Data Stream Mining and Real-time Analytics Training Course

Professional Development Training Course Outline

Category	Research and Data Analysis	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

In today’s data-driven world, organizations demand real-time insights to make mission-critical decisions. Data Stream Mining and Real-Time Analytics Training Course is designed to empower data professionals, developers, and business leaders with the knowledge to extract, process, and analyze continuous data streams with cutting-edge technologies. This course offers in-depth exposure to stream processing tools, real-time analytics frameworks, and advanced machine learning techniques to uncover actionable insights from live data.

By mastering data stream mining, participants will be able to build scalable, low-latency applications that harness the power of real-time data across diverse domains including finance, healthcare, e-commerce, telecommunications, and IoT. The course blends theoretical foundations with practical applications, covering tools like Apache Kafka, Apache Flink, Apache Storm, Apache Spark Streaming, and more. Through hands-on labs and case studies, learners will develop competencies to thrive in the fast-paced analytics environment.

Programme Curriculum

Data Stream Mining and Real-Time Analytics Training Course

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Course Objectives

Participants will be able to:

1. Understand the fundamentals of real-time data streaming and event-driven architecture.
2. Master stream processing with top frameworks such as Apache Kafka, Flink, and Spark Streaming.
3. Implement real-time dashboards and visualizations for streaming analytics.
4. Apply stream mining algorithms for anomaly detection, pattern recognition, and prediction.
5. Deploy scalable and fault-tolerant stream processing pipelines.
6. Integrate real-time analytics into cloud and hybrid environments.
7. Manage high-velocity data ingestion and latency issues effectively.
8. Handle windowing, time series, and data retention strategies.
9. Incorporate AI/ML in real-time analytics using TensorFlow, Scikit-learn, and Spark MLlib.
10. Monitor and optimize performance of streaming systems.
11. Secure streaming data pipelines with encryption, authentication, and auditing.
12. Solve real-world problems with data stream mining through industry use-cases.
13. Prepare for certifications in Big Data and Streaming Technologies.

Target Audiences

1. Data Scientists & Analysts
2. Software Engineers & Developers
3. Big Data Engineers
4. Business Intelligence Professionals
5. IT Managers & System Architects
6. Cloud Engineers
7. Data Engineering Students
8. IoT and Edge Computing Professionals

Course Duration: 5 days

Course Modules

Module 1: Introduction to Data Stream Mining

- Overview of data streams vs. batch data
- Key challenges in streaming analytics
- Introduction to stream mining algorithms
- Real-time use cases across industries
- Core components of a stream processing system
- **Case Study: Real-Time Traffic Monitoring in Smart Cities**

Module 2: Real-Time Architecture and Technologies

- Event-driven vs. micro-batch architectures
- Tools: Apache Kafka, Apache Pulsar
- Designing scalable data pipelines
- Managing message brokers
- Performance considerations

- **Case Study: Twitter’s Real-Time Trend Analytics**

Module 3: Stream Processing with Apache Spark Streaming

- Spark Structured Streaming fundamentals
- Stateful and stateless transformations
- Fault tolerance and checkpointing
- Watermarking and event-time processing
- Integrating with dashboards (Grafana)
- **Case Study: Fraud Detection in Banking**

Module 4: Machine Learning on Streaming Data

- Online learning algorithms
- Real-time model updates and predictions
- Concept drift and model retraining
- Streaming with TensorFlow and MLlib
- Classification and clustering on data streams
- **Case Study: Predictive Maintenance in Manufacturing**

Module 5: Advanced Analytics with Apache Flink

- Flink architecture and API overview
- Event-time vs. processing-time semantics
- Complex event processing (CEP)
- Windowing strategies and joins
- Fault tolerance with savepoints
- **Case Study: Real-Time Clickstream Analysis**

Module 6: Real-Time Visualization and Dashboards

- Visualizing data streams with Grafana/Power BI
- Real-time KPIs and alerts
- Data aggregation and visualization design
- Data storytelling in dashboards
- Integration with stream processing tools
- **Case Study: IoT Sensor Data Monitoring**

Module 7: Securing Streaming Analytics

- Data encryption in motion and at rest
- Authentication and access control
- Securing Apache Kafka pipelines
- Compliance and audit logging
- Strategies for secure cloud streaming
- **Case Study: Healthcare Data Privacy in Streaming**

Module 8: Cloud Deployment and Industry Applications

- Deploying streaming systems on AWS/GCP/Azure
- Scaling and auto-healing with Kubernetes
- Hybrid cloud architectures for analytics
- Industry-specific applications (finance, telecom, retail)
- Cost and performance optimization
- **Case Study: Real-Time Stock Market Prediction System**

Training Methodology

- Instructor-led live sessions and recordings
- Hands-on labs using real-world datasets
- Interactive quizzes and assignments
- Use of industry tools and open-source platforms
- Final capstone project for real-time analytics solution design

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

Start Date	End Date	Location	Price
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:

Register Online Now

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