VaR, ES, and Back Testing Practical Workshop Training Course

Professional Development Training Course Outline

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

Course Introduction

In today’s volatile and highly regulated financial markets, robust risk measurement is no longer optional it’s a fundamental requirement for financial stability and regulatory compliance. The cornerstone of modern market risk management lies in the mastery of two critical metrics: Value-at-Risk (VaR) and its more coherent successor, Expected Shortfall. VaR, while providing a simple, single-number estimate of maximum potential loss at a given confidence level, has inherent limitations, particularly its failure to capture tail risk beyond the threshold. ES directly addresses this by measuring the expected loss in the worst-case scenarios, offering a more complete picture of downside exposure and encouraging portfolio diversification.

VaR, ES, and Back Testing Practical Workshop Training Course is designed to transition risk professionals from theoretical understanding to practical model application and validation. A critical but often overlooked component of the risk cycle is Backtesting, which serves as the "reality check" for both VaR and ES models. Effective backtesting methodologies, including the Traffic Light Approach and various statistical tests, are essential for assessing model accuracy, ensuring capital adequacy, and adhering to regulatory mandates. By mastering these three intertwined concepts VaR, ES, and Backtesting participants will be equipped to build, validate, and confidently deploy risk models that withstand the scrutiny of both internal audit and external regulators, ensuring superior risk-adjusted performance and model governance.

Programme Curriculum

VaR, ES, and Back Testing Practical Workshop Training Course

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Course Duration

5 days

Course Objectives

1. Master the core VaR methodologies
2. Quantify Tail Risk and calculate Expected Shortfall in various market scenarios.
3. Differentiate the mathematical and practical properties of VaR versus ES.
4. Implement the Basel Committee's Traffic Light Approach for VaR model validation.
5. Conduct advanced statistical Backtesting using Python/R.
6. Apply the latest FRTB market risk standards.
7. Develop robust procedures for Backtesting Expected Shortfall
8. Integrate Stress Testing and Scenario Analysis with VaR/ES estimates for extreme events.
9. Analyze model risk and the impact of assumptions
10. Evaluate the implications of backtesting failures on Regulatory Capital requirements.
11. Design a comprehensive Model Validation Framework for front-to-back office deployment.
12. Optimize portfolio construction using Risk Decomposition
13. Benchmark internal models against industry best practices for Model Governance.

Target Audience

1. Market Risk Analysts
2. Quantitative Analysts (Quants)
3. Risk Managers / CROs
4. Model Validation Specialists
5. Regulatory Reporting/Compliance Officers
6. Portfolio Managers / Investment Analysts
7. Treasury and Capital Management Professionals
8. Financial Engineers

Course Modules

Module 1: Foundations of VaR and Market Risk Measurement

- Definition, history, and key parameters of Value-at-Risk

- Understanding different loss distributions and the assumption of Normality in Finance.
- The three primary VaR calculation methods.
- Case Study: Calculating 1-day 99% VaR for a multi-asset equity portfolio using Historical Simulation on S&P 500 data.
- Limitations of VaR.

Module 2: Advanced VaR Methodologies and Techniques

- Detailed implementation of the Variance-Covariance VaR for linear portfolios.
- Incorporating GARCH models and non-normal distributions for volatility.
- Practical application of Delta-Normal and Delta-Gamma approximations for non-linear instruments.
- Case Study: Calculating VaR for a portfolio with options/derivatives, highlighting the need for non-linear VaR methods.
- Introduction to Stressed VaR as required under regulatory frameworks.

Module 3: Expected Shortfall (ES) and Coherent Risk Measures

- Defining Expected Shortfall, also known as Conditional VaR or Tail VaR
- Proof and understanding of ES's properties as a Coherent Risk Measure
- Calculation techniques for ES corresponding to Historical, Parametric, and Monte Carlo VaR.
- Case Study: Comparing VaR and ES capital requirements for a High-Yield Bond Portfolio during a credit crunch.
- Using ES for risk budgeting and optimal capital allocation across trading desks.

Module 4: Practical Monte Carlo Simulation for Risk

- Fundamentals of Stochastic Processes and modeling asset price paths
- Generating random numbers and applying variance reduction techniques
- Step-by-step implementation of Monte Carlo VaR and ES for complex portfolios.
- Case Study: Modeling and calculating VaR and ES for a Cross-Currency Swap portfolio using Monte Carlo simulation.
- Simulation best practices, convergence diagnostics, and Computational Efficiency considerations.

Module 5: Regulatory Backtesting Frameworks (VaR)

- The purpose of backtesting.
- The Basel Traffic Light System and its regulatory implications.
- Implementing Kupiec's Unconditional Coverage Test for frequency of exceptions.
- Case Study: Backtesting a bank's Internal Model Approach VaR with 250 days of trading data, interpreting the number of exceedances.
- Understanding the economic consequences of a failed backtest

Module 6: Advanced Backtesting and Model Validation

- Implementing Christoffersen's Conditional Coverage Test
- Introduction to Duration-Based Backtesting and other advanced methodologies.
- Addressing challenges.
- Case Study: Using a Volatility-Clustering dataset to demonstrate the failure of the unconditional test but the success of the conditional test.
- The role of backtesting within a holistic Model Risk Management framework.

Module 7: Backtesting Expected Shortfall (ES)

- The Elicitability challenge of ES and its implications for direct backtesting.
- Methods for Implicit Backtesting of ES using multiple VaR thresholds.
- Implementing a Joint VaR-ES Backtest based on the properties of tail distribution.
- Case Study: Applying a Multinomial Test to indirectly validate an ES model for a Fixed Income Desk.
- Model Calibration and making necessary adjustments following an ES backtesting result.

Module 8: Stress Testing, Scenario Analysis, and Model Governance

- Differentiating between Backtesting, Stress Testing, and Scenario Analysis.
- Designing relevant historical scenarios and hypothetical scenarios.
- Integrating VaR/ES with Economic Capital and ICAAP
- Case Study: Performing a Reverse Stress Test to identify scenarios that cause model failure or regulatory capital breach.
- Best practices for Model Documentation, Change Control, and regulatory Audit Trails.

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

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