

Python Programming Certification Course

Course Curriculum: Your 10 module Learning Plan

https://www.edureka.co/python-programming-certification-training

About Edureka

Edureka is a leading e-learning platform providing live instructor-led interactive online training. We cater to professionals and students across the globe in categories like Big Data & Hadoop, Business Analytics, NoSQL Databases, Java & Mobile Technologies, System Engineering, Project Management and Programming. We have an easy and affordable learning solution that is accessible to millions of learners. With our students spread across countries like the US, India, UK, Canada, Singapore, Australia, Middle East, Brazil and many others, we have built a community of over 1 million learners across the globe.

About Course

Edureka's Python Programming Certification Course will help you master important Python programming concepts such as Data Operations, File Operations, Object-Oriented concepts, and various Python libraries such as Pandas, Numpy, Matplotlib and many more. You will learn Data Visualization and techniques to deal with different types of data – ordinal, categorical, encoding. This course makes you industry-ready by working on real-life case-studies and equipping you with relevant concepts.

Python Programming Course Description

About Python Programming Course?

The Python Programming Certification Course covers both basic and advanced concepts of Python, such as writing Python scripts, sequence and file operations, object-oriented concepts, and web scraping. During this journey, you will learn many essential and widely used Python libraries such as pandas, NumPy, Matplotlib, among others.

Why learn Python Programming?

Python is a premier, flexible, and powerful open-source language that is easy to learn, easy to use, and has powerful libraries for data manipulation and analysis. For over a decade, Python has been used in scientific computing and highly quantitative domains such as Finance, Oil and Gas, Physics, and Signal Processing. Today, it is the most preferred language for Artificial Intelligence (AI), Robotics, Web Development, and DevOps.

What are the objectives of our Python Programming Certification Course?

Upon completing this course, you will be able to:

- Write Python scripts and test code
- Programmatically download and analyze data
- Implement the techniques to deal with different types of data ordinal, categorical, encoding
- Create data visualization
- Use Python notebooks and master the art of presenting step-by-step data analysis

Who should go for Python Programming Certification Course?

The Python Programming Certification Course is a good fit for the below professionals:

- Programmers, Developers, Technical Leads, Architects, Freshers
- Data Scientists, Data Analysts
- Statisticians and Analysts
- Business Analysts
- Project Managers
- Business Intelligence Managers

What are the prerequisites for this Python Programming Certification Course?

There are no specific prerequisites for taking up Python Programming Certification Training. Basic understanding of Computer Programming terminologies is beneficial.

Python Programming Course Curriculum

Introduction to Python

Learning Objective:In this module, you will get to know about the basic concepts of Python.

Topics:

- Need for Programming
- Advantages of Programming
- Overview of Python
- Organizations using Python
- Python Applications in Various Domains
- Python Installation
- Variables
- Operands and Expressions
- Conditional Statements
- Loops
- Command Line Arguments

Hands-On:

- Creating the "Hello World" code
- Numbers in Python
- Demonstrating Conditional Statements
- Demonstrating Loops

Sequences and File Operations

Learning Objective: Perform operations on Files and learn different types of sequence structures, their usage, and execute sequence operations.

Topics:

- Method of Accepting User Input and eval Function
- Python Files Input/Output Functions
- Lists and Related Operations
- Tuples and Related Operations
- Strings and Related Operations
- Sets and Related Operations
- Dictionaries and Related Operations

Hands-On:

- File Handling
- Tuple Properties, Related Operations
- List Properties, Related Operations
- Dictionary Properties, Related Operations
- Set Properties, Related Operations
- String Properties, Related Operations

Deep Dive – Functions and OOPs

Learning Objective: Learn about different types of Functions and various Object-Oriented concepts such as Abstraction, Inheritance, Polymorphism, Overloading, Constructor, and so on.

- User-Defined Functions
- Concept of Return Statement
- Concept of __name__=" __main__"

- Function Parameters
- Different Types of Arguments
- Global Variables
- Global Keyword
- Variable Scope and Returning Values
- Lambda Functions
- Various Built-In Functions
- Introduction to Object-Oriented Concepts
- Built-In Class Attributes
- Public, Protected and Private Attributes, and Methods
- Class Variable and Instance Variable
- Constructor and Destructor
- Decorator in Python
- Core Object-Oriented Principles
- Inheritance and Its Types
- Method Resolution Order
- Overloading
- Overriding
- Getter and Setter Methods
- Inheritance-In-Class Case Study

Hands-On:

- Functions Syntax, Arguments, Keyword Arguments, and Return Values
- Lambda Features, Syntax, Options
- Built-In Functions
- Python Object-Oriented Concepts Applications
- Python Object-Oriented Core Principles and Its Applications
- Inheritance Case Study

Working with Modules and Handling Exceptions

Learning Objective:Learn how to create generic python scripts, address errors/exceptions in code, and extract/filter content using regex.

Topics:

- Standard Libraries
- Packages and Import Statements
- Reload Function
- Important Modules in Python
- Sys Module
- Os Module
- Math Module
- Date-Time Module
- Random Module
- ISON Module
- Regular Expression
- Exception Handling

Hands-On:

- Packages and Modules
- Regular Expressio
- Errors and Exceptions Types of Issues, and Their Remediation

Introduction to NumPy

Learning Objective:Get familiar with the basics of Data Analysis using two essential libraries: NumPy and Pandas. You will also understand the concept of file handling using the NumPy library.

Topics:

- Basics of Data Analysis
- NumPy Arrays
- Operations on Arrays
- Indexing Slicing and Iterating
- NumPy Array Attributes
- Matrix Product
- NumPy Functions
- Functions
- Array Manipulation
- File Handling Using NumPy

Hands-On:

- Matrix Product and Aggregate Functions using Numpy
- Array Creation and Logic Functions
- File Handling Using Numpy

Data Manipulation using pandas

Learning Objective: Gain in-depth knowledge about analyzing datasets and data manipulation using Pandas.

- Introduction to pandas
- Data structures in pandas
- Series
- Data Frames
- Importing and Exporting Files in Python

- Basic Functionalities of a Data Object
- Merging of Data Objects
- Concatenation of Data Objects
- Types of Joins on Data Objects
- Data Cleaning using pandas
- Exploring Datasets

Hands-On:

- Functionality of Series
- The Functionality of Data Frame
- Combining Data from Dataset
- Cleaning Data

Data Visualization using Matplotlib

Learning Objective:Learn Data Visualization using Matplotlib.

- Why Data Visualization?
- Matplotlib Library
- Line Plots
- Multiline Plots
- Bar Plot
- Histogram
- Pie Chart
- Scatter Plot
- Boxplot
- Saving Charts

- Customizing Visualizations
- Saving Plots
- Grids
- Subplots

Hands-On:

- Plotting Different Types of Charts
- Customizing Visualizations Using Matplotlib
- Customizing Visualizations and Subplots

GUI Programming

Learning Objective: In this module, you will learn GUI programming using ipywidgets package.

Topics:

- Ipywidgets Package
- Numeric Widgets
- Boolean Widgets
- Selection Widgets
- String Widgets
- Date Picker
- Color Picker
- Container Widgets
- Creating a GUI Application

Hands-On:

- Creating GUI Elements
- Creating an application containing GUI elements

Developing Web Maps and Representing Information using Plots (Self-paced)

Learning Objective:Learn to design Python Applications.

Topics:

- Use of Folium Library
- Use of Pandas Library
- Flow Chart of Web Map Application
- Developing Web Map Using Folium and Pandas
- Reading Information from Titanic Dataset and Represent It Using Plots

Computer Vision using OpenCV and Visualisation using Bokeh (Self-paced)

Learning Objective: Learn to design Python Applications.

- Beautiful Soup Library
- Requests Library
- Scrap All Hyperlinks from a Webpage Using Beautiful Soup and Requests
- Plotting Charts Using Bokeh
- Plotting Scatterplots Using Bokeh
- Image Editing Using OpenCV
- Face Detection Using OpenCV
- Motion Detection and Capturing Video

Python Programming Course Projects

What are the system requirements for our Python Programming Course?

Here is what it takes to install Python:

- A system with an Intel i3 processor or above
- A minimum of 3GB RAM (4GB or above recommended for faster processing)
- Operating system: 32bit or 64 bits

How will I execute the practicals?

You will do your assignments/case studies using Jupyter Notebook that is already installed on your Cloud LAB environment (access it from a browser). The access credentials are available on your LMS. Should you have any queries, the 24*7 Support Team will promptly assist you.

Which case studies and Projects will be a part of this Python Programming Certification Course

Case Study #1:

Domain: Banking

Problem Statement: FinBank is the latest entrant in the banking market of Thailand. For opening a bank account, verification was manual through the photocopy of the approved id card document till now. However, they have recently introduced a system where the customers' fingerprint will be mapped with the newly introduced Unique Id for citizens of Thailand by the government of Thailand. FinBank should now verify customers against the fingerprint and Unique Id.

Case Study #2:

Domain: Marketing

Problem Statement: Bank of Portugal runs a marketing campaign to offer loans to clients. The loan is offered to only clients with professions. A list of successful campaigns (with client data) is given in the attached dataset. You must come up with a program which reads the file and builds a set of unique profession list and when the profession data of the client is fed, the system must be able to tell whether the client in question is eligible for the loan.

Case Study #3:

Domain: E-Commerce

Problem Statement: GoodsKart—largest e-commerce company in Indonesia with a revenue of \$2B+ acquired another e-commerce company FairDeal. FairDeal has its own IT system to maintain records of a customer, sales, etc. For ease of maintenance and cost savings, GoodsKart is integrating customer databases of both the organizations; hence customer data of FairDeal has to be converted in GoodsKart Customer Format.

Case Study #4:

Domain: Education

Problem Statement: You are a data analyst with University of California,? USA University has data of Maths, Physics and Data Structure score of sophomore students. This data is stored in different files. University has hired a data science company to do an analysis of scores and find if there is any correlation of score with age, ethnicity, etc. Before the data is given to the company, you are required to do data wrangling.

Case Study #5:

Domain: Retail

Problem Statement: BigMart is one of the biggest retailers in Europe and has operations across multiple countries. You are a data analyst in the IT team of BigMart. Invoice and SKU wise Sales Data for the Year 2011 is shared with you. It would help if you prepared meaningful charts to showcase the various sales trends for 2011 to top management.

Certification Project:

Domain: 911 Calls

Problem Statement:For this capstone project, we will be analyzing 911 call data from Kaggle. This data is from Montgomery County in the Pennsylvania State of USA. 911 is the most important social security feature in the USA. Citizens can call on 911 in case of any emergencies such as crime, medical, traffic, fire, etc. As a data analyst, you must analyze and visualize the data and answer the question in the section.