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Python Automation Mastery for Shared Services

FA-0328

Agentic & Generative AI · Software Development · Data & Analytics · Automation, RPA & Power Platform

Introduction

Design, Script, and Integrate Reliable Automation That Scales Across the Enterprise

Shared Services and Global Business Services functions are under constant pressure to deliver faster cycles, tighter controls, and higher accuracy with fewer manual touchpoints. Python has moved from being a "nice-to-have" skill to a practical automation engine inside finance, operations, and reporting teams. What differentiates high-performing teams today is not their ability to visualize data, but their ability to automate recurring processes, integrate systems, validate outputs, and deploy maintainable scripts that run reliably month after month.

This advanced course builds directly on prior Python fundamentals and shifts the focus decisively toward **automation, scripting, integration, and operational reliability**. Participants will work on patterns aligned with real submitted project themes—process automation, Excel integration, reconciliation support, and repeatable reporting workflows.

The course is led by an instructor with over 30 years of industry experience, bringing real enterprise constraints, audit expectations, and scalability considerations into the classroom. The emphasis is on industry-demanded execution standards, not academic exercises.

Learning outcomes

By the end of this course, participants will be able to:

- Design and implement automation scripts for recurring finance and operations tasks
- Structure maintainable, reusable Python scripts aligned with enterprise standards
- Automate Excel-driven workflows without disrupting formatting and controls
- Implement data validation, reconciliation, and exception-handling logic
- Integrate Python with files, folders, and external data sources

- Build logging, traceability, and audit-friendly automation processes
- Prepare scripts for scheduled and unattended execution
- Use ChatGPT responsibly to accelerate scripting, debugging, and refactoring

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Prerequisites

- Prior Python fundamentals training or equivalent hands-on experience
- Working knowledge of variables, loops, conditionals, functions, and basic data structures
- Familiarity with Excel-based operational or finance workflows
- Basic understanding of reporting or close-cycle processes
- No prior data science or visualization background required

Training outline

1. 1. Python’s Role in Enterprise Automation

Python as a process automation tool in Shared Services and GBS

- Automation vs manual workflows
- Automation vs macros vs low-code platforms
- Identifying high-impact automation candidates

Characteristics of enterprise-ready scripts

- Reliability
- Maintainability
- Traceability
- Handover readiness

- Aligning automation with internal controls and audit expectations

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2. 2. Writing Production-Ready Python Scripts

Script structure and modular design

- Main execution blocks
- Modular functions
- Separation of logic and configuration

Clean coding standards for enterprise environments

- Naming conventions

- Documentation and inline comments
- Avoiding hard-coded values

Error handling and defensive programming

- Try-except structures
- Handling missing files and corrupted data
- Graceful failure and fallback logic

- Input validation and data integrity checks

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3. 3. File and Folder Automation

Working with file systems programmatically

- Navigating directories
- Filtering and selecting files

Automating repetitive file operations

- Renaming
- Moving and archiving
- Consolidating multiple files

Batch processing patterns

- Looping through structured folders
- Handling inconsistent file naming

- Designing scripts for evolving folder structures

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4. 4. Advanced Excel Automation for Finance and Operations

Reading and writing Excel files programmatically

- Working with multiple sheets
- Handling structured templates

- Updating existing reports without breaking formatting

Automating reconciliations and variance checks

- Cross-sheet validation
- Comparing datasets

Generating standardized output files

- Controlled templates
- Naming conventions

- Validating numeric accuracy and flagging anomalies

- Ensuring audit traceability in automated Excel workflows

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5. 5. Data Transformation for Automation Pipelines

Cleaning and standardizing operational datasets

- Handling missing and inconsistent values
- Data type enforcement

- Structuring raw exports for downstream processing
- Merging and joining datasets from multiple sources
- Applying business rules programmatically
- Preparing clean outputs for reporting systems or stakeholders

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6. 6. Process Automation Scenarios (Aligned with Project Themes)

Automating recurring monthly close tasks

- Data consolidation
- Variance analysis preparation

- Automating standard management reporting packs
- Automating data validation prior to system uploads
- Building exception reporting scripts

  Creating repeatable end-to-end workflows

  - Input ingestion
  - Transformation
  - Validation
  - Output generation

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7. 7. Logging, Monitoring, and Control Mechanisms

Implementing structured logging

- Tracking execution steps
- Recording warnings and errors

- Creating execution summaries
- Designing scripts for audit visibility
- Basic monitoring concepts for unattended execution

- Managing version control for automation scripts

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8. 8. Integration and Interoperability

Integrating Python with:

- CSV and structured data files
- Excel-based systems
- Shared drives and network locations

Basic API integration concepts

- Sending and receiving data
- Authentication fundamentals

- Triggering and chaining automation tasks
- Interfacing Python outputs with downstream enterprise tools

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9. 9. Operationalizing and Scheduling Automation

- Organizing project folders for team environments
- Dependency and environment management
- Configuration files and parameter-driven scripts

Preparing scripts for scheduled execution

- Task schedulers
- Batch execution concepts

- Managing changes and enhancements over time
- Handover documentation standards

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10. 10. Using ChatGPT as a Development Assistant

- Translating business process descriptions into automation logic
- Generating initial script drafts
- Refactoring legacy scripts for clarity and maintainability
- Debugging common automation errors
- Validating logic and identifying edge cases
- Responsible and compliant AI usage in enterprise environments

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