# Machine Learning for Credit Scoring in MFIs Training Course

Professional Development Training Course Outline

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| **Category** | Microfinance & Financial Inclusion | **Duration** | 5 Days |
| **Base Fee** | $1,500 USD | **Delivery Mode** | Online / On-site Hybrid |

## Course Introduction

Machine Learning for Credit Scoring in MFIs Training Course provides participants with advanced knowledge and practical skills in leveraging machine learning algorithms to improve credit assessment, portfolio management, and risk mitigation in microfinance institutions. The course explores predictive modeling, data-driven decision-making, and algorithmic approaches to identify creditworthy clients while minimizing default risks. Participants will gain hands-on experience with datasets, scoring models, and analytical tools that enhance accuracy, efficiency, and sustainability of credit operations.

In today’s digital microfinance landscape, institutions face challenges such as limited historical data, diverse client segments, and the need for scalable decision-making frameworks. This course equips learners with the ability to implement machine learning solutions tailored to microfinance portfolios, integrate data-driven insights into operational workflows, and optimize lending strategies for improved financial inclusion, profitability, and risk management.

## Programme Curriculum

**Machine Learning for Credit Scoring in MFIs Training Course**

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**Course Objectives**

1. Understand the fundamentals of machine learning and its applications in credit scoring.
2. Explore predictive analytics for microfinance portfolio risk management.
3. Implement data preprocessing and feature engineering for credit assessment.
4. Apply supervised learning models for predicting client repayment behavior.
5. Evaluate classification models using accuracy, precision, recall, and AUC metrics.
6. Understand unsupervised learning for segmenting clients and identifying patterns.
7. Incorporate alternative data sources to enhance predictive power.
8. Build and validate credit scoring models using Python, R, or relevant software.
9. Integrate ML-driven insights into credit policy and loan approval workflows.
10. Optimize credit scoring processes for operational efficiency and scalability.
11. Monitor and update models to reflect portfolio changes and market conditions.
12. Manage ethical, compliance, and data privacy considerations in ML applications.
13. Develop strategies to combine machine learning with traditional credit assessment methods.

**Organizational Benefits**

- Improved credit risk assessment and portfolio management
- Enhanced decision-making accuracy through predictive modeling
- Reduced default rates and improved loan recovery
- Increased operational efficiency in loan processing
- Data-driven insights supporting sustainable financial inclusion
- Scalable credit scoring frameworks for diverse client portfolios
- Strengthened governance and compliance in credit operations
- Optimized allocation of lending capital
- Improved customer segmentation and targeting strategies
- Competitive advantage through innovative data analytics

**Target Audiences**

- Microfinance credit managers and loan officers
- Risk management and compliance professionals
- Data analysts and business intelligence specialists
- MFI portfolio managers and supervisors
- IT and system integration teams in MFIs
- Policy makers and regulators in financial inclusion
- Consultants supporting microfinance credit strategy
- Trainers and educators in financial technology and analytics

**Course Duration:** 5 days

**Course Modules**

**Module 1: Introduction to Machine Learning in Microfinance**

- Overview of machine learning concepts and types
- Importance of ML for credit scoring in MFIs
- Key challenges in microfinance lending
- Data-driven decision-making in credit operations
- Benefits of ML-based credit assessment
- Case Study: Implementing ML for loan approval in a small MFI

**Module 2: Data Collection and Preprocessing**

- Identifying and collecting relevant client and financial data
- Cleaning and handling missing values in datasets
- Feature selection and dimensionality reduction
- Encoding categorical variables for modeling
- Normalization and standardization of numerical data
- Case Study: Preprocessing loan applicant data for predictive modeling

**Module 3: Supervised Learning Models for Credit Scoring**

- Logistic regression and decision trees for credit scoring
- Random forests and gradient boosting models
- Model training, validation, and testing approaches
- Overfitting, underfitting, and regularization techniques
- Model interpretability and explainability for lending decisions
- Case Study: Building a predictive repayment model using historical MFI data

**Module 4: Evaluating and Validating Models**

- Performance metrics: accuracy, precision, recall, F1-score, AUC
- Cross-validation and k-fold testing
- Confusion matrices for classification evaluation
- ROC curves and lift charts interpretation
- Comparing multiple model performances
- Case Study: Model evaluation to select the best scoring algorithm

**Module 5: Unsupervised Learning and Client Segmentation**

- Introduction to clustering algorithms (K-means, hierarchical)
- Identifying patterns in client behavior
- Segmenting portfolios to reduce risk and improve targeting
- Using unsupervised learning to detect anomalies
- Enhancing lending strategies with client segmentation
- Case Study: Segmenting MFI clients to improve loan collection efficiency

**Module 6: Integration of Alternative Data**

- Exploring non-traditional data sources (mobile, social, transaction)
- Incorporating alternative data into predictive models
- Benefits and challenges of alternative data usage
- Improving model accuracy and coverage
- Ethical and privacy considerations
- Case Study: Using mobile transaction data to predict repayment behavior

**Module 7: Implementation and Monitoring**

- Embedding ML models into credit policy workflows
- Automating loan approval processes
- Real-time monitoring of model performance
- Updating models to adapt to portfolio changes
- Reporting insights to management and stakeholders
- Case Study: Monitoring an ML-driven scoring system in a mid-sized MFI

**Module 8: Governance, Compliance, and Ethical Considerations**

- Ensuring ethical use of ML in credit decisions
- Data privacy, security, and compliance with regulations
- Managing bias and fairness in predictive models
- Documentation and auditability of ML-based processes
- Combining ML outputs with human decision-making
- Case Study: Ethical challenges in deploying ML credit scoring in an MFI

**Training Methodology**

- Instructor-led presentations and conceptual briefings
- Hands-on exercises with real and simulated MFI datasets
- Group case study discussions and practical problem-solving
- Demonstrations of machine learning tools and software
- Collaborative workshops on model development and evaluation
- Continuous assessment and interactive feedback sessions

**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 |
| **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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