Data Engineering Fundamentals 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

Data Engineering is the backbone of modern analytics and business intelligence. Organizations increasingly rely on robust data pipelines, scalable storage solutions, and efficient data processing to transform raw data into actionable insights. Data Engineering Fundamentals Training Course equips participants with the essential skills and practical knowledge to design, develop, and manage data workflows, ensuring high-quality, accessible, and secure data for informed decision-making.

The course provides a hands-on learning experience covering key concepts such as data modeling, ETL (Extract, Transform, Load) processes, data warehousing, cloud data platforms, and big data ecosystems. Through practical exercises, case studies, and real-world applications, participants will gain a competitive advantage by mastering industry-standard tools and techniques required to succeed as a data engineer in today’s rapidly evolving data landscape.

Programme Curriculum

Data Engineering Fundamentals Training Course

Introduction

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Course Objectives

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

1. Understand the fundamentals of data engineering and modern data ecosystems.
2. Develop efficient ETL pipelines for structured and unstructured data.
3. Implement data warehousing and data lake strategies for scalable storage.
4. Design optimized data models for reporting and analytics.
5. Apply big data technologies like Apache Hadoop, Spark, and Kafka.
6. Utilize cloud platforms (AWS, Azure, GCP) for data engineering tasks.
7. Implement data quality, governance, and security best practices.
8. Optimize performance of data pipelines and processing workflows.
9. Integrate real-time and batch data processing solutions.
10. Leverage SQL and Python for data extraction, transformation, and analysis.
11. Understand DevOps principles for CI/CD in data engineering.
12. Conduct root-cause analysis for data inconsistencies and pipeline failures.
13. Apply industry case studies to solve practical data engineering challenges.

Organizational Benefits

- Enhanced efficiency of data management processes.
- Improved accuracy and reliability of business intelligence.
- Scalable and future-ready data infrastructure.
- Cost-effective data storage and processing solutions.
- Faster decision-making through real-time data availability.
- Compliance with data governance and regulatory standards.
- Reduced system downtime and data pipeline failures.
- Increased collaboration between data and business teams.
- Adoption of cloud-based and hybrid data architectures.
- Competitive advantage through actionable insights.

Target Audiences

1. Aspiring Data Engineers
2. Data Analysts transitioning to Engineering roles
3. Business Intelligence Professionals
4. Software Developers interested in data pipelines
5. IT Professionals handling data architecture
6. Cloud Engineers focusing on data services
7. Database Administrators
8. Project Managers in data-driven projects

Course Duration: 5 days

Course Modules

Module 1: Introduction to Data Engineering

- Overview of data engineering roles and responsibilities
- Modern data ecosystem components

- Key data engineering tools and technologies
- Data engineering vs data science vs data analytics
- Challenges in data engineering workflows
- Case Study: Building a small-scale ETL pipeline

Module 2: Data Modeling Fundamentals

- Conceptual, logical, and physical data modeling
- Normalization and denormalization techniques
- Schema design for data warehouses
- Star and snowflake schema design
- Data relationships and integrity constraints
- Case Study: Designing a retail sales data model

Module 3: ETL Processes and Pipelines

- Understanding ETL and ELT workflows
- Data extraction from multiple sources
- Data transformation and cleaning best practices
- Loading data into warehouses or lakes
- Scheduling and automating ETL pipelines
- Case Study: Creating an automated ETL pipeline for sales data

Module 4: Data Warehousing and Data Lakes

- Differences between data warehouses and data lakes
- Selecting the right storage solution
- Partitioning and indexing strategies
- Cloud-based warehousing solutions
- Managing metadata and data cataloging
- Case Study: Migrating on-premise data to a cloud warehouse

Module 5: Big Data Technologies

- Introduction to Hadoop ecosystem
- Spark architecture and processing frameworks
- Kafka for real-time streaming data
- Batch vs real-time data processing
- Integrating big data tools with pipelines
- Case Study: Processing streaming sensor data using Spark

Module 6: Cloud Data Engineering

- Overview of AWS, Azure, and GCP data services
- Cloud storage, compute, and orchestration tools
- Serverless data engineering architectures
- Security and access control in cloud platforms
- Monitoring and optimizing cloud pipelines
- Case Study: Deploying a cloud-based data pipeline

Module 7: Data Governance and Security

- Importance of data governance
- Data privacy regulations (GDPR, HIPAA, etc.)
- Implementing role-based access control
- Data lineage and auditing practices
- Data quality assessment and improvement
- Case Study: Ensuring compliance in a healthcare data pipeline

Module 8: Practical Project and Capstone

- End-to-end data engineering project
- Real-world datasets and pipeline creation
- Performance tuning and optimization
- Troubleshooting common pipeline issues
- Presenting insights from engineered data
- Case Study: Building a recommendation engine pipeline

Training Methodology

- Interactive instructor-led sessions with real-time demonstrations
- Hands-on labs using industry-standard tools
- Group discussions and knowledge-sharing sessions
- Guided exercises on ETL, data modeling, and pipeline optimization
- Analysis of real-world case studies for practical learning
- Continuous assessment through quizzes, mini-projects, and feedback

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

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