Machine Learning Analytics for M&E Training Course

Professional Development Training Course Outline

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

Course Introduction

In today’s data-driven development landscape, Machine Learning (ML) Analytics for Monitoring & Evaluation (M&E) has emerged as a transformative tool for enhancing program efficiency, predicting outcomes, and optimizing decision-making. Machine Learning Analytics for M&E Training Course equips M&E professionals, data analysts, and development practitioners with cutting-edge machine learning techniques, predictive modeling, and data visualization skills tailored for real-world monitoring and evaluation challenges. Participants will gain expertise in leveraging structured and unstructured datasets, automating data analysis, and generating actionable insights that drive program performance, accountability, and impact.

Through a hands-on and practical approach, this training integrates real-life case studies, scenario-based exercises, and interactive simulations to ensure learners can apply ML analytics to complex development programs. The course emphasizes the ethical use of data, AI-powered decision-making, and advanced analytics frameworks while fostering innovation in evidence-based monitoring, performance tracking, and predictive evaluation. By the end of the course, participants will be equipped to harness the power of machine learning, data mining, and algorithmic modeling for transforming M&E practices across sectors.

Programme Curriculum

Machine Learning Analytics for M&E Training Course

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Course Duration

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Course Objectives

By the end of this training, participants will be able to:

1. Apply machine learning algorithms to M&E datasets for predictive insights.
2. Design data-driven monitoring frameworks integrating AI and ML techniques.
3. Conduct predictive modeling and forecasting for program performance.
4. Utilize supervised and unsupervised learning for evaluation analytics.
5. Automate data cleaning, processing, and analysis using Python/R tools.
6. Visualize and interpret complex data through interactive dashboards.
7. Identify key performance indicators (KPIs) using ML feature selection.
8. Integrate geospatial and temporal data for improved program monitoring.
9. Enhance decision-making efficiency through predictive analytics.
10. Implement anomaly detection models to identify risks and gaps.
11. Ensure ethical AI and data governance in M&E applications.
12. Develop custom ML pipelines for continuous program learning.
13. Translate analytics findings into evidence-based policy recommendations.

Target Audience

1. Monitoring & Evaluation Officers
2. Data Analysts and Data Scientists
3. Program Managers and Project Coordinators
4. Policy Analysts and Researchers
5. Development Practitioners and NGO Professionals
6. Government Planning & Evaluation Officers
7. AI/ML Enthusiasts in Social Impact Sectors
8. Academicians and Graduate Students in Data Science & M&E

Course Modules

Module 1: Introduction to Machine Learning for M&E

- Overview of ML concepts and terminology
- Applications of ML in M&E programs
- Key ML tools for monitoring and evaluation

- Case study: Predicting school enrollment trends using ML
- Identifying suitable ML models for different M&E datasets

Module 2: Data Collection and Preprocessing

- Handling structured vs unstructured data
- Cleaning and transforming datasets
- Feature selection and engineering
- Case study: Preprocessing health survey data for predictive analysis
- Python data cleaning workflow

Module 3: Supervised Learning Techniques

- Linear & logistic regression
- Decision trees and random forests
- Performance evaluation metrics
- Case study: Predicting community program adoption rates
- Building a supervised model in R

Module 4: Unsupervised Learning Techniques

- Clustering methods (K-means, hierarchical)
- Dimensionality reduction (PCA, t-SNE)
- Pattern detection in large datasets
- Case study: Segmenting beneficiaries based on engagement data
- Implementing K-means clustering

Module 5: Predictive Modeling for Program Outcomes

- Time series forecasting
- Regression and classification models for prediction
- Model validation and optimization
- Case study: Forecasting vaccination coverage
- Building a predictive pipeline

Module 6: Data Visualization & Interpretation

- Visual storytelling for M&E
- Interactive dashboards (Power BI, Tableau)
- Interpretation of ML outputs
- Case study: Visualizing donor program impact
- Creating a dynamic dashboard

Module 7: Geospatial and Temporal Analytics

- Spatial data in program monitoring
- Temporal patterns and trend analysis
- GIS integration with ML
- Case study: Mapping disease outbreak predictions
- ML-driven geospatial analysis

Module 8: Automated Data Processing Pipelines

- ML workflow automation
- Data pipelines in Python/R
- Case study: Automating NGO program reports
- Building an automated ML pipeline
- Best practices for reproducibility

Module 9: Anomaly Detection & Risk Identification

- Detecting outliers and unusual trends
- Risk modeling for M&E
- Case study: Fraud detection in financial aid programs
- Building anomaly detection models
- Reporting and decision-making applications

Module 10: Integrating ML into Decision-Making

- AI-assisted decision frameworks
- Translating analytics into policy
- Case study: Program scaling decisions based on ML insights
- Decision scenario simulations
- Evaluating ML recommendations in real-world contexts

Module 11: Ethical AI & Data Governance

- Data privacy and security
- Bias and fairness in ML models
- Compliance with local and international regulations
- Case study: Ethical considerations in ML-driven health programs
- Balancing accuracy with fairness

Module 12: Advanced ML Algorithms

- Neural networks and deep learning basics
- Ensemble methods for prediction improvement
- Case study: Predicting educational outcomes with deep learning
- Building a simple neural network
- Evaluating advanced model performance

Module 13: Monitoring ML Model Performance

- Continuous model evaluation
- Metrics for tracking accuracy, precision, recall
- Case study: Tracking ML model performance over time
- Updating and retraining models
- Implementing feedback loops

Module 14: Custom ML Solutions for M&E

- Tailoring ML models to program needs
- Pipeline design for different sectors
- Case study: ML in water and sanitation programs
- Designing a custom solution

- Best practices for scaling ML in M&E

Module 15: Capstone Project & Practical Application

- Real-life project simulation
- End-to-end ML pipeline creation
- Peer review and feedback sessions
- Case study: Predicting project success in multi-country programs
- Final presentation and evaluation

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:

Register Online Now

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