data analysis)

Week 11 - Data Visualization

- Data science: Matplotlib
- Data visualization with plots
- Introduction to the matplotlib syntax
- Creating charts, Bar, Histograms, Donut, Line etc
- Formatting plots shapes
- Adding Seaborn styling for lovelier charts
- Basic statistics visualization with matplotlib
- Project

- Examination: Analysis of COVID-19 Data in Nigeria to obtain Growth and Slowdown factors.

Week 12

- Projects & Graduation

About us

TechBridge Consulting is a leader in digital skills training. We are on a mission to train 10 million children and adults for advanced IT and programming skills that will inspire remarkable innovations from Africa by year 2030. Our project based and peer learning approach is strategic for building exceptionally brilliant talents that will unleash globally competitive innovations from Africa.

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