Indoor Air Quality (IAQ) Monitoring Systems Training Course

Professional Development Training Course Outline

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

Course Introduction

Indoor Air Quality (IAQ) Monitoring Systems have become a critical component in modern building management, smart infrastructure, and occupational health compliance. With rising concerns around air pollution, COVID-19 aftermath, carbon emissions, volatile organic compounds (VOCs), and workplace wellness, the demand for real-time IAQ monitoring, sensor-based analytics, and smart ventilation control systems is rapidly increasing. Indoor Air Quality (IAQ) Monitoring Systems Training Course provides a comprehensive foundation in IoT-based air quality monitoring, environmental sensing technologies, data-driven HVAC optimization, and regulatory compliance frameworks aligned with global standards such as ASHRAE, WHO guidelines, and green building certifications.

Participants will gain in-depth knowledge of air quality sensors, PM2.5/PM10 detection, CO? monitoring systems, IAQ dashboards, predictive analytics, and cloud-based environmental monitoring platforms. The course emphasizes practical applications in smart buildings, hospitals, schools, industrial environments, and commercial spaces. By integrating AI-powered analytics, edge computing, and sustainable building technologies, learners will be equipped to design, deploy, and manage advanced IAQ monitoring systems that improve health outcomes, energy efficiency, and regulatory compliance.

Programme Curriculum

Indoor Air Quality (IAQ) Monitoring Systems Training Course

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Course Duration

5 days

Course Objectives

1. Understand Indoor Air Quality (IAQ) fundamentals & environmental health impact
2. Master IoT-based air quality monitoring systems architecture
3. Analyze PM2.5, PM10, CO?, VOCs, CO gas detection technologies
4. Implement smart sensor calibration and deployment techniques
5. Design real-time IAQ data acquisition systems
6. Apply cloud-based environmental data analytics platforms
7. Integrate AI and machine learning for air quality prediction
8. Optimize HVAC systems using IAQ sensor feedback loops
9. Ensure compliance with WHO, EPA, and ASHRAE standards
10. Develop smart building automation systems for IAQ control
11. Utilize edge computing for real-time air quality processing
12. Build dashboard visualization and IoT monitoring interfaces
13. Implement sustainable green building IAQ strategies

Target Audience

1. Environmental Engineers
2. HVAC Engineers & Technicians
3. IoT Developers & System Integrators
4. Facility Managers & Building Operators
5. Occupational Health & Safety Professionals
6. Smart City Planners & Urban Developers
7. Sustainability & ESG Consultants
8. University Students & Research Scholars in Environmental Sciences

Course Modules

Module 1: Fundamentals of Indoor Air Quality (IAQ)

- IAQ definitions and global standards
- Air pollutants: biological, chemical, particulate
- Health impacts of poor indoor air quality

- Air circulation and ventilation principles
- IAQ measurement parameters
- **Case Study:** Office building experiencing high sick-leave rates due to poor ventilation and CO? buildup.

Module 2: Air Quality Sensors & Technologies

- PM2.5/PM10 sensor technologies
- Gas sensors (CO, CO?, VOC detection)
- Calibration techniques
- Sensor accuracy and drift management
- Sensor fusion systems
- **Case Study:** Hospital deploying multi-sensor IAQ system to reduce airborne infection risks.

Module 3: IoT Architecture for IAQ Systems

- IoT device integration for air monitoring
- Wireless communication protocols
- Edge vs cloud processing
- System scalability design
- Data transmission security
- **Case Study:** Smart campus implementing IoT-based air quality network across classrooms.

Module 4: Data Analytics & Visualization

- IAQ data collection frameworks
- Real-time dashboards
- Trend analysis & reporting
- Cloud platforms
- Data-driven decision systems
- **Case Study:** Shopping mall optimizing ventilation using IAQ analytics dashboard.

Module 5: AI & Predictive Air Quality Modeling

- Machine learning for pollution prediction
- Pattern recognition in air quality data
- Predictive maintenance of HVAC systems
- Anomaly detection systems
- AI-based alert systems
- **Case Study:** Industrial plant predicting VOC spikes using AI models.

Module 6: HVAC Integration & Smart Control Systems

- HVAC automation using IAQ feedback
- Demand-controlled ventilation (DCV)
- Energy efficiency optimization
- Smart thermostats integration
- Airflow optimization techniques
- **Case Study:** Corporate office reducing energy cost by 30% using IAQ-driven HVAC control.

Module 7: Compliance, Standards & Green Building Certification

- ASHRAE ventilation standards

- LEED & WELL certification requirements
- Indoor environmental quality compliance
- Occupational safety regulations
- Environmental reporting systems
- **Case Study:** LEED-certified green building achieving top IAQ rating.

Module 8: Smart Building & Future IAQ Technologies

- Smart city integration
- Edge AI for real-time monitoring
- Blockchain for environmental data integrity
- Autonomous ventilation systems
- Future trends in IAQ innovation
- **Case Study:** Smart city deploying city-wide IAQ monitoring network with predictive alerts.

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	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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