The Modern Excel
Python Programming

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Programming in Excel – Python

A customizable course according to your company's requirements.

Duration

8 hours

Objectives

1) Introduction to Python and Excel Integration
2) Reading and Writing Excel Files with Python
3) Data Analysis and Visualization in Excel with Python
4) Advanced Excel Automation and Integration
5) Real-world Applications and Case Studies
6) Error Handling, Optimization, and Best Practices
7) Python and Excel Project Development

The course is totally hands-on. No theory! No PowerPoint presentation. Throughout the course you practice the skills on Excel. The exercises are based on real life data scenarios.

Pre-requisite

You must have worked on Excel for at least 12 months.

Outline of Python Programming Course:

1. Introduction to Python and Excel Integration

1.1 Overview of Python in Excel

- Understanding the benefits of Python integration with Excel
- Overview of different tools and libraries (openpyxl, xlrd, xlwt, pandas)

1.2 Setting Up the Python Environment for Excel

- Installing Python and Jupyter Notebooks
- Introduction to popular Python IDEs (Integrated Development Environments)

1.3 Basic Python Syntax and Data Types

- Python variables, data types, and basic operations
- Introduction to Python data structures (lists, tuples, dictionaries)

2. Reading and Writing Excel Files with Python

2.1 Reading Excel Files

- Using openpyxl and pandas to read Excel files
- Handling different Excel formats and sheet manipulations

2.2 Writing to Excel Files

- Exporting data from Python to Excel
- Creating and modifying Excel sheets programmatically

2.3 Excel Automation with Python

- Automating repetitive Excel tasks using Python scripts
- Building reusable functions for Excel data manipulation

3. Data Analysis and Visualization in Excel with Python

3.1 Data Analysis with pandas

- Utilizing pandas for data manipulation and analysis
- Filtering, sorting, and aggregating data using Python

3.2 Excel Charts and Graphs with Matplotlib and Seaborn

- Creating dynamic visualizations using Python libraries
- Embedding charts in Excel using Python

3.3 Interactive Dashboards with Plotly and Excel

- Building interactive dashboards with Plotly
- Integrating interactive components into Excel

4. Advanced Excel Automation and Integration

4.1 Advanced Data Processing in Excel with Python

- Implementing advanced data processing techniques
- Handling large datasets efficiently

4.2 Excel Formulas and Calculations with Python

- Using Python to execute complex calculations in Excel
- Dynamically updating Excel formulas using Python

4.3 Excel Macros and VBA Automation

- Integrating Python with Excel VBA for advanced automation
- Enhancing Excel functionality with Python scripts

5. Real-world Applications and Case Studies

5.1 Python for Financial Modeling in Excel

- Introduction to web scraping techniques.
- Using Excel to scrape data from websites.

5.2 Python for Data Cleaning and Transformation

- Automation with external databases.
- Connecting to APIs and fetching data.

5.3 Python for Excel Reporting and Dashboards

- Creating advanced reports and dashboards in Excel with Python

- Integrating Python-powered insights into Excel reports

6. Error Handling, Optimization, and Best Practices

6.1 Error Handling in Python for Excel

- Strategies for handling errors and exceptions in Python scripts
- Debugging techniques for Excel integration

6.2 Optimizing Python Code for Excel

- Performance optimization tips for Python scripts in Excel
- Using profiling tools for code optimization

6.3 Best Practices for Python-Excel Integration

- Guidelines for writing maintainable and efficient Python code for Excel
- Ensuring compatibility and scalability in Excel projects

7. Python and Excel Project Development

7.1 Collaborative Project Development

- Applying all learned concepts to create a sample report.
- Addressing common challenges in report design

7.2 Deployment and Integration Strategies

- Engaging with expert speaker.
- Gaining insights into advanced scripting techniques.

7.3 Q&A and Troubleshooting

- Addressing common issues and answering participant questions
- Troubleshooting Python and Excel integration challenges