"

UPGRADE YOUR
SKILLS AND LAUNCH
YOUR CAREER

NOVATEC

TRAINING & SERVICES

PYTHON
CURRICULUM

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Requirements

System Requirements

Hardware Requirements
- Memory – Minimum – 8GB RAM
- Processor – Intel Core i3 CPU @ 2.0 GHz or above
- Storage – 250 GB HDD/SDD or above

Software Requirements
- Operating System – Windows 10
- Open internet with no proxy blocks to connect for virtual machines

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Python Course Content

Module 1: PYTHON ENVIRONMENT SETUP & ESSENTIALS

1.1 Introduction to Python Language
1.2 Features, the advantages of Python over other programming languages
1.3 Python installation – Windows, Mac & Linux distribution for Anaconda Python
1.4 Deploying Python IDE
1.5 Basic Python commands, data types, variables, keywords and more

Lab: 1. Installing Python Anaconda on Windows, Linux, or Mac

Module 2: PYTHON LANGUAGE BASIC CONSTRUCTS

2.1 Built-in data types in Python
2.2 Learn classes, modules, Str(String), Ellipsis Object, Null Object, Ellipsis, Debug
2.3 Basic operators, comparison, arithmetic, slicing and slice operator, logical, bitwise 2.4 Loop and control statements while, for, if, break, else, continue.

Lab:
1. Writing your first Python program
2. Writing a Python function (with and without parameters)
3. Using the Lambda expression

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Module 3: OOP CONCEPTS IN PYTHON

3.1 How to write OOP concepts program in Python
3.2 Connecting to a database Python Certification Training
3.3 Classes and objects in Python
3.4 OOPs paradigm, important concepts in OOP like polymorphism, inheritance, encapsulation
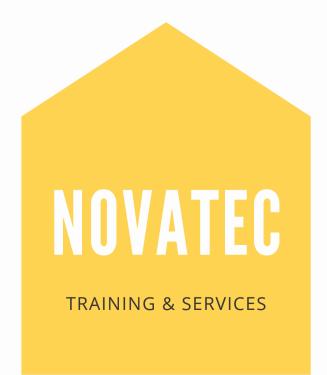3.5 Python functions, return types and parameters
3.6 Lambda expressions

Lab:
1. Creating an application using the concepts of OOPs

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Module 4: DATABASE CONNECTION

4.1 Understanding the Database, need of database
4.2 Installing MySQL on windows
4.3 Understanding Database connection using Python.

Lab: Database connection using Python and pulling data

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Module 5: NUMPY FOR MATHEMATICAL COMPUTING

5.1 Introduction to arrays and matrices
5.2 Broadcasting of array math, indexing of array
5.3 Standard deviation, conditional probability, correlation and covariance.

Lab:
1. How to import a NumPy module
2. Creating an array using ND-array
3. Calculating standard deviation on an array of numbers
4. Calculating correlation between two variables

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Module 6: SCIPY FOR SCIENTIFIC COMPUTING

6.1 Introduction to SciPy
6.2 Functions building on top of NumPy, cluster, linalg, signal, optimize, integrate, subpackages, SciPy with Bayes Theorem.

Lab:
1. Importing of SciPy
2. Applying the Bayes theorem on the given dataset

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Module 7: MATPLOTLIB FOR DATA VISUALIZATION

7.1 How to plot graph and chart with Python
7.2 Various aspects of line, scatter, bar, histogram, 3D, the API of MatPlotLib, subplots.

Lab:
1. Deploying Matplotlib for creating pie, scatter, line, and histogram charts

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Module 8: PANDAS FOR DATA ANALYSIS & MACHINE LEARNING

8.1Introduction to Python dataframes
8.2 Importing data from JSON, CSV, Excel, SQL database, NumPy array to dataframe
8.3 Various data operations like selecting, filtering, sorting, viewing, joining, combining

Lab:
1. Working on importing data from JSON files
2. Selecting a record by a group
3. Applying filter on top viewing records

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Module 9: EXCEPTION HANDLING

9.1 Introduction to Exception Handling
9.2 Scenarios in Exception Handling with its execution
9.3 Arithmetic exception
9.4 RAISE of Exception
9.5 What is Random List, running a Random list on Jupyter Notebook
9.6 Value Error in Exception Handling.

Lab: 1. Demo on exception handling with an Industry-based use case

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Module 10: MULTI-THREADING & RACE CONDITION

10.1 Introduction to Thread, need of threads
10.2 What are thread functions
10.3 Performing various operations on thread like joining a thread, starting a thread, enumeration in a thread
10.4 Creating a Multithread, finishing the multithreads.
10.5. Understanding Race Condition, lock and Synchronization.

Lab:
1. Demo on starting a thread and a multithread
2. Performing multiple operations on them

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Module 11: PACKAGES & FUNCTIONS

11.1 Intro to modules in Python, need of modules
11.2 How to import modules in python
11.3 Locating a module, namespace and scoping
11.4 Arithmetic operations on Modules using a function
11.5 Intro to Search path, Global and local functions, filter functions
11.6 Python Packages, import in packages, various ways of accessing the packages
11.7 Decorators, Pointer assignments, and Xldr.

Lab:
1. Demo on importing modules and performing various operations on them using arithmetic functions
2. Importing various packages, accessing them, and performing different operations on them

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Module 12: WEB SCRAPING WITH PYTHON

12.1 Introduction to web scraping in Python
12.2 Installing of beautifulsoup
12.3 Installing Python parser lxml
12.4 Various web scraping libraries, beautifulsoup, Scrapy Python packages
12.5 Creating soup object with input HTML
12.6 Searching of tree, full or partial parsing, output print

Lab:
1. Installation of Beautiful Soup and LXML Python Parser
2. Making a Soup object with the input HTML file
3. Navigating using Py objects in the Soup tree

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Module 13: Use case of Python in AWS Cloud

13.1 Basics of AWS architecture
13.2 Use Case illustrating the application on Python in AWS Cloud
13.3 Demo followed by Lab Session