Epidemiology of Pandemics Training Course

Professional Development Training Course Outline

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

Course Introduction

The Epidemiology of Pandemics Training Course is a comprehensive, data-driven program designed to equip learners with advanced competencies in infectious disease surveillance, outbreak analytics, global health security, and pandemic preparedness strategies. In an era defined by COVID-19, emerging zoonotic diseases, antimicrobial resistance, and climate-driven health risks, this course builds critical expertise in real-time epidemiological modeling, public health intelligence, and global response coordination frameworks. Participants will gain actionable knowledge in pandemic forecasting, R0 analysis, contact tracing systems, and digital epidemiology tools used by leading global health organizations.

Epidemiology of Pandemics Training Course integrates cutting-edge methodologies in AI-driven epidemiology, genomic surveillance, One Health approaches, and risk communication strategies to prepare professionals for modern outbreak challenges. With increasing global interconnectivity and urbanization, the demand for experts in pandemic response planning, disease outbreak containment, and health data analytics continues to rise. This course bridges theoretical epidemiology with practical field applications, ensuring readiness for future pandemic threats, biopreparedness operations, and global disease control systems.

Programme Curriculum

Epidemiology of Pandemics Training Course

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Course Duration

5 days

Course Objectives

1. Understand pandemic epidemiology principles and disease transmission dynamics
2. Apply R0, R-effective, and attack rate calculations in outbreak settings
3. Develop skills in real-time disease surveillance systems (GIS & AI tools)
4. Analyze global health security frameworks (WHO, CDC guidelines)
5. Implement contact tracing and digital tracking technologies
6. Evaluate vaccine epidemiology and herd immunity thresholds
7. Design pandemic preparedness and response strategies
8. Use big data analytics in infectious disease modeling
9. Interpret genomic sequencing in outbreak detection
10. Strengthen risk communication and infodemic management skills
11. Apply One Health approach to zoonotic disease control
12. Assess health system resilience during pandemics
13. Develop expertise in emergency response and biothreat mitigation

Target Audience

1. Public Health Professionals
2. Epidemiologists and Biostatisticians
3. Medical Doctors and Clinical Researchers
4. Laboratory Scientists and Virologists
5. Health Policy Makers and Government Officials
6. NGO and Humanitarian Health Workers
7. Data Scientists in Health Analytics
8. Graduate Students in Public Health and Medicine

Course Modules

Module 1: Fundamentals of Epidemiology in Pandemics

- Basic epidemiological principles and disease models
- Types of outbreaks: epidemic, endemic, pandemic
- Transmission pathways and infection dynamics
- Introduction to surveillance systems
- Case Study: **COVID-19 initial outbreak modeling in Wuhan**

Module 2: Disease Surveillance Systems & Data Intelligence

- Real-time surveillance technologies
- GIS mapping in outbreak detection
- Data pipelines in epidemiology
- Early warning systems
- Case Study: **Ebola outbreak surveillance in West Africa**

Module 3: Outbreak Investigation & Field Epidemiology

- Steps in outbreak investigation
- Case definition development
- Sampling techniques in field studies
- Contact tracing frameworks
- Case Study: **Cholera outbreak investigation in Haiti**

Module 4: Mathematical Modeling of Pandemics

- SIR and SEIR models
- R0 and reproduction dynamics
- Predictive modeling techniques
- Simulation tools in epidemiology
- Case Study: **COVID-19 predictive modeling in Europe**

Module 5: Genomic Epidemiology & Pathogen Evolution

- Viral mutation tracking
- Genome sequencing technologies
- Phylogenetic analysis
- Variant surveillance systems
- Case Study: **SARS-CoV-2 variant tracking (Delta & Omicron)**

Module 6: Vaccinology & Immunological Epidemiology

- Vaccine development pipelines
- Herd immunity thresholds
- Vaccine effectiveness studies
- Immunization campaign strategies
- Case Study: **Global COVID-19 vaccination rollout analysis**

Module 7: Pandemic Preparedness & Health Systems Resilience

- Emergency response planning
- Hospital surge capacity management
- Supply chain in health emergencies
- Policy frameworks for pandemics
- Case Study: **Italy healthcare system response during COVID-19 peak**

Module 8: Digital Epidemiology & AI in Disease Control

- AI and machine learning in outbreak prediction
- Social media disease surveillance
- Mobile health (mHealth) tools
- Infodemic and misinformation control

- Case Study: **Google Flu Trends and COVID-19 misinformation tracking**

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

Start Date	End Date	Location	Price
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

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

Register Online Now

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