

Kn Tech!

Discover Learning



Python Developer Masters Program



About Kn Tech

Kn tech is one of the world's largest and most effective online education platform for technology professionals. In a span of 10 years, 100,000+ students from over 176 countries have upskilled themselves with the help of our online courses. Since our inception, we have been dedicated to helping technology professionals from all corners of the world learn Programming, Data Science, Big Data, Cloud Computing, DevOps, Business Analytic, Java & Mobile Technologies, Software Testing, Web Development, System Engineering, Project Management, Digital Marketing, Business Intelligence, Cybersecurity, RPA and more.

We have an easy and affordable learning solution that is accessible to millions of learners. With our learners 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 the Program

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 Big Data.

Kn tech Python Developer Masters program will help you become an expert in Python and opens a career opportunity in various domains such as Machine Learning, Data Science, Big Data, Web Development.



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**Depending on industry requirements, Edureka may make changes to the course curriculum*



Python Programming Certification Course

Course Curriculum

About the Course

The Python Programming for beginners covers basic and advanced Python concepts, 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, and Matplotlib.

Module 1: Introduction to Python

Goal:

In this module, you will learn 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

Module 2 – Sequences and File Operations

Goal:

In this module, you will learn how to 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

Module 3 – Deep Dive – Functions and OOPs

Goal:

In this module, you will learn about different types of Functions and various Object-Oriented concepts such as Abstraction, Inheritance, Polymorphism, Overloading, Constructor, and so on

Topics:

- 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

Module 4 – Working with Modules and Handling Exceptions

Goal:

In this module, you will learn how to create generic python scripts, address/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
- JSON Module
- Regular Expression
- Exception Handling

Module 5 – Introduction to NumPy**Goal:**

In this module, you will learn about 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

Module 5 – Introduction to NumPy

Goal:

In this module, you will learn about 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

Module 6 – Data Manipulation using pandas

Goal:

In this module, you will gain in-depth knowledge about analyzing datasets and data manipulation using Pandas

Topics:

- 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

Module 7 – Data Visualization using Matplotlib

Goal:

In this module, you will learn Data Visualization using Matplotlib

Topics:

- 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

Module 8 – GUI Programming

Goal:

In this module, you will learn about GUI programming using the ipywidgets package.

Topics:

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

Developing Web Maps and Representing information using Plots

(Self-paced)

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)

Objective: Learn to design Python Applications.

Topics:

- 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



Machine Learning Certification Training using Python

Course Curriculum

About the Course

This Python Data Science course is designed to make you grab the concepts of Machine Learning. The course will provide a deep understanding of Machine Learning and its mechanism. As a Data Scientist, you will be learning the importance of Machine Learning and its implementation in the python programming language. Furthermore, you will be taught of Reinforcement Learning, which in turn is an important aspect of Artificial Intelligence. You will be able to automate real-life scenarios using Machine Learning Algorithms. Towards the end of the course, we will be discussing various practical use cases of Machine Learning in a python programming language to enhance your learning experience.

Module 1: Introduction to Data Science

Goal:

In this module, you will learn about what is Data Science, its importance in the industry, various job opportunities, and Data Science Life Cycle.

Topics:

- What is Data Science?
- History of Data Science
- Importance of Data Scientist in Industry
- Applications of Data Science
- How Data Science Works?
- Data Science Life Cycle
- Data Science Toolkit
- Job Opportunities
- Why Python for Data Science?

Module 2 – Data Extraction, wrangling, and visualization

Goal:

In this module, you will learn why Data extraction, wrangling, and visualization is necessary, and various techniques used to clean data in the industry.

Topics:

- What is Data Cleaning
- Why is Data Cleaning is required?
- Data Cleaning
 - Missing Values
 - Noisy Data
 - Inconsistent Data
- Other Pre-processing Methods
 - Data Integration
 - Data Transformation
 - Data Reduction
- What is Web Scraping?
- Do Data Scientists need Web Scraping?
- Best Practises for Web Scraping
- Python Web Scraping modules
 - BeautifulSoup
 - Scrapy
 - Scrapy vs. BeautifulSoup
 - Requests & Responses
 - Creating a basic Spider
 - Scrapy shell commands
 - Scrapy selector
 - Scrapy Items & Item Loader

Module 3: Introduction to Machine Learning with Python

Goal:

In this module, you will learn the concept of Machine Learning and types of Machine Learning

Topics:

- Python Revision (NumPy, Pandas, sci-kit learn, matplotlib)
- What is Machine Learning?
- Machine Learning Use-Cases
- Machine Learning Process Flow
- Machine Learning Categories
- Linear regression
- Gradient descent

Module 4: *Supervised Learning - I*

Goal:

In this module, you will learn Supervised Learning Techniques and their implementation, such as Decision Trees, Random Forest classifiers, etc.

Objective:

At the end of this module, you should be able to:

- Understand What is Supervised Learning?
- Illustrate Logistic Regression
- Define Classification
- Explain different types of Classifiers such as,
 - Decision Tree
 - Random Forest

Topics:

- What are classification and its use cases?
- What is Decision Tree?
- Algorithm for Decision Tree Induction
- Creating a Perfect Decision Tree
- Confusion Matrix
- What is a Random Forest?

Skills:

- Supervised Learning concepts
- Implementing different types of Supervised Learning algorithms

- Evaluating model output

Hands-On:

- Implementation of Logistic regression, Decision tree, Random forest

Module 5: *Dimensionality Reduction*

Goal: In this module, you will learn about the impact of dimensions within data. You will be taught to perform factor analysis using PCA and compress dimensions. Also, you will be developing the LDA model.

Objective:

At the end of this module, you should be able to:

- Define the importance of Dimensions
- Explore PCA and its implementation
- Discuss LDA and its implementation

Topics:

- Introduction to Dimensionality
- Why Dimensionality Reduction
- PCA
- Factor Analysis
- Scaling dimensional model
- LDA

Skills:

- Implementing Dimensionality Reduction Technique

Hands-On:

- PCA
- Scaling
- LDA

Module 6: *Supervised Learning - II***Goal:**

In this module, you will learn Supervised Learning Techniques and their implementation, such as Decision Trees, Random Forest classifiers, etc.

Objective:

At the end of this module, you should be able to:

- Understand What is Naïve Bayes Classifier
- How Naïve Bayes Classifier works?
- Understand the Support Vector Machine
- Illustrate How Support Vector Machine works?
- Hyperparameter optimization

Topics:

- What is Naïve Bayes?
- How Naïve Bayes works?
- Implementing Naïve Bayes Classifier
- What is Support Vector Machine?
- Illustrate how Support Vector Machine works?
- Hyperparameter optimization
- Grid Search vs. Random Search
- Implementation of Support Vector Machine for Classification

Skills:

- Supervised Learning concepts
- Implementing different types of Supervised Learning algorithms
- Evaluating model output

Hands-On:

- Implementation of Naïve Bayes, SVM

Module 7: *Unsupervised Learning***Goal:**

In this module, you will learn about Unsupervised Learning and the various types of Clustering that can be used to analyze the data.

Objective:

At the end of this module, you should be able to:

- Define Unsupervised Learning
- Discuss the following Cluster Analysis
 - K - means Clustering.

- C - means Clustering.
- Hierarchical Clustering

Topics:

- What is Clustering & its Use Cases?
- What is K-means Clustering?
- How does the K-means algorithm work?
- How to do optimal Clustering
- What is C-means Clustering?
- What is Hierarchical Clustering?
- How Hierarchical Clustering works?

Skills:

- Unsupervised Learning
- Implementation of Clustering – various types

Hands-On:

- Implementing K-means Clustering
- Implementing Hierarchical Clustering

Module 8: Association Rules Mining and Recommendation Systems

Goal: In this module, you will learn Association rules and their extension towards recommendation engines with the Apriori algorithm.

Objective:

At the end of this module, you should be able to:

- Define Association Rules
- Learn the backend of recommendation engines and develop your own using Python

Topics:

- What are Association Rules?
- Association Rule Parameters
- Calculating Association Rule Parameters
- Recommendation Engines
- How do Recommendation Engines work?
- Collaborative Filtering

- Content-Based Filtering

Skills:

- Data Mining using Python
- Recommender Systems using Python

Hands-On:

- Apriori Algorithm
- Market Basket Analysis

Module 9: Reinforcement Learning**Goal:**

In this module, you will learn about developing a smart learning algorithm such that the learning becomes more and more accurate as time passes by. You will be able to define an optimal solution for an agent-based on agent environment interaction.

Objective:

At the end of this module, you should be able to

- Explain the concept of Reinforcement Learning
- Generalize a problem using Reinforcement Learning
- Explain Markov's Decision Process
- Demonstrate Q Learning

Topics:

- What is Reinforcement Learning
- Why Reinforcement Learning
- Elements of Reinforcement Learning
- Exploration vs. Exploitation dilemma
- Epsilon Greedy Algorithm
- Markov Decision Process (MDP)
- Q values and V values
- Q – Learning
- α values

Skills:

- Implement Reinforcement Learning using Python
- Developing Q Learning model in Python

Hands-On:

- Calculating Reward
- Discounted Reward
- Calculating Optimal quantities
- Implementing Q Learning
- Setting up an Optimal Action

Module 10: *Time Series Analysis***Goal:**

In this module, you will learn about Time Series Analysis to forecast dependent variables based on time. You will be taught different models for time series modeling such that you analyze real time-dependent data for forecasting.

Objective:

At the end of this module, you should be able to:

- Explain Time Series Analysis (TSA)
- Discuss the need for TSA
- Describe ARIMA modeling
- Forecast the time series model

Topics:

- What is Time Series Analysis?
- Importance of TSA
- Components of TSA
- White Noise
- AR model
- MA model
- ARMA model
- ARIMA model
- Stationarity
- ACF & PACF

Skills:

- TSA in Python

Hands-on:

- Checking Stationarity
- Converting a non-stationary data to stationary
- Implementing the Dickey-Fuller Test
- Plot ACF and PACF
- Generating the ARIMA plot
- TSA Forecasting

Module 11: *Model Selection and Boosting***Goal:**

In this module, you will learn about selecting one model over another. Also, you will learn about Boosting and its importance in Machine Learning. You will learn how to convert weaker algorithms to stronger ones.

Objective:

At the end of this module, you should be able to:

- Discuss Model Selection
- Define Boosting
- Express the need of Boosting
- Explain the working of different Boosting algorithms

Topics:

- What is the Model Selection?
- The Need for Model Selection
- Cross-Validation
- Bootstrapping
- What is Boosting?
- How Boosting Algorithms work?
- Types of Boosting Algorithms
- Gradient Boosting
- The Generalisation of AdaBoost as Gradient Boosting

Skills:

- Model Selection

- Boosting algorithms using Python

Hands-on:

- Cross-Validation
- Bootstrapping
- Gradient Boosting
- AdaBoost

Module 12: Hands-On Project**Goal:**

In this module, you should learn how to approach and implement a Machine project end to end, the instructor from the industry will share his experience and insights from the industry to help you kickstart your career in this domain. At last, we will be having a QA and doubt clearing session for the students.

Objectives:

At the end of this module, you should be able to:

- How to approach a project
- Hands-On project implementation
- What industry expects
- Industry insights for the Machine Learning domain
- QA and Doubt Clearing Session



Natural Language processing with Python Certification Course

Course Curriculum

About the Course

This Python NLP course is for anyone who works with data and text– with good analytical background and little exposure to Python Programming Language. It is designed to help you understand the critical concepts and techniques used in Natural Language Processing using Python Programming Language. You will be able to build your own machine learning model for text classification. Towards the end of the course, we will be discussing various practical use cases of NLP in the python programming language to enhance your learning experience.

Course Outline

Module 1: Introduction to Text Mining and NLP

Goal:

In this module, you will learn about text mining and the ways of extracting and reading data from some common file types including NLTK corpora

Topics:

- Overview of Text Mining
- Need of Text Mining
- Natural Language Processing (NLP) in Text Mining
- Applications of Text Mining
- OS Module
- Reading, Writing to text and word files
- Setting the NLTK Environment
- Accessing the NLTK Corpora

Module 2: Extracting, Cleaning and Pre-processing Text

Goal:

This module will help you understand some ways of text extraction and cleaning using NLTK

Topics:

- Tokenization
- Frequency Distribution
- Different Types of Tokenizers
- Bigrams, Trigrams & Ngrams
- Stemming
- Lemmatization
- Stopwords
- POS Tagging
- Named Entity Recognition

Module 3: Analyzing Sentence Structure

Goal:

In this Module, you will learn how to analyze a sentence structure using a group of words to create phrases and sentences using NLP and the rules of English grammar

Topics:

- Syntax Trees
- Chunking
- Chinking
- Context Free Grammars (CFG)
- Automating Text Paraphrasing

Module 4: Text Classification - I

Goal:

In this module, you will explore text classification, vectorization techniques and processing using scikit-learn.

Topics:

- Machine Learning: Brush Up
- Bag of Words
- Count Vectorizer
- Term Frequency (TF)
- Inverse Document Frequency (IDF)

Module 5: Text Classification - II

Goal:

In this module, you will learn to build a Machine Learning classifier for text classification.

Topics:

- Converting text to features and labels
- Multinomial Naive Bayes Classifier
- Leveraging Confusion Matrix

Module 6: In Class Project

Goal: In this module, you will learn Sentiment Classification on Movie Rating Dataset

Objective: At the end of this module, you should be able to:

- Implement all the text processing techniques starting with tokenization
- Express your end to end work on Text Mining
- Implement Machine Learning along with Text Processing



Python Spark Certification Training using PySpark

Course Curriculum

About the Course

This Python for Big Data (PySpark) course is designed to provide knowledge and skills to become a successful Spark Developer using Python. You will get an in-depth understanding of concepts such as Hadoop Distributed File System, Hadoop Cluster, Hadoop 2.x, Flume, Sqoop by taking this course.

You will understand how Spark enables in-memory data processing and runs much faster than Hadoop MapReduce. You will learn about RDDs, different APIs, and libraries, which Spark offers, such as Spark Streaming, MLlib, and Spark SQL. It also includes the fundamental concepts of the Kafka cluster and different Kafka APIs. This PySpark Developer course is an integral part of a Big Data Developer's Career path.

Course Outline

Module 1 - Introduction to Big Data Hadoop and Spark

Goal: In this module, you will learn what is Big Data Hadoop and what Spark is. You will get to know Hadoop Architecture.

Topics:

- What is Big Data
- Big Data Customer Scenarios
- Limitations and Solutions of Existing Data Analytics Architecture with Uber Use Case

- How Hadoop Solves the Big Data Problem
- What is Hadoop
- Hadoop's Key Characteristics
- Hadoop Ecosystem and HDFS
- Hadoop Core Components
- Rack Awareness and Block Replication
- YARN and Its Advantage
- Hadoop Cluster and Its Architecture
- Hadoop: Different Cluster Modes
- Big Data Analytics with Batch & Real-Time Processing

Module 2 - Introduction to Python for Apache Spark

Goal:

Give a brief idea of Python and touch on the basics and learn different types of sequence structures, related operations, and usage. Also, learn diverse ways of opening, reading, and writing to files.

Topics:

- Overview of Python
- Different Applications where Python is Used
- Values, Types, Variables
- Operands and Expressions
- Conditional Statements
- Loops
- Command Line Arguments
- Writing to the Screen
- Python files I/O Functions
- Numbers
- Strings and related operations
- Tuples and related operations
- Lists and related operations
- Dictionaries and related operations
- Sets and related operations

Module 3 - Functions, OOPs, Modules in Python

Goal:

In this module, you will learn how to create generic python scripts, address errors/exceptions in code, and finally, how to extract/filter content using regex.

Topics:

- Functions
- Function Parameters
- Global Variables
- Variable Scope and Returning Values
- Lambda Functions
- Object-Oriented Concepts
- Standard Libraries
- Modules Used in Python
- The Import Statements
- Module Search Path
- Package Installation Ways
- Errors and Exception Handling
- Handling Multiple Exceptions

Module 4 – Deep Dive into Apache Spark Framework

Goal:

In this module, you will learn Apache Spark Frameworks. You will get to know how to build the application.

Topics:

- Spark Components & It's Architecture
- Introduction to PySpark Shell
- Submitting PySpark Job
- Spark Web UI
- You are writing your first PySpark Job Using Jupyter Notebook.
- Data Ingestion using Sqoop

Module 5 - Playing with Spark RDDs

Goal:

In this module, you will learn how to create RDDs, ways to create RDDs, and different operations performed on RDDs.

Topics:

- Challenges in Existing Computing Methods
- Probable Solution & How RDD Solves the Problem
- What is RDD, It's Operations, Transformations & Actions?
- Data Loading and Saving Through RDDs
- Key-Value Pair RDDs
- Other Pair RDDs, Two Pair RDDs
- RDD Lineage
- RDD Persistence
- Word Count Program Using RDD Concepts
- RDD Partitioning & How It Helps Achieve Parallelization

Module 6 – Data Frames and Spark SQL

Goal:

In this module, you will learn about Data frames in Spark. You will also learn how to use Spark SQL.

Topics:

- Need for Spark SQL
- What is Spark SQL?
- Spark SQL Architecture
- SQL Context in Spark SQL
- Data Frames & Datasets
- Interoperating with RDDs
- JSON and Parquet File Formats
- Loading Data through Different Sources

Module 7 – Machine Learning using Spark MLlib

Goal:

In this module, you will learn what Machine Learning is and why it is used. You will learn the MLlib library of Spark used for Machine Learning.

Topics:

- Why Machine Learning?
- What is Machine Learning?
- Where is Machine Learning Used?
- Face Detection: USE CASE
- Different Types of Machine Learning Techniques
- Introduction to MLlib
- Features of MLlib and MLlib Tools
- Various ML algorithms supported by MLlib

Module 8 – Deep Dive into Spark MLlib

Goal:

In this module, you will learn different algorithms like Linear Regression, Logistic Regression, etc. for Machine Learning.

Topics:

- Supervised Learning
 - Linear Regression
 - Logistic Regression
 - Decision Tree
 - Random Forest
- Unsupervised Learning
 - K-Means Clustering & How It Works with MLlib
- Analysis of US Election Data using MLlib (K-Means)

Module 9 - Understanding Apache Kafka and Apache Flume

Goal:

You will learn what Kafka is and why it is used. You will also learn Flume, and its architecture.

Topics:

- Need for Kafka
- What is Kafka?
- Core Concepts of Kafka
- Kafka Architecture
- Where is Kafka Used?
- Understanding the Components of Kafka Cluster
- Configuring Kafka Cluster
- Kafka Producer and Consumer Java API
- The need for Apache Flume
- What is Apache Flume?
- Basic Flume Architecture
- Flume Sources
- Flume Sinks
- Flume Channels
- Flume Configuration
- Integrating Apache Flume and Apache Kafka

Module 10 - Apache Spark Streaming - Processing Multiple Batches**Goal:**

You will learn what Streaming is, how to work on Spark Streaming, and Spark Streaming Features.

Topics:

- Drawbacks in Existing Computing Methods
- Why is Streaming Necessary?
- What is Spark Streaming?
- Spark Streaming Features
- Spark Streaming Workflow
- How Uber Uses Streaming Data
- Streaming Context & DStreams
- Transformations on DStreams
- Describe Windowed Operators and Why it is Useful
- Important Windowed Operators

- Slice, Window and ReduceByWindow Operators
- Stateful Operators

Module 11 - Apache Spark Streaming – Data Sources

Goal:

You will learn Spark Streaming Data Sources. You will learn to create Streaming Applications.

Topics:

- Apache Spark Streaming: Data Sources
- Streaming Data Source Overview
- Apache Flume and Apache Kafka Data Sources
- Example: Using a Kafka Direct Data Source
- Perform Twitter Sentimental Analysis Using Spark Streaming

Module 12 – Implementing an End-to-End Project

Spark GraphX (Self-Paced)

Objective: In this module, you will be learning the key concepts of Spark GraphX programming concepts and operations, along with different GraphX algorithms and their implementations.

Topics:

- Introduction to Spark GraphX
- Information about a Graph
- GraphX Basic APIs and Operations
- Spark GraphX Algorithm
 - PageRank
 - Personalized PageRank
 - Triangle Count
 - Shortest Paths
 - Connected Components
 - Strongly Connected Components
 - Label Propagation
- Examples:
 - The Traveling Salesman problem
 - Minimum Spanning Trees



Python Django Training and Certification

Course Curriculum

About the Course

This Python for Web Development (Django) course is designed to train the Python Language participants to become a Python developer and use the Django web framework. This course will cover both basics and advanced concepts of like writing Python scripts, file operations in Python, working with Databases, creating Views, Templates, and REST APIs in Django.

The Python with Django Training is intended to make the learner an expert in Python programming. The learner will be able to write python code for some real problems, learn to use Python to communicates with databases, code for backends of websites, and parse data.

Course Outline

Module-1: Introduction to Python

Goal: Give brief idea of what Python is and touch on basics.

Topics:

- Get an overview of Python
- Learn about Interpreted Languages
- List the Advantages/Disadvantages of Python
- Explore Pydoc
- Start Python
- Discuss Interpreter PATH
- Use the Interpreter
- Run a Python Script
- Discuss Python Scripts on UNIX/Windows
- Explore Python Editors and IDEs

- Use Variables, Keywords, Built-in Functions, Strings, Different literals, Math operators and expressions, Writing to the screen, String formatting, Command line parameters and Flow Control.

Module-2: Sequences and File Operations

Goal: Learn different types of sequence structures, related operations and their usage. Also learn diverse ways of opening, reading, and writing to files.

Topics:

- Lists
- Tuples
- Indexing and Slicing
- Iterating through a sequence
- Functions for all sequences
- Using enumerate ()
- Operators and keywords for sequences
- The xrange () function
- www.edureka.co © 2019 Brain4ce Education Solutions Pvt. Ltd. All rights Reserved.
- List comprehensions
- Generator expressions
- Dictionaries and sets.
- Working with files
- Modes of opening a file
- File attributes
- File methods

Module-3: Deep Dive – Functions, Sorting, Errors and Exception, Regular Expressions and Packages

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

Topics:

- Functions
- Function Parameters
- Global variables
- Variable scope and Returning Values
- Sorting
- Alternate Keys
- Lambda Functions
- Sorting collections of collections
- Sorting dictionaries
- Sorting lists in place
- Errors and Exception Handling
- Handling multiple exceptions
- The standard exception hierarchy using Modules
- The Import statement
- Module search path
- Package installation ways Module Aliases and Regular Expressions

Module-4: Object Oriented Programming in Python

Goal: Understand the Object-Oriented Programming world in Python and use of standard libraries.

Topics:

- The sys Module
- Interpreter information
- STDIO
- Launching external programs
- Paths
- Directories and filenames
- Walking directory trees
- Math Function
- Random Numbers
- Dates and Times
- Zipped Archives
- Introduction to Python Classes

- Defining Classes
- Initializes
- Instance methods
- Properties
- Class methods and data
- Static methods
- Private methods and Inheritance

Module-5: Debugging, Databases and Project Skeletons

Goal: Learn how to debug, how to use databases and how a project skeleton looks like in Python.

Topics:

- Debugging
- Dealing with errors
- Using unit tests
- Project Skeleton
- Required packages
- Creating the Skeleton
- Project Directory
- Final Directory Structure
- www.edureka.co © 2019 Brain4ce Education Solutions Pvt. Ltd. All rights Reserved.
- Testing your set up
- Using the skeleton
- Creating a database with SQLite 3
- CRUD operations
- Creating a database object.

Module 6: *Introduction to Django web Framework*

Goal:

In this module, you will be introduced to Django and learn how to create views and perform URL mapping.

Topics:

- Web development
- Introduction to Django Web Framework
- Features of Django
- Installing Django
- MVC model
- HTTP concepts
- Views
- URL Mapping

Module 7: *Django Template Language and Forms*

Goal:

In this module, you will learn how to create Templates and Forms in Django

Topics:

- Django Template Language
- Utilities of Templates
- Creating Template Objects
- Tags, Variables and Filters
- Rendering Templates
- Template Inheritance
- Form Handling
- Form validation and Error Messages
- Form Display

Module 8: *Models and Dynamic Webpages*

Goal:

In this module, you will learn how to create Database Models and add Dynamic content to your webpages.

Topics:

- Django Models
- Model Fields
- Model Inheritance
- CRUD on DB
- Primary keys and the model
- Dynamic Webpages
- Toggle Hidden Content
- jQuery and AJAX integration

Module 9: *Serialization*

Goal:

In this module, you will learn how to serialize and deserialize data and create APIs

Topics:

- Serialization and Deserialization
- Django REST Framework
- Serializer class
- Model Serializers
- REST APIs

Module 10: *Parsing XML and JSON with Python*

Goal:

In this module, you will learn how to parse data stored in XML & JSON formats using Python

Topics:

- XML-RPC
- XML, parsing object to XML and back
- JSON, parsing object to JSON and back



Python Statistics for Data Science Course

Course Curriculum

About the Course

This course aims at making the learner familiar with the concepts of Predictive Analytics and Statistics.

- It talks about Statistics and its methods, which are the backend of Data Science.
- Machine learning employs different techniques and theories drawn from statistical & probabilistic fields. This course takes you through the fundamentals of Probability & Distribution.
- The course also enables you to gain knowledge of the essential Statistics algorithms such as Regression Modelling.
- In addition, this course provides hands-on experience in implementing these techniques using Python.

Course Outline

Module-1: Understanding the Data

Goal: In this module, you will be introduced to data and its types and accordingly sample data and derive meaningful information from the data in terms different statistical parameters.

Topics:

- Introduction to Data Types
- Numerical parameters to represent data
- Mean
- Mode
- Median
- Sensitivity
- Information Gain
- Entropy

- Statistical parameters to represent data

Module-2: Probability and its uses

Goal: In this module, you should learn about probability, interpret & solve real-life problems using probability. You will get to know the power of probability with Bayesian Inference.

Objectives: At the end of this Module, you should be able to:

- Understand rules of probability
- Learn about dependent and independent events
- Implement conditional, marginal and joint probability using Bayes Theorem
- Discuss probability distribution
- Explain Central Limit Theorem

Topics:

- Uses of probability
- Need of probability
- Bayesian Inference
- Density Concepts
- Normal Distribution Curve

Module-3: Statistical Inference

Goal: Draw inferences from present data and construct predictive models using different inferential parameters (as a constraint).

Topics:

- Point Estimation
- Confidence Margin
- Hypothesis Testing
- Levels of Hypothesis Testing

Module-4: Testing the Data

Goal: In this module, you should learn the different methods of testing the alternative hypothesis.

Topics:

- Parametric Test
- Parametric Test Types
- Non- Parametric Test
- Experimental Designing
- A/B testing

Module-5: Data Clustering

Goal: Get an introduction to Clustering as part of this Module which forms the basis for machine learning.

Topics:

- Association and Dependence
- Causation and Correlation
- Covariance
- Simpson's Paradox
- Clustering Techniques

Module-6: Regression Modelling

Goal: Learn the roots of Regression Modelling using statistics.

Topics:

- Logistic and Regression Techniques
- Problem of Collinearity
- WOE and IV
- Residual Analysis
- Heteroscedasticity
- Homoscedasticity



Python Scripting Certification Training

Course Curriculum

About the Course

Python Scripting allows programmers to build applications easily and rapidly. This course is an introduction to Python scripting, which focuses on the concepts of Python. It will help you to perform operations on variable types using Pycharm. You will learn the importance of Python in a real-time environment and will be able to develop applications based on Object-Oriented Programming concept. End of this course, you will be able to develop networking applications with suitable GUI

Module 1 – Introduction to Python and Scripting Concepts

Goal: In this module, you will learn the concepts of Python and Scripting

Topics:

- Get an overview of Python
- The companies using Python Other applications in which Python can be used
- Explore Python Frameworks and IDEs
- Concept of Scripting
- Difference between Scripting language and Programming language
- Installation of Python

Module 2 – Introduction to Data types and Conditional Statements

Goal: In this module, you will learn basic data types of Python and decision-making statements

Topics:

- Introduction to Identifiers
- What are the different variable types?
- Different operators

- Conditional statements
- Loops

Module-3: Deep Dive into Data types

Goal: In this module, you will learn the different types of sequence structures, related operations and their usage.

Topic:

- Numbers
- Strings and related operations
- Tuples and related operations
- Lists and related operations
- Dictionaries and related operations
- Sets and related operations

Module-4: Functions, OOPs, and Exception Handling

Goal: In this module, you will learn how to create and execute Functions and Object-Oriented Concepts. You will learn how to handle expected and unexpected exceptions using PyCharm.

Topics:

- Function Parameters
- Global variables
- Why Python is called Object-oriented language?
- Class and Objects
- Variable scope and Returning Values
- Python files I/O Functions
- Errors and Exception
- Handling multiple exceptions

Module-5: Network Programming, Multi-threading, and GUI Programming

Goal: In this module, you will learn Standard Libraries of Python, modules used in Python, how to connect your server with MySQL DB. In addition, learn about Socket programming and GUI programming.

Topics:

- Modules used in Python
- Python Boto ec2 module
- MySQL DB access
- Network programming
- Multi-threading
- GUI programming