# Model Validation and Back Testing Methods Training Course

Professional Development Training Course Outline

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

## Course Introduction

Model risk is a paramount concern across the financial services, insurance, and technology industries, driven by increasing regulatory scrutiny and the rapid adoption of complex machine learning (ML) and Generative AI models. Model Validation and Back Testing Methods Training Course provides a comprehensive and practical framework for establishing robust Model Governance, validation, and performance monitoring processes. Participants will master advanced quantitative validation techniques, including various Back testing methodologies, to ensure models are fit for purpose, reliable, and compliant. A focus on mitigating critical issues like look-ahead bias, overfitting, and data drift is central to building enduring confidence in predictive analytics and maintaining a competitive edge in a data-driven world.

This course directly addresses the urgent need for qualified professionals capable of rigorous model risk management (MRM). By blending theoretical foundations with extensive hands-on case studies using industry-standard tools and techniques, the program equips attendees with immediately applicable skills in model calibration, discriminatory power assessment, and stress testing. Success in modern finance and risk modeling hinges on the ability to validate not just the final output but the entire Model Development Lifecycle from data quality and conceptual soundness to implementation and ongoing performance monitoring. This training is your essential guide to navigating the future of algorithmic trading, credit risk, and operational risk modeling with validated confidence.

## Programme Curriculum

**Model Validation and Back Testing Methods Training Course**

**Introduction**

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**Course Duration**

5 days

**Learning Objectives**

Upon completion of this course, participants will be able to:

1. Establish an effective Model Governance and Model Risk Management (MRM) framework compliant with SR 11-7 principles.
2. Evaluate the conceptual soundness and design of various predictive models and AI/ML systems.
3. Perform comprehensive data validation and data quality checks to ensure model input integrity.
4. Master traditional and Walk-Forward Backtesting techniques for time-series and trading strategies.
5. Quantify model performance using key metrics: AUC, Gini Coefficient, Kolmogorov-Smirnov (KS), and risk-adjusted returns like Sharpe Ratio.
6. Detect and mitigate critical model flaws, including overfitting, underfitting, and look-ahead bias.
7. Conduct effective Sensitivity Analysis and Stress Testing for robust model performance under adverse scenarios.
8. Validate credit risk models and pricing models for regulatory compliance.
9. Implement ongoing Model Monitoring and Data Drift detection strategies using automated systems.
10. Apply advanced Cross-Validation methods, specifically tailored for time-dependent data
11. Interpret and document validation findings to provide clear, actionable recommendations to senior management and regulators.
12. Utilize industry tools for automated validation and reporting workflows.
13. Benchmark model performance against industry standards and alternative models using robust statistical tests.

**Target Audience**

1. Model Validation Professionals
2. Risk Management Teams
3. Quantitative Analysts (Quants) and Data Scientists
4. Internal Auditors focused on model and algorithm reliance
5. Financial Regulators and Compliance Officers
6. Portfolio Managers and Algorithmic Traders

7. Data Governance and IT Risk Professionals
8. Credit Officers and Lending Decision Makers

**Course Modules**

**Module 1: Model Risk Management Framework & Governance**

- Model Risk Definition and Regulatory Landscape
- The Model Development Lifecycle and the Role of Independent Validation.
- Model Inventory, Risk Tiering, and setting Tolerances for validation findings.
- Qualitative Validation
- Case Study: Analyzing a financial institution's internal audit findings on non-compliant model documentation and risk tiering.

**Module 2: Data Quality and Integrity Validation**

- Data Sourcing and Pre-processing Checks.
- Detecting and treating Outliers, Missing Values, and Data Inconsistencies.
- Feature Importance and Variable Stability assessment.
- Handling Survivorship Bias and Look-Ahead Bias in historical data for backtesting.
- Case Study: A backtesting strategy fail due to the inclusion of price data that was not historically available

**Module 3: Quantitative Validation: Discrimination & Calibration**

- Model Discriminatory Power Metrics and interpretation.
- Model Calibration assessment
- Statistical tests for comparing model performance.
- Techniques for assessing model Stability and Robustness over time.
- Case Study: Comparing the Gini Coefficient of a new internal credit score model against a benchmark model using live portfolio data.

**Module 4: Backtesting Methodologies**

- Introduction to In-Sample and Out-of-Sample Testing.
- Holdout and K-Fold Cross-Validation for traditional models.
- Walk-Forward Optimization and Rolling Window Backtesting.
- Metrics for Backtesting Trading Strategies.
- Case Study: Implementing a Walk-Forward backtest on an algorithmic trading strategy to find the optimal re-calibration frequency.

**Module 5: Stress Testing and Sensitivity Analysis**

- Defining Stress Scenarios
- Sensitivity Analysis.
- Model Reserve and Capital Calculation implications of stress testing results.
- Adversarial Testing and Model Vulnerability Assessment.
- Case Study: Stress testing a LGD (Loss Given Default) model using a severe, regulator-defined unemployment shock scenario.

**Module 6: Ongoing Monitoring and Data Drift**

- Designing an effective Continuous Monitoring system.
- Techniques for detecting Data Drift and Concept Drift
- Setting Trigger Points for model review and re-validation.
- Automating reporting and visualization of key performance indicators
- Case Study: Using the PSI metric to identify when a credit model's input distribution has shifted enough to warrant re-training.

**Module 7: Specialized Validation for Advanced Models**

- Validation challenges specific to **AI/ML** models and **Deep Learning**.
- Introduction to **Explainable AI (XAI)** techniques (**SHAP**, **LIME**) for interpretability.
- Validating **Time-Series Forecasting Models** (e.g., ARIMA, GARCH) and their assumptions.
- Validation for **Generative AI** and **Large Language Models (LLMs)**.
- **Case Study:** Applying **SHAP values** to a complex Black-Box ML model to explain individual risk predictions to a non-technical audience.

**Module 8: Documentation, Reporting, and Remediation**

- Best practices for comprehensive Model Validation Report creation.
- Structuring validation findings, recommendations, and Remediation Plans.
- Communicating model risk and limitations to Senior Management and the Board.
- The relationship between validation, internal audit, and the regulatory review process.
- Case Study: Drafting an executive summary for a validation report, clearly translating complex quantitative findings into high-level business risks.

## 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 |
| **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