Scripting for Data Pipelines Training Course

Professional Development Training Course Outline

Category	Business Intelligence	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

In today’s data-driven economy, organizations depend heavily on efficient data pipelines to support analytics, machine learning, and real-time decision-making. Scripting for Data Pipelines Training Course equips professionals with cutting-edge skills in automation, data integration, ETL scripting, and workflow orchestration. Participants will gain hands-on experience in writing scalable, efficient scripts using modern programming practices, enabling seamless data movement across systems. The course emphasizes high-demand competencies such as data engineering, cloud integration, pipeline automation, and performance optimization, ensuring learners remain competitive in the evolving digital landscape.

The training focuses on practical implementation of scripting techniques for building robust, fault-tolerant pipelines that handle large-scale data processing. Learners will explore trending tools and methodologies including Python scripting, API integration, data transformation, batch and stream processing, and DevOps practices. By the end of the course, participants will be equipped to design, deploy, and maintain automated data workflows, improving organizational efficiency, scalability, and data reliability while aligning with modern data architecture standards.

Programme Curriculum

Scripting for Data Pipelines Training Course

Introduction

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Course Objectives

- Develop advanced scripting skills for automated data pipelines
- Master ETL (Extract, Transform, Load) processes using modern tools
- Implement scalable and efficient data workflow automation
- Integrate APIs and external data sources seamlessly
- Optimize data pipeline performance and reliability
- Apply data validation and error handling techniques
- Utilize cloud-based data pipeline solutions
- Automate batch and real-time data processing workflows
- Implement version control and CI/CD in data scripting
- Enhance data security and compliance in pipelines
- Build reusable and modular scripting frameworks
- Monitor and troubleshoot pipeline performance issues
- Apply DevOps principles in data engineering workflows

Organizational Benefits

- Improved data processing efficiency and speed
- Enhanced decision-making through reliable data pipelines
- Reduced operational costs via automation
- Increased scalability of data infrastructure
- Improved data quality and consistency
- Faster deployment of analytics solutions
- Strengthened data governance and compliance
- Better integration across systems and platforms
- Enhanced team productivity and collaboration
- Competitive advantage through advanced data capabilities

Target Audiences

- Data Engineers
- Software Developers
- Data Analysts
- IT Professionals
- Database Administrators
- DevOps Engineers
- Business Intelligence Professionals
- Cloud Engineers

Course Duration: 5 days

Course Modules

Module 1: Introduction to Data Pipelines and Scripting

- Overview of data pipelines and architectures
- Role of scripting in data engineering
- Key concepts in ETL and ELT processes
- Introduction to Python for data pipelines
- Understanding data sources and formats
- Case Study: Building a basic data ingestion pipeline

Module 2: Python Scripting for Data Engineering

- Python fundamentals for data workflows
- Working with libraries such as Pandas and NumPy
- File handling and data parsing techniques
- Writing reusable and modular scripts
- Debugging and testing scripts
- Case Study: Automating CSV to database pipeline

Module 3: Data Extraction Techniques

- Extracting data from APIs and web services
- Database connectivity and querying
- Handling structured and unstructured data
- Data scraping fundamentals
- Authentication and security considerations
- Case Study: API-based data extraction pipeline

Module 4: Data Transformation and Cleaning

- Data cleaning and preprocessing methods
- Transforming data using scripting techniques
- Handling missing and inconsistent data
- Data normalization and aggregation
- Performance optimization in transformations
- Case Study: Cleaning and transforming raw datasets

Module 5: Workflow Automation and Scheduling

- Introduction to workflow orchestration tools
- Scheduling scripts using cron and task schedulers
- Automating end-to-end data workflows
- Managing dependencies in pipelines
- Logging and monitoring workflows
- Case Study: Automated daily data pipeline

Module 6: Data Loading and Integration

- Loading data into databases and data warehouses
- Integration with cloud storage solutions
- Incremental and batch data loading strategies

- Data synchronization techniques
- Ensuring data integrity during loading
- Case Study: Data warehouse integration pipeline

Module 7: Error Handling and Performance Optimization

- Implementing robust error handling mechanisms
- Logging and alerting strategies
- Performance tuning for large datasets
- Parallel processing and optimization
- Monitoring pipeline efficiency
- Case Study: Optimizing a slow-performing pipeline

Module 8: Advanced Topics and Best Practices

- CI/CD for data pipelines
- Version control using Git
- Security best practices in scripting
- Introduction to real-time data streaming
- Future trends in data engineering
- Case Study: End-to-end production-ready pipeline

Training Methodology

- Instructor-led interactive sessions
- Hands-on practical exercises and labs
- Real-world case studies and scenarios
- Group discussions and collaborative learning
- Live demonstrations of tools and scripts
- Assignments and project-based learning
- Continuous assessment and feedback
- Use of industry-standard tools and platforms

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

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Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com