

# **Python for Data Analytics Course**

Unlock your potentials, become proficient in python

#### **COURSE BROCHURE**



Step into the world of data science with one of the most powerful and versatile programming languages, Python. This hands-on Python for Data Analytics course is designed to equip you with practical skills to analyze, manipulate, and visualize data with confidence. Whether you're a complete beginner or seeking to solidify your technical foundation, this course empowers you to solve real-world data challenges using tools that top organizations rely on daily.

You'll master essential libraries like Pandas, NumPy, Matplotlib, and Seaborn, and build practical projects that take you from learning syntax to making data-driven decisions.

COURSE OVERVIEW	
Delivery Method:	Instructor Led
Duration:	6 Weeks
Internship Duration:	2 Weeks
Skill Level:	Beginner - Advanced
Prerequisite:	Basic Computer Knowledge
Certificate:	Earn a prestigeous certificate upon completion
Comprehensive Curriculum:	Covering tools like Python, GitHub, ChatGPT, and more
Hands-On Projects:	Engage in over 5 industry-standard projects across various sectors.



#### What Makes This Course Different?

- Guided by Experience: Learn from a passionate data professional with real-world expertise applying Python to business, analytics, and research problems.
- Practical, Hands-On Learning: You won't just learn Python, you'll use it. Through realworld datasets and business scenarios, you'll build confidence by working on tasks that mirror industry needs.
- End-to-End Skillset: Master core Python programming along with the most in-demand libraries for data analysis, visualization, and statistical modeling, and get introduced to automation and simple machine learning workflows.
- **Career-Ready Certification:** Earn a respected certificate that proves your Python data skills to potential employers and helps you stand out in a competitive job market.
- **Designed for You:** Whether you're a student, professional, or career switcher, this course is tailored to meet you where you are with structured, easy-to-follow content and flexible learning options.



# **Python for Data Analytics Course Introduction**

#### Why Python for Data Analytics?

Python is the #1 language of choice for data professionals due to its simplicity, flexibility, and vast ecosystem of tools. It's used in virtually every industry, from fintech and healthcare to e-commerce and climate science. Companies like Google, Netflix, Amazon, and NASA rely on Python to draw insights, build models, and drive innovation.



According to Statista, Python ranks consistently among the top programming languages globally, and its usage in data science has surged by over 27% in the last 5 years alone. From automation to machine learning, Python enables organizations to extract value from complex data and stay competitive in today's fast-paced digital world.

#### A Growing Market, Global Demand

As data continues to explode in volume and complexity, organizations are searching for professionals who can harness its power. The global data science platform market is projected to grow from USD 95.3 billion in 2024 to USD 395.8 billion by 2032 (CAGR of 18.6%), driven by demand for data-driven decision-making and predictive insights.

In the U.S., entry-level Python data analysts and scientists earn between \$70,000 and \$95,000 annually, while senior roles command well over \$120,000. Across Europe, Python skills are among the top five requirements for data-related roles, with remote and freelance opportunities expanding rapidly.

Whether you aim to work locally or remotely with global teams, your ability to analyze and model data using Python will place you in high demand.

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## Python for Data Analytics Course More Info About the Course

#### **Understanding Data Science**

Data Science is the art and science of extracting actionable insights from data to drive business and societal impact. It involves collecting, cleaning, exploring, and modeling data to uncover patterns, predict outcomes, and support decision-making. At its core, data science combines programming, statistics, and domain knowledge to solve complex problems.

In this course, you'll not only learn how to code in Python but also how to apply data science principles to real-world scenarios through:

- Exploratory Data Analysis (EDA): Understand datasets, detect patterns, and identify anomalies.
- Data Wrangling & Cleaning: Transform messy, raw data into clean, structured formats ready for analysis.
- Statistical Analysis: Use Python to perform descriptive and inferential statistics to guide insights.
- Predictive Modeling: Build simple machine learning models to forecast trends and outcomes.
- Data Visualization: Translate insights into compelling visuals using libraries like Matplotlib and Seaborn.

#### **Skills and Tools You'll Acquire**

Throughout this program, you'll develop a balanced blend of technical and analytical skills that are in high demand across industries:

#### **Technical and Analytical Tools:**

- Python Programming: The foundation of modern data science workflows
- Pandas & NumPy: For efficient data manipulation and numerical operations



- Matplotlib & Seaborn: For creating insightful visualizations
- Scikit-learn: For building and evaluating machine learning models
- Jupyter Notebooks: For interactive coding and storytelling with data
- GitHub: For version control and collaboration on coding projects
- ChatGPT / AI Tools: For ideation, code generation, and productivity boosts.

Soft Skills:

- Analytical Thinking: Break down complex datasets and identify what truly matters
- **Problem-Solving:** Develop data-driven solutions to real business challenges
- **Data Storytelling:** Present insights with clarity and impact through visual narratives
- **Communication:** Translate technical analysis into insights stakeholders can understand
- Business Context Awareness: Align data work with strategic business objectives

These versatile skills will equip you to add value in various domains, from business and healthcare to finance and technology, helping organizations make smarter, faster, and more impactful decisions.

#### Your Pathway To Success

Upon completing this course, you'll be ready to pursue or advance a career in Data Science with the following benefits:

- Hands-On Experience: Build a solid portfolio through real-world data analytics projects
- **Certification:** Earn a professional certificate from Brufellas Tech Solutions Limited
- **Career Support:** Receive guidance on CV building, LinkedIn optimization, interview prep, and job search strategies
- Global Opportunities: Tap into remote and international data analytics and data science roles across diverse industries
- Professional Network: Join a thriving community of data professionals, mentors, and aspiring scientists



## Python for Data Analytics Curriculum Introduction to Python for Data Analytics



#### Module 1: Building Your Python Foundation for Data Analytics

In this module, you'll begin your journey by learning Python, the most widely used programming language in the field of data science. You'll master the core programming concepts that serve as the building blocks for working with data, including variables, loops, conditionals, functions, and data structures.

From there, you'll transition into working with key Python libraries such as:

- NumPy: for numerical computing and matrix operations
- Pandas: for data manipulation and structured data analysis
- Matplotlib: for creating basic plots and data visualizations
- Seaborn: for creating advanced statistical visualizations with ease and elegance.

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Through hands-on coding exercises, you'll work with real-world datasets to build your practical skills. You'll learn how to clean, transform, and explore data to uncover meaningful insights, preparing you to apply Python confidently in professional data workflows.

By the end of this module, you'll be comfortable writing Python code for data manipulation and visualization, setting a solid foundation for advanced analysis and modeling in later stages.

#### Module 2: Applying Python to Real-World Data Analytics Problems

Now that you've mastered the basics, this module takes you deeper into the world of data analytics, data science and machine learning. You'll learn to apply Python to solve actual business problems using real datasets.

Key topics in this module include:

- Exploratory Data Analysis (EDA): Identify trends, relationships, and anomalies in data
- Statistical Modeling & Hypothesis Testing: Draw conclusions from data using statistical techniques
- Supervised Learning with Scikit-learn: Build, evaluate, and interpret predictive models
- **Model Evaluation:** Use metrics like accuracy, precision, recall, and AUC to measure model performance
- Data Visualization: Communicate insights effectively through advanced charting and dashboards

This module emphasizes practical, hands-on experience, guiding you through the end-toend process of solving data science challenges. You'll gain exposure to commonly used machine learning algorithms and develop the skills to create models that predict outcomes and generate actionable business insights.



## Python for Data Anlytics Curriculum Python for Data Analytics Course



#### **Module 3:** Introduction to Python for Data Analytics

Learn the foundations of Python programming and how it applies to data analytics:

- Understand Python syntax, variables, and data types
- Write conditional statements and loops
- Create and use functions
- Explore Jupyter Notebooks for writing and documenting code
- Apply Python to basic data-driven problems



#### Module 4: Data Preparation and Cleaning with Python

Prepare messy, real-world data for effective analysis and modeling:

- Load datasets using Pandas
- Handle missing data and duplicates
- Perform data type conversions and formatting
- Clean inconsistent and noisy data
- Use NumPy for numerical operations and array manipulation

#### Module 5: Exploratory Data Analysis (EDA)

Discover patterns and insights from raw datasets:

- Apply descriptive statistics to summarize data
- Use Pandas for group-by operations and aggregations
- Visualize distributions, trends, and relationships
- Identify outliers and anomalies

#### Module 6: Data Visualization with Python

Communicate findings using clear and compelling visuals:

- Create basic plots with Matplotlib (bar, line, scatter, etc.)
- Build advanced plots with Seaborn (boxplots, heatmaps, pairplots)
- Customize chart aesthetics and labels
- Select appropriate chart types for different data scenarios
- Tell a story with your visualizations

#### Module 7: Introduction to Machine Learning with Python

Build your first predictive models using scikit-learn:

- Understand the basics of supervised and unsupervised learning
- Implement regression and classification models
- Use k-means clustering for unsupervised learning
- Split data into training and testing sets
- Evaluate models using metrics like accuracy and confusion matrix

#### **Module 8:** Feature Engineering for Machine Learning

Enhance model performance by transforming your dataset:

- Handle categorical data (label encoding, one-hot encoding)
- Scale and normalize numerical data
- Create new features from existing ones
- Reduce dimensionality with techniques like PCA
- Select the most relevant features for modeling

#### Module 9: Model Evaluation and Tuning

Optimize model accuracy and prevent overfitting:

- Use cross-validation to validate model stability
- Evaluate models with precision, recall, and F1 score
- Tune hyperparameters with GridSearchCV and RandomizedSearchCV
- Interpret confusion matrix and classification reports
- Compare model performance and choose the best on



#### Module 10: Advanced Machine Learning Techniques

Explore more powerful algorithms for complex problems:

- Train ensemble models like Random Forest and Gradient Boosting
- Implement Support Vector Machines (SVM)
- Get introduced to basic Neural Networks
- Solve advanced problems like text classification or image recognition
- Understand when to use each technique for different data types

#### **Module 11:** Data Visualization & Presentation Techniques with Power BI/ Tableau, and PowerPoint

Turn data insights into impactful presentations:

- Create dashboards with Power BI or Tableau
- Select color schemes, chart types, and layout for storytelling
- Build interactive visuals and drill-down reports
- Combine visuals and narrative in PowerPoint
- Present insights to technical and non-technical audiences

#### Module 12: Real-World Project and Portfolio Building

Apply everything you've learned to a capstone project:

- Define a real-world data science problem
- Collect, clean, and explore data
- Build and evaluate predictive models
- Visualize findings and communicate results
- Document your work and showcase it in a portfolio



#### Python for Data Analytics Curriculum Problem Solving



#### **Module 13: Problem Solving with Python**

Develop a strategic mindset for solving real-world business and analytical problems using Python and data science techniques.

- Understand the problem-solving lifecycle in data analytics/ data science
- Define clear business or analytical questions from vague problems
- Translate business challenges into data questions and measurable goals
- Choose the right tools, models, and techniques to approach problems
- Break down complex problems into actionable steps
- Practice solving real business problems using case studies and datasets
- Use Python to test hypotheses, analyze scenarios, and simulate outcomes
- Communicate your problem-solving approach, findings, and recommendations





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