

## About Python

### Introduction

Python is commonly used for developing websites and software, task automation, data analysis, and data visualisation. Since it's relatively easy to learn, Python has been adopted by many non-programmers such as accountants and scientists, for a variety of everyday tasks, like organising finances.

Python can be used in several areas, including testing, web development, app development and upgrades, and scriptwriting, to name a few. Python's automatic memory management and dynamic type system support different programming standards. If you acquire this skill, you will have more Python career opportunities than you can imagine. Python opens for you several avenues that no other programming language can

### Why Python

- It's Simple
- It's Free
- It's Easy to Use
- It's Highly Compatible
- It is Object-Oriented
- It has Lots of Libraries
- It has Built-in Data Structures
- It's Widely Applicable
- It Increases Speed and Productivity
- It's Easy to Learn

### Core Python Details

- The course duration for core python is 1 month ( 60 hours)

### Topics covered in Core Python Course

- Introduction to Python and computer programming
- Data types, variables, basic input-output operations, basic operators
- Boolean Values, Conditional Execution, Loops, Lists and List Processing, Logical and Bitwise Operations
- Functions, tuples, dictionaries, and data processing
- Code structuring and the concept of function
- Modules, Packages and PIP
- Strings, String and List Methods, Exceptions
- Object-Oriented Programming

- Python Networking Programming
- Python GUI Programming

The Python syllabus followed by Vidya is from Cisco Networking Academy Partnership so there will be added benefits such as

- Course Completion Certificate from Cisco NetAcad.
- If they are opting for Python + PCAP Exam Bundle in a Cisco Network Academy , then there will be 50% off on the cost of PCAP exam

## **Advanced Python**

### **Python for web development**

The course duration for python web development is 2 month( Provided you know basic python) ( 120 hours)

### **Topics covered in Python for Django Course**

- Django's History
- The Basics of Dynamic Web Pages
- The Django Template System
- Interacting with a Database: Models
- The Django Administration Site
- Form Processing
- Advanced Views and URL configurations
- Generic Views
- Extending the Template Engine
- Users and Registration

## Python For Data Science

The course duration for python data science is 2 month( Provided you know basic python) ( 120 hours)

### Topics covered in Python for Data Science

#### Module-01: Data

- What is Data?
- Why is Data important ?
- Types of Data:
  - Categorical Data
  - Numerical Data
  - Discrete Data
  - Continuous Data
  - Nominal Scale
  - Ordinary Scale
  - Interval scale
  - Ratio scale
  
- The DIKW Model: Knowledge Management and Data
- Transformation & Value Extraction DIKW Pyramid
- Data
- Information
- Knowledge+
- Wisdom

#### Module-02: Fundamentals of Data Science

- What is Data Science?
- Why Data Science?
- Common terminologies of Data Science
- Applications of Data Science
- Various roles within Data Science
- Careers in Data Science
- Module-03: Understanding Data Processing
  - Collection
  - Preparation
  - Input
  - Processing
  - Output
  - Storage
- Module-04: Essential Stages of Data Science Life Cycle
- 5-7 Days

## Problem Statement

- Data Cleaning
- Data Analysis and Exploration
- Data Modelling
- Data Visualization, Plotting & Reporting
- Optimization and Deployment
- Module-05: Why Python for Data Science?
- Data Science Tools: Python Ecosystem
  - Setup a Python3 Ecosystem Environment
  - Setup a Python virtual environment
  - What is pip & pip, install and verify
- Install & Configure following Third Party Python
- Libraries
  - Python3 (Pre-Requisites)
  - VS Code (Pre-Requisites)
  - Jupyter Notebook
  - Introduction to Jupyter Notebook
  - Getting Started with Jupyter
  - Numpy
  - Scipy
  - Pandas
  - Matplotlib
  - Seaborn
  - Bokeh
  - Beautiful Soup
- Verify the versions of Python Libraries installation
- BeautifulSoup: Web Scraping
  - Requests Module
  - Response object
  - BeautifulSoup Library: Installation
  - Parsing the HTML
  - Scraping multiple Pages
  - Saving Data to CSV
- Numpy: Data Manipulation of large, multi-dimensional arrays and Matrices
  - What is NumPy in Python?
  - Why use NumPy?
  - How to Install NumPy
  - Import NumPy and Check Version
  - What is Python NumPy Array?
  - Creating a NumPy Array
  - Mathematical Operations on an Array
  - Shape of Array
  - 2 Dimension Array
  - 3 Dimension Array
  - What is numpy.zeros()?

- What is numpy.ones()?
- numpy.reshape() function in Python
- numpy.flatten() in Python
- What is numpy.hstack() in Python?
- What is numpy.vstack() in Python?
- Generate Random Numbers using NumPy ◦ NumPy Asarray Function
- What is numpy.arange()?
- NumPy Linspace Function
- LogSpace NumPy Function in Python
- Indexing and Slicing in Python
- Statistical Functions in Python
- Function
  - Numpy
- Min
  - np.min()
- Max
  - np.max()
- Mean
  - np.mean()
- Median
  - np.median()
- Standard deviation
  - np.std()
  
- What is numpy dot product?
- Matrix Multiplication in Python
- Determinant
- pandas: Data Manipulation and Analysis
  - What is Pandas?
  - Why use Pandas?
  - How to Install Pandas?
  - What is a Series?
  - What is a Pandas DataFrame?
  - Create & Work with Pandas Series
  - Create & Work with Pandas DataFrame
  - Pandas Range Data
- Label Encoding
- One-Hot Encoding
- Inspecting Data
- Slicing, Indexing
- Drop a Column
- Concatenation
- Working with CSV, Excel, JSON, RDBMS,
- NOSQL data using pandas
- Manipulating using pandas Dataframe
- Data Cleaning/Wrangling/Munging Using pandas

- What is Data Cleaning
  - Data Cleaning Life Cycle
  - Get the Datasets, Merge the Datasets
  - Manage the missing data
  - Data Standardization and Normalisation
  - Deduplication
  - Export the dataset
  
- Matplotlib & Seaborn: Data Visualization & Plotting
- What is Data Visualization?
- Benefits of Good Data Visualization
- Different Types of Analysis for Data Visualization
- Univariate Analysis Techniques for Data
  - Visualisation
- Bivariate Analysis Techniques for Data
  - Visualisation
- Box plots
- Scatter Plot
- Histograms
- Count plots
- Correlation plots
- Heat Maps
- Pie Charts
- Error Bars

### **Job roles after learning Python**

- Python developer
- Data analyst
- Product manager
- Machine learning engineer
- Research Analyst
- Data Scientist
- Software Developer
- Full-stack developer
- Python Application Engineer

### **Famous websites using python**

- Instagram

Instagram currently features the world's largest deployment of the Django web framework, which is written entirely in Python

- Google

Python has been an important part of Google since the beginning, and remains so as the system grows and evolves. Today dozens of Google engineers use Python

- Spotify

Spotify's backend consists of many interdependent services, connected by [its] own messaging protocol over ZeroMQ. Around 80% of these services are written in Python.