



# Python Data Science Course Certification Training

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## About the Program

This Data Science with Python course enables you to master Data Science Analytics using Python. You will work on various python libraries such as SciPy, NumPy, Matplotlib, Lambda function, etc. You will master Data Science Analytics skills through real-world projects in multiple domains such as retail, e-commerce, finance, etc.

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## About Intellipaat

Intellipaat is one of the leading e-learning training providers with more than 600,000 learners across 55+ countries. We are on a mission to democratize education as we believe that everyone has the right to quality education.

Our courses are delivered by subject matter experts from top MNCs, and our world-class pedagogy enables learners to quickly learn difficult topics in no time. Our 24/7 technical support and career services will help them jump-start their careers in their dream companies.

# Key Features



**39 HRS INSTRUCTOR-LED  
TRAINING**



**24 HRS SELF-PACED TRAINING**



**50 HRS REAL-TIME  
PROJECT WORK**



**LIFETIME ACCESS**



**24/7 TECHNICAL SUPPORT**



**INDUSTRY-RECOGNIZED  
CERTIFICATION**



**JOB ASSISTANCE THROUGH  
80+ CORPORATE TIE-UPS**



**FLEXIBLE SCHEDULING**

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# Career Support



## SESSIONS WITH INDUSTRY MENTORS

Attend sessions from top industry experts and get guidance on how to boost your career growth



## MOCK INTERVIEWS

Mock interviews to make you prepare for cracking interviews by top employers



## GUARANTEED INTERVIEWS & JOB SUPPORT

Get interviewed by our 400+ hiring partners



## RESUME PREPARATION

Get assistance in creating a world-class resume from our career services team



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## Why take up this course?

- Python's design and libraries provide 10 times productivity compared to C, C++, or Java
- A Senior Python Developer in the United States can earn US\$102,000 – Indeed

Python is one of the best programming languages that is used for the domain of Data Science. Intellipaate is offering the definitive Python for Data Science course for learning Python coding and running it on various operating systems, such as Windows, Linux, and Mac, thus making it one of the highly versatile languages for the domain of Data Analytics.

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## Who should take up this course?

- BI Managers and Project Managers
- Software Developers and ETL Professionals
- Analytics Professionals
- Big Data Professionals
- Those who are wanting to have a career in Python

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# Program Curriculum

## Python Data Science Training Course Content

- **INTRODUCTION TO DATA SCIENCE USING PYTHON**

- 1.1 What is Data Science, and what does a Data Scientist do?
- 1.2 Various examples of Data Science in the industries
- 1.3 How Python is deployed for Data Science applications
- 1.4 Various steps in the Data Science process such as data wrangling, data exploration, and selecting the model
- 1.5 Introduction to Python programming language
- 1.6 Important Python features, how Python is different from other programming languages
- 1.7 Python installation and Anaconda Python distribution for Windows, Linux, and Mac
- 1.8 How to run a sample Python script and the Python IDE working mechanism
- 1.9 Running some Python basic commands
- 1.10 Python variables, data types, and keywords

***Hands-on Exercise** – Installing Python Anaconda for the Windows, Linux, and Mac*

- **PYTHON BASIC CONSTRUCTS**

- 2.1 Introduction to a basic construct in Python
- 2.2 Understanding indentation such as tabs and spaces
- 2.3 Python built-in data types
- 2.4 Basic operators in Python
- 2.5 Loop and control statements such as break, if, for, continue, else, range(), and more

***Hands-on Exercise** – Write your first Python program, write a Python function (with and without parameters), use Lambda expression, write a class, create a member function and a variable, create an object, and write a for loop to print all odd numbers*

- **MATHS FOR DS: STATISTICS & PROBABILITY**

3.1 Central tendency

3.2 Variability

3.3 Hypothesis testing

3.4 ANOVA

3.5 Correlation

3.6 Regression

3.7 Probability definitions and notations

3.8 Joint probabilities

3.9 The sum rule, conditional probability, and the product rule

3.10 The Bayes theorem

**Hands-on Exercise** – Analyze both categorical data and quantitative data and focus on specific case studies to help solidify a week's statistical concepts

- **OOPS IN PYTHON**

4.1 Understanding the OOP paradigm such as encapsulation, inheritance, polymorphism, and abstraction

4.2 What are access modifiers, instances, and class members?

4.3 Classes and objects

4.4 Function parameters and return type functions

4.5 Lambda expressions

- **NUMPY FOR MATHEMATICAL COMPUTING**

5.1 Introduction to mathematical computing in Python

5.2 What are arrays and matrices? Array indexing, array math, inspecting a NumPy array, and NumPy array manipulation

**Hands-on Exercise:** Import a NumPy module, create an array using ND-array, calculate standard deviation on the array of numbers, and calculate correlation between two variables

- **SCIPY FOR SCIENTIFIC COMPUTING**



6.1 Introduction to SciPy and building on top of NumPy

6.2 What are the characteristics of SciPy?

6.3 Various sub-packages of SciPy, such as signal, integrate, fftpack, cluster, optimize, stats, and more, and the Bayes Theorem with SciPy

***Hands-on Exercise:*** *Importing SciPy and applying the Bayes theorem on the given dataset*

- **DATA MANIPULATION**

7.1 What is a data Manipulation? Using the Pandas library

7.2 NumPy dependency of the Pandas library

7.3 Series object in Pandas

7.4 DataFrames in Pandas

7.5 Loading and handling data with Pandas

7.6 How to merge data objects?

7.7 Concatenation and various types of joins on data objects and exploring a dataset

***Hands-on Exercise:*** *Data manipulation with Pandas by handling tabular datasets that include variable types such as float, integer, double, and others and cleaning a dataset, manipulating it, and visualizing the same*

- **DATA VISUALIZATION WITH MATPLOTLIB**

8.1 Introduction to Matplotlib

8.2 Using Matplotlib for plotting graphs and charts such as scatter, bar, pie, line, histogram, and more

8.3 Matplotlib API

***Hands-on Exercise:*** *Deploying Matplotlib for creating pie, scatter, and line charts, histogram, and subplots and Pandas built-in data visualization*

- **MACHINE LEARNING USING PYTHON**

9.1 Revision of topics in Python (Pandas, Matplotlib, NumPy, and Scikit-Learn)

9.2 Introduction to Machine Learning

9.3 Need of Machine Learning

9.4 Types of Machine Learning and the workflow of it

9.5 Uses cases in Machine Learning and its various algorithms

9.6 What is supervised learning?

9.7 What is unsupervised learning?

**Hands-on Exercise:** Demo on ML algorithms

- **SUPERVISED LEARNING**

10.1 What is linear regression?

10.2 Step-by-step calculation of linear regression

10.3 Linear regression in Python

10.4 Logistic regression

10.5 What is classification?

10.6 Decision tree, confusion matrix, random forest, Naïve Bayes classifier (self-paced), support vector machine (self-paced), and XGBoost (self-paced)

**Hands-on Exercise:** Using Python library Scikit-Learn for coming up with a random forest algorithm to implement supervised learning

- **UNSUPERVISED LEARNING**

11.1 Introduction to unsupervised learning

11.2 Use cases of unsupervised learning

11.3 What is clustering?

11.4 Types of clustering: Exclusive clustering, Overlapping clustering, and hierarchical clustering (self-paced)

11.5 What is k-means clustering?

11.6 Step-by-step calculation of k-means algorithm

11.7 Association rule mining, market basket analysis, measures in association rule mining: Support, confidence, and lift (self-paced)

11.8 The Apriori algorithm

**Hands-on Exercise:** Setting up the Jupyter Notebook environment, loading of a dataset in Jupyter, algorithms in the Scikit-Learn package for performing Machine Learning techniques and training a model to search a grid, practicing k-means using SciKit, and practicing Apriori

- **PYTHON INTEGRATION WITH SPARK (SELF-PACED)**

12.1 Introduction to PySpark

12.2 Who uses PySpark and the need of Spark with Python

- 12.3 PySpark installation
- 12.4 PySpark fundamentals
- 12.5 Advantage over MapReduce
- 12.6 Use cases of PySpark and their demo

**Hands-on Exercise:** Demonstrating loops, conditional statements, tuples (related operations, properties, list, etc.), lists (operations, related properties, etc.), sets (properties, associated operations, etc.), and dictionaries (operations, related properties, etc.)

- **DIMENSIONALITY REDUCTION**

- 13.1 Introduction to dimensionality
- 13.2 Why dimensionality reduction?
- 13.3 PCA
- 13.4 Factor Analysis
- 13.5 LDA

**Hands-on Exercise:** Practicing dimensionality reduction techniques: PCA, factor analysis, t-SNE, random forest, and the forward and backward feature

- **TIME SERIES FORECASTING**

- 14.1 White noise
- 14.2 AR model
- 14.3 MA model
- 14.4 ARMA model
- 14.5 ARIMA model
- 14.6 Stationarity
- 14.7 ACF and PACF

**Hands-on Exercise:** Create an AR model, an MA model, and an ARMA model

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# Project Work

## Data Science with Python Projects

- Analyzing the Trends of COVID-19 with Python
- Analyzing the Naming Trends Using Python
- Performing Analysis on Customer Churn Dataset
- Netflix Recommendation System
- Python Web Scraping for Data Science
- OOPS in Python
- Working with NumPy
- Visualizing and Analyzing the Customer Churn Dataset Using Python
- Building Models with the Help of Machine Learning Algorithms

# Certification

After the completion of the course, you will get a certificate from IntelliPaat.



## CERTIFICATE OF COMPLETION

This certificate is awarded to

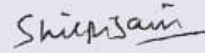
Your Name

Who has successfully completed

**Course Name**

Fulfilling all the requirements stipulated by IntelliPaat to achieve professional excellence.

Issued Date: Month XX, XXXX



Mrs. Shilpi Jain  
Director,  
intellipaate Software Solutions Pvt. Ltd.

VERIFIED  
CERTIFICATE

Certificate ID #94658291

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## Success Stories



### **Kevin K Wada**

Thank you very much for your top-class service. A special mention should be made for your patience in listening to my queries and giving me a solution, which was exactly what I was looking for. I am giving you a 10 on

10!



### **Sampson Basoah**

The Intellipaate team helped me in selecting the perfect course that suits my profile. The whole course was practically oriented, and the trainers are always ready to answer any question. I found this course to be impactful. Thank you.



### **Sugandha Sinha**

Intellipaate's course instructors were excellent and well-versed with their concepts. Support solved all my queries within the promised 24 hours. They explained all topics and concepts well and the course material was updated and included videos, exercises too. I would highly recommend Intellipaate to those who wish to excel in the IT field.



### **Vishal Pentakota**

The best part of this course is the series of hands-on demonstrations that the trainer performed. Not only did he explain each concept theoretically, but he also implemented all those concepts practically. Great job! A must go for beginners.



### **Haris Naeem**

Great course! I had a really good experience with this platform as it trained me well. I completed my Python training with this institute, where I was provided with extremely good training and good support too. Further, the course instructors were well-educated who explained all the topics with great enthusiasm.

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## CONTACT US

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If you have any further queries or just want to have a conversation with us, then do call us.

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