Network Science for Public Health Research of Data Training Course

Professional Development Training Course Outline

Category	Research and Data Analysis	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Network Science for Public Health Research Training Course is a cutting-edge program designed to equip professionals, researchers, and public health practitioners with the theoretical knowledge and practical skills necessary to harness the power of network analysis in solving complex health challenges. In an era marked by global pandemics, chronic disease burdens, and digital epidemiology, understanding how social, biological, and technological networks shape health outcomes is essential. This course bridges the gap between public health research and data-driven decision-making using interdisciplinary techniques from network science, systems thinking, and health informatics.

This hands-on, modular training emphasizes real-world applications, including contact tracing, behavioral health surveillance, community risk mapping, and disease diffusion modeling. Participants will master tools for analyzing networks, such as Gephi, Cytoscape, and Python-based libraries, while exploring key public health domains like epidemiology, health communication, and policy modeling. By integrating case studies, interactive simulations, and collaborative exercises, the course ensures a dynamic learning experience aligned with current global public health priorities and innovations.

Programme Curriculum

Network Science for Public Health Research Training Course

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Course Objectives

1. Understand the fundamentals of network theory and its applications in public health surveillance.
2. Explore complex systems modeling in epidemiology using computational tools.
3. Apply graph theory metrics to identify influential nodes in health communication networks.
4. Analyze social networks for understanding the spread of diseases and health behaviors.
5. Conduct contact tracing simulations using real-world datasets and synthetic populations.
6. Develop proficiency in visualizing public health networks using Gephi and Cytoscape.
7. Model disease outbreaks using network-based epidemiological frameworks.
8. Design data-informed interventions by mapping community-level networks.
9. Utilize machine learning algorithms to predict network evolution and health outcomes.
10. Interpret network models for guiding policy development and health interventions.
11. Assess the impact of digital health technologies on information diffusion.
12. Examine equity and disparities in healthcare access through network lens.
13. Create actionable insights from integrated network datasets for real-time public health response.

Target Audience

1. Public health professionals
2. Epidemiologists and data scientists
3. Healthcare administrators
4. Health policy makers
5. Biomedical researchers
6. Academic faculty and students
7. NGO and community health leaders
8. Governmental and global health agencies

Course Duration: 5 days

Course Modules

Module 1: Foundations of Network Science in Public Health

- Introduction to networks and nodes
- Types of networks: social, biological, technological
- Network structures and their implications
- Key metrics: centrality, density, modularity
- Ethical considerations in network research
- **Case Study**: Ebola contact network and containment strategies

Module 2: Network Data Collection & Processing

- Primary and secondary data sources
- Data wrangling techniques in R and Python
- Creating adjacency and incidence matrices
- Dealing with missing or incomplete data

- Anonymization and data privacy in networks
- **Case Study**: Community network mapping in low-resource settings

Module 3: Network Visualization & Interpretation

- Tools: Gephi, Cytoscape, NetworkX
- Visual encoding principles for networks
- Identifying hubs, bridges, and cliques
- Creating dynamic and temporal networks
- Customizing visual outputs for stakeholders
- **Case Study**: Social network analysis of COVID-19 misinformation

Module 4: Disease Transmission and Contact Networks

- Modeling infectious diseases through networks
- Thresholds for epidemic spread
- Role of superspreaders and behavioral nodes
- Stochastic simulations of outbreaks
- Evaluating control strategies
- **Case Study**: Network simulation of influenza spread in schools

Module 5: Social Network Analysis for Behavior Change

- Influence and peer effects in health behaviors
- Diffusion of innovations and public health campaigns
- Homophily and community detection
- Intervention targeting using SNA
- Designing peer-led health programs
- **Case Study**: HIV prevention through key opinion leaders in MSM networks

Module 6: Machine Learning and Predictive Network Models

- Introduction to ML in network analysis
- Node classification and link prediction
- Clustering and community dynamics
- Time-series network evolution
- Risk prediction using hybrid models
- **Case Study**: Predictive modeling for hospital readmissions

Module 7: Network Analysis for Policy and Decision-Making

- Translating network metrics into policy insights
- Systems mapping for interagency collaboration
- Strategic planning using network-informed data
- Multi-sectoral network modeling
- Network resilience and crisis response
- **Case Study**: Network modeling for vaccine allocation strategies

Module 8: Advanced Tools, Ethics, and Future Trends

- Big data and cloud-based network analysis
- Blockchain and privacy-preserving networks
- Equity and bias in network algorithms
- Sustainability and scaling of network solutions
- Emerging trends: digital twins, IoT in health
- **Case Study**: Future of AI-enhanced contact networks post-pandemic

Training Methodology

- Interactive lectures and real-time demos
- Hands-on coding labs using real-world datasets
- Peer collaboration in group projects and simulations
- Gamified learning using network modeling tools
- Expert-led case study discussions
- Capstone project with personal network application

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

Start Date	End Date	Location	Price
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

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