

Certified Entry-Level Data Analyst with Python (PCED)

Duration: 3 Days

Course Description:

The Certified Entry-Level Data Analyst with Python (PCED) course equips learners with essential data analysis skills using Python, enabling them to effectively interpret and analyze data in real-world scenarios.

Target Audience:

The Certified Entry-Level Data Analyst with Python (PCED) course equips learners with essential Python skills for data analysis, catering to beginners and professionals looking to enhance their analytical capabilities.

- Aspiring Data Analysts
- Business Analysts
- Marketing Analysts
- Financial Analysts
- IT Professionals transitioning to Data Analysis
- Recent Graduates in STEM fields
- Data Enthusiasts and Hobbyists
- Professionals in roles requiring data-driven decision-making
- Employees in organizations leveraging data analytics services
- Students pursuing data-centric programs

Prerequisites:

To successfully undertake the Certified Entry-Level Data Analyst with Python (PCED) course, we recommend that students have the following foundational knowledge:

- Basic understanding of data analysis concepts
- Familiarity with spreadsheets and data manipulation techniques
- Some experience with programming (prior exposure to Python is beneficial but not mandatory)
- Willingness to learn and explore new concepts in data analytics

These prerequisites are designed to ensure that you have a solid starting point for your learning journey in data analysis with Python. We encourage all learners, regardless of their background, to pursue this course with curiosity and enthusiasm.

Course Objectives:

- Understand the fundamentals of data analysis and its significance in various industries.
- Gain proficiency in Python programming, focusing on libraries such as Pandas and NumPy.
- Perform data manipulation and cleaning to prepare datasets for analysis.
- Visualize data effectively using Python's Matplotlib and Seaborn libraries.
- Analyze datasets to extract meaningful insights and support decision-making.
- Implement data collection techniques and understand database fundamentals.
- Develop skills in presenting data findings clearly and concisely.
- Recognize the ethical considerations surrounding data privacy and security.
- Work on practical projects to solidify understanding and demonstrate competencies.
- Prepare for further certifications and advanced courses in data analysis and related fields.

Course Outlines:

1. Data Acquisition and Preprocessing

- Types and sources of data (CSV, Excel, JSON, APIs, scraping)
- Ethical and legal considerations (data privacy, GDPR)
- Web scraping basics using requests and BeautifulSoup
- Reading and writing files with pandas
- Handling missing values and duplicates
- Data type conversion and formatting
- Normalization and standardization
- Encoding categorical data (Label, One-Hot)
- Feature extraction basics

2. Python Programming Essentials

- Python syntax, variables, and data types
- Lists, dictionaries, tuples, and sets
- Control structures: conditionals and loops
- Functions and scope
- File handling (read/write)
- Importing modules and working with packages

3. SQL and Database Integration

- SQL basics: SELECT, WHERE, ORDER BY, GROUP BY, HAVING
- Joins: INNER JOIN and LEFT JOIN
- Using SQLite: creating tables, inserting and retrieving data
- Connecting Python to SQLite using sqlite3
- Querying and transforming database results in pandas

4. Statistical Analysis

- Descriptive statistics: mean, median, mode, std dev, variance
- Visualizing distributions
- Correlation and covariance
- Introduction to inferential statistics
- Simple linear regression and interpretation

5. Data Analysis with Pandas

- Loading and exploring datasets
- Filtering, grouping, and sorting data
- Merging and joining datasets
- Aggregation functions and pivot tables
- Exploratory Data Analysis (EDA)

6. Data Modeling

- Introduction to machine learning workflow
- Train-test split using scikit-learn
- Building a linear regression model
- Evaluating model performance (MSE, R²)

7. Data Visualization

Subtopics:

- Plotting with matplotlib and seaborn
 - Bar chart, histogram, scatter plot, boxplot
 - Correlation heatmap
- Visual storytelling and choosing the right chart
- Optional: Intro to streamlit for dashboard creation

8. Capstone Project & PCED Exam Preparation

Subtopics:

- End-to-end workflow: data acquisition → cleaning → analysis → modeling → visualization
- Presenting insights
- PCED certification exam overview and readiness tips
- Mock quiz and discussion

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