Machine Learning in Public Health 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

Machine Learning (ML) is transforming global public health systems by enabling predictive analytics, disease surveillance, outbreak forecasting, and evidence-based healthcare decision-making. Machine Learning in Public Health Training Course is designed to equip learners with cutting-edge competencies in health data science, epidemiological modeling, AI-driven diagnostics, and population health intelligence systems. Participants will gain hands-on exposure to real-world datasets and tools used in health informatics, digital epidemiology, and AI-powered health monitoring systems, ensuring they can apply machine learning techniques to improve healthcare delivery and policy outcomes.

With the rise of pandemics, chronic disease burdens, and health inequities, ML has become a critical enabler of precision public health, real-time disease tracking, and automated health risk prediction. This course integrates theoretical foundations with practical applications using Python, R, TensorFlow, and health data platforms, empowering professionals to design scalable solutions for smart healthcare systems, AI-assisted diagnostics, and population-level health interventions. Learners will engage in case-driven learning based on global health challenges such as COVID-19 surveillance, malaria prediction systems, and maternal health analytics.

Programme Curriculum

Machine Learning in Public Health Training Course

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Course Duration

5 days

Course Objectives

1. Understand fundamentals of Machine Learning in Healthcare Analytics
2. Apply predictive modeling for disease outbreak forecasting
3. Develop skills in health data preprocessing and feature engineering
4. Implement AI-driven epidemiological surveillance systems
5. Use deep learning for medical image analysis
6. Design public health decision support systems
7. Apply natural language processing (NLP) in health records
8. Build real-time disease monitoring dashboards
9. Analyze social determinants of health using ML models
10. Evaluate health risk prediction algorithms
11. Implement population health analytics frameworks
12. Use cloud-based health data platforms for ML deployment
13. Develop ethical understanding of AI in healthcare governance

Target Audience

1. Public health professionals
2. Epidemiologists and biostatisticians
3. Healthcare data analysts
4. Medical researchers
5. Government health policymakers
6. AI/ML engineers in healthcare
7. NGO and global health workers
8. Graduate students in public health, data science, and biomedical fields

Course Modules

Module 1: Introduction to Machine Learning in Public Health

- Basics of supervised, unsupervised, reinforcement learning
- Role of ML in global health systems
- Public health data ecosystems overview
- Data sources: WHO, CDC, hospital EHR systems
- **Case Study:** COVID-19 predictive modeling using ML

Module 2: Health Data Collection & Preprocessing

- Data cleaning and normalization techniques
- Handling missing and noisy health data
- Feature extraction from clinical datasets
- Data integration from multiple health systems
- **Case Study:** Malaria dataset preprocessing for Africa region

Module 3: Predictive Analytics in Disease Outbreaks

- Time-series forecasting models
- Regression and classification techniques
- Outbreak early warning systems
- Risk scoring algorithms
- **Case Study:** Dengue fever outbreak prediction model

Module 4: Machine Learning for Epidemiology

- Epidemiological modeling with ML
- Transmission dynamics analysis
- Contact tracing systems
- Cluster detection algorithms
- **Case Study:** Tuberculosis spread modeling in urban populations

Module 5: Deep Learning in Medical Imaging

- CNNs for X-ray and MRI analysis
- Image classification techniques
- Diagnostic automation systems
- Transfer learning in healthcare
- **Case Study:** AI-based pneumonia detection from chest X-rays

Module 6: Natural Language Processing in Healthcare

- Clinical text mining from EHRs
- Sentiment analysis of patient records
- Named entity recognition in medical data
- Chatbots for healthcare support
- **Case Study:** Automated extraction of symptoms from clinical notes

Module 7: Public Health Decision Support Systems

- AI-driven policy modeling
- Resource allocation optimization
- Health intervention simulation
- Dashboard development for health agencies
- **Case Study:** Hospital bed allocation during COVID-19 surge

Module 8: Ethical AI & Deployment in Healthcare

- Bias and fairness in health algorithms
- Data privacy and HIPAA/GDPR compliance
- Explainable AI in healthcare decisions
- Cloud deployment of ML models

- **Case Study:** Ethical evaluation of AI-based triage system

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:

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