Edge Computing for Real-Time Monitoring Training Course

Professional Development Training Course Outline

Category	Monitoring and Evaluation	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

In today’s fast-paced digital ecosystem, organizations are increasingly leveraging edge computing to drive real-time monitoring, optimize operational efficiency, and reduce latency. Edge computing decentralizes data processing by bringing computation closer to the source of data, enabling instant insights, predictive analytics, and enhanced decision-making across sectors such as IoT, smart manufacturing, healthcare, transportation, and energy management. Edge Computing for Real-Time Monitoring Training Course equips professionals with the knowledge, practical skills, and hands-on experience needed to implement edge solutions for real-time monitoring, ensuring businesses stay competitive in a data-driven world.

Participants will explore cutting-edge technologies, frameworks, and best practices in edge computing architecture, sensor data integration, and low-latency processing, while addressing challenges in data security, network optimization, and scalability. Through interactive case studies, live simulations, and project-based exercises, this course empowers learners to design, deploy, and manage edge-enabled monitoring systems that deliver actionable insights, operational resilience, and business continuity. By the end of the program, participants will confidently leverage edge computing innovations to transform raw data into strategic value.

Programme Curriculum

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Course Objectives

1. Understand the fundamentals of edge computing and its role in real-time monitoring.
2. Analyze the architecture of edge networks and distributed systems.
3. Explore IoT sensor integration for real-time data capture.
4. Implement low-latency processing techniques for instant analytics.
5. Optimize network performance for edge-enabled applications.
6. Apply predictive analytics on edge-deployed systems.
7. Ensure data security and privacy in edge computing environments.
8. Design scalable edge solutions for industrial and commercial applications.
9. Integrate cloud and edge computing for hybrid monitoring solutions.
10. Evaluate hardware and software selection for edge deployments.
11. Develop real-time monitoring dashboards for actionable insights.
12. Troubleshoot edge computing failures and ensure system resilience.
13. Implement emerging edge technologies such as AI at the edge and 5G-enabled devices.

Target Audience

1. IT Managers and Network Engineers
2. Data Scientists and Analytics Professionals
3. IoT and Embedded Systems Developers
4. Operations and Manufacturing Managers
5. Smart City and Transportation Engineers
6. Healthcare IT Professionals
7. Energy and Utility Monitoring Specialists
8. Technology Consultants and System Integrators

Course Modules

Module 1: Introduction to Edge Computing

- Evolution from cloud to edge computing
- Benefits of edge computing for real-time monitoring
- gateways, edge devices, micro data centers
- Edge vs cloud vs hybrid models

- Case Study: Edge deployment in smart manufacturing

Module 2: Edge Computing Architecture

- Layered architecture
- Microservices and containerization at the edge
- Data flow and processing pipelines
- Scalability considerations
- Case Study: Multi-site industrial monitoring

Module 3: IoT Sensor Integration

- Types of sensors and data acquisition methods
- Sensor network protocols
- Real-time data capture techniques
- Edge preprocessing strategies
- Case Study: Remote patient monitoring in healthcare

Module 4: Real-Time Data Processing

- Stream processing vs batch processing
- Edge analytics frameworks
- Event-driven architecture
- Latency minimization techniques
- Case Study: Traffic flow optimization in smart cities

Module 5: Low-Latency Networking

- Network protocols for edge
- Quality of Service optimization
- Bandwidth and data prioritization
- Edge caching strategies
- Case Study: Predictive maintenance in manufacturing plants

Module 6: Predictive Analytics at the Edge

- Machine learning models suitable for edge deployment
- Model compression and optimization
- Real-time anomaly detection
- Integration with decision-making systems
- Case Study: Energy consumption prediction in smart grids

Module 7: Data Security & Privacy

- Encryption at rest and in transit
- Authentication and access control
- Regulatory compliance
- Threat detection and mitigation
- Case Study: Secure remote monitoring in healthcare devices

Module 8: Hybrid Edge-Cloud Solutions

- Cloud orchestration for edge data

- Data synchronization strategies
- Cloud-edge feedback loops
- Latency-aware cloud integration
- Case Study: Supply chain monitoring with hybrid architecture

Module 9: Hardware & Software Selection

- Edge device selection criteria
- Edge gateways and microservers
- Operating systems and runtime environments
- Resource optimization strategies
- Case Study: IoT gateway deployment for industrial monitoring

Module 10: Dashboard & Visualization Tools

- Real-time dashboards design principles
- Integration with visualization platforms
- Alerts and notification systems
- User experience best practices
- Case Study: Manufacturing process monitoring dashboard

Module 11: Troubleshooting & Resilience

- Common edge deployment issues
- Fault detection and recovery mechanisms
- Redundancy strategies
- Performance monitoring and optimization
- Case Study: Edge network failure recovery in utilities

Module 12: Edge AI & Machine Learning

- AI models at the edge
- On-device inference optimization
- AI-driven predictive maintenance
- Edge-enabled computer vision applications
- Case Study: Autonomous vehicle real-time monitoring

Module 13: 5G and Edge Integration

- 5G network capabilities for edge devices
- Ultra-low latency applications
- Network slicing for dedicated edge workloads
- Edge-device communication patterns
- Case Study: Smart city surveillance with 5G edge networks

Module 14: Operational Best Practices

- Monitoring KPIs and SLAs
- Edge deployment lifecycle management
- Continuous improvement strategies
- Cost and ROI analysis
- Case Study: Oil and gas remote monitoring systems

Module 15: Emerging Trends & Future of Edge

- AIoT (AI + IoT) at the edge
- Edge for AR/VR applications
- Blockchain at the edge
- Edge orchestration platforms
- Case Study: Real-time monitoring in autonomous logistics

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

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	04 Dec 2026	Online	$2,000
23 Nov 2026	04 Dec 2026	Physical	$3,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$9,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$12,000

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

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