Epidemiological Surveillance Systems Training Course

Professional Development Training Course Outline

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

Course Introduction

Epidemiological Surveillance Systems are the backbone of modern public health intelligence, outbreak detection, disease monitoring, and real-time health data analytics. In an era defined by emerging infectious diseases, antimicrobial resistance, and global pandemics, robust surveillance systems powered by digital health, AI-driven analytics, GIS mapping, and real-time reporting platforms are essential for early warning and rapid response. Epidemiological Surveillance Systems Training Course equips participants with cutting-edge competencies in public health surveillance frameworks, disease intelligence systems, and data-driven epidemiology to strengthen national and global health security.

This program integrates advanced methodologies in infectious disease surveillance, syndromic surveillance, health informatics, and epidemiological modeling. Participants will gain practical expertise in data collection systems, outbreak investigation tools, electronic reporting platforms, and predictive analytics. The course emphasizes real-world application through case-based learning, enabling professionals to transform raw health data into actionable insights for disease prevention, epidemic preparedness, and evidence-based decision-making.

Programme Curriculum

Epidemiological Surveillance Systems Training Course

Introduction

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Course Duration

10 days

Course Objectives

1. Master Epidemiological Surveillance Systems architecture and design
2. Understand real-time disease monitoring and outbreak detection systems
3. Apply digital health surveillance tools and platforms
4. Analyze public health data using epidemiological methods
5. Develop skills in syndromic surveillance and early warning systems
6. Implement data-driven outbreak investigation techniques
7. Strengthen capacity in health information systems integration
8. Utilize GIS mapping for disease tracking and visualization
9. Apply AI and machine learning in epidemiology
10. Improve reporting, notification, and case management systems
11. Conduct risk assessment and trend analysis in public health
12. Design national and regional surveillance frameworks
13. Enhance global health security and epidemic preparedness strategies

Target Audience

- Public health professionals
- Epidemiologists and field investigators
- Health data analysts and statisticians
- Hospital surveillance officers
- Ministry of Health officials
- NGO and humanitarian health workers
- Laboratory surveillance personnel
- Health informatics specialists

Course Modules

Module 1: Introduction to Epidemiological Surveillance

- Definition and importance of surveillance systems
- Types: passive, active, sentinel, syndromic
- Core surveillance indicators
- Role in public health decision-making
- Global surveillance frameworks
- **Case Study:** Early COVID-19 detection systems in Asia

Module 2: Disease Surveillance Frameworks

- National and international surveillance structures
- WHO surveillance guidelines
- Data flow mechanisms
- Reporting hierarchies
- Legal and ethical considerations
- **Case Study:** WHO Global Influenza Surveillance Network

Module 3: Data Collection Methods

- Case definitions and reporting tools
- Survey and field data collection techniques
- Electronic health records integration
- Mobile health (mHealth) data capture
- Data validation methods
- **Case Study:** Ebola field data collection in West Africa

Module 4: Syndromic Surveillance Systems

- Early symptom-based detection systems
- Emergency department data monitoring
- Real-time alerts and thresholds
- Non-laboratory indicators
- Event-based surveillance
- **Case Study:** Influenza-like illness surveillance in USA

Module 5: Outbreak Detection & Response

- Signal detection algorithms
- Threshold-based alerts
- Response coordination systems
- Rapid response teams
- Field investigation protocols
- **Case Study:** Cholera outbreak response in Haiti

Module 6: Health Information Systems

- HIS architecture and integration
- Electronic surveillance platforms
- Interoperability standards
- Data security protocols
- Cloud-based health systems
- **Case Study:** DHIS2 implementation in Africa

Module 7: Epidemiological Data Analysis

- Descriptive and inferential analysis
- Incidence and prevalence calculations
- Time-series analysis
- Statistical software tools
- Data visualization techniques

- **Case Study:** Malaria trend analysis in Kenya

Module 8: GIS in Disease Surveillance

- Spatial epidemiology concepts
- Mapping disease outbreaks
- Hotspot analysis
- Geospatial tools (ArcGIS, QGIS)
- Risk mapping techniques
- **Case Study:** Dengue fever mapping in Southeast Asia

Module 9: Digital Surveillance Technologies

- Mobile reporting systems
- Cloud-based dashboards
- AI-powered analytics
- IoT in health monitoring
- Big data in epidemiology
- **Case Study:** COVID-19 digital dashboards

Module 10: Laboratory Surveillance Systems

- Sample tracking systems
- Lab reporting integration
- Quality assurance in diagnostics
- Genomic surveillance
- Pathogen sequencing systems
- **Case Study:** COVID-19 variant tracking

Module 11: Risk Assessment & Modeling

- Risk factor identification
- Predictive modeling techniques
- Scenario analysis
- Simulation tools
- Decision-support systems
- **Case Study:** Ebola outbreak risk modeling

Module 12: Public Health Emergency Response

- Emergency preparedness plans
- Incident management systems
- Coordination mechanisms
- Communication strategies
- Resource mobilization
- **Case Study:** SARS outbreak response coordination

Module 13: Global Health Security

- International Health Regulations (IHR)
- Cross-border surveillance
- Pandemic preparedness

- Global reporting systems
- Health diplomacy
- **Case Study:** COVID-19 global coordination efforts

Module 14: Data Quality & Ethics

- Data accuracy and completeness
- Ethical data handling
- Patient confidentiality
- Bias reduction techniques
- Data governance frameworks
- **Case Study:** Ethical challenges in contact tracing apps

Module 15: Surveillance System Evaluation

- System performance indicators
- Sensitivity and specificity analysis
- Timeliness and usefulness
- Cost-effectiveness analysis
- Continuous improvement strategies
- **Case Study:** Evaluation of national influenza surveillance systems

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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