Advanced fixed income analytics- Term structure modeling, credit spreads, duration and convexity hedging Training Course

Professional Development Training Course Outline

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

Course Introduction

Introduction

Advanced Fixed Income Analytics Training Course is designed for finance professionals, portfolio managers, risk analysts, and investment strategists who seek in-depth expertise in bond markets, term structure modeling, credit spread analysis, duration management, and convexity hedging strategies. With global markets becoming more complex, understanding advanced fixed income valuation techniques, interest rate risk management, and portfolio optimization is essential for sustaining performance and mitigating risks in both developed and emerging markets.

This intensive program equips participants with practical tools, quantitative methods, and advanced analytics to master yield curve construction, credit risk modeling, interest rate derivatives, duration-convexity matching, and hedging strategies. Through real-world case studies, hands-on simulations, and interactive sessions, participants will enhance their technical skills and gain strategic insights to strengthen investment decision-making and improve portfolio resilience.

Programme Curriculum

Advanced fixed income analytics- Term structure modeling, credit spreads, duration and convexity hedging

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Course Objectives

1. Master advanced term structure modeling for fixed income securities.
2. Apply yield curve construction techniques in market valuation.
3. Analyze credit spreads and default probabilities using advanced models.
4. Develop strategies for duration and convexity hedging.
5. Use interest rate derivatives for risk management.
6. Assess liquidity risk in bond markets.
7. Implement quantitative fixed income analytics in portfolio management.
8. Evaluate sovereign and corporate bond risks.
9. Optimize asset-liability management (ALM) using duration-convexity tools.
10. Apply stress testing and scenario analysis in fixed income portfolios.
11. Integrate ESG factors into fixed income analytics.
12. Utilize machine learning and AI applications in credit risk modeling.
13. Strengthen decision-making with data-driven fixed income analytics.

Target Audience

1. Portfolio Managers
2. Risk Analysts
3. Investment Bankers
4. Treasury Professionals
5. Asset Managers
6. Financial Analysts
7. Regulators and Policy Makers
8. Quantitative Researchers

Course Duration: 5 days

Course Modules

Module 1: Fundamentals of Fixed Income Analytics

- Overview of bond markets and securities
- Key fixed income valuation principles
- Role of interest rates and risk-free benchmarks
- Understanding yield curves and their implications
- Core concepts of duration and convexity

- **Case Study:** Evaluating bond portfolios under changing yield environments

Module 2: Term Structure Modeling

- Yield curve estimation techniques
- Nelson-Siegel and Svensson models
- Arbitrage-free term structure models
- Stochastic interest rate models
- Practical yield curve fitting exercises
- **Case Study:** Constructing and interpreting yield curves for policy analysis

Module 3: Credit Spreads and Risk Analysis

- Measuring and interpreting credit spreads
- Default risk and rating methodologies
- Structural vs. reduced-form credit models
- Credit default swaps (CDS) analysis
- Application of credit spread in pricing
- **Case Study:** Modeling sovereign and corporate credit spreads

Module 4: Duration and Convexity Hedging

- Advanced duration and convexity concepts
- Portfolio immunization strategies
- Duration matching vs. convexity adjustments
- Hedging interest rate risk with swaps and futures
- Measuring hedge effectiveness
- **Case Study:** Designing a duration-convexity hedged portfolio

Module 5: Interest Rate Derivatives and Risk Management

- Swaps, futures, and options applications
- Interest rate caps, floors, and swaptions
- Managing exposure with derivatives
- Strategies for dynamic hedging
- Risk-return trade-offs in derivative usage
- **Case Study:** Using swaps for fixed income portfolio hedging

Module 6: Asset-Liability Management (ALM)

- Principles of ALM in financial institutions
- Duration-convexity in ALM strategies
- Matching liabilities with assets
- Managing liquidity and funding risks
- Stress testing ALM portfolios
- **Case Study:** ALM optimization in a pension fund

Module 7: Quantitative Fixed Income Analytics

- Factor models in bond returns
- Monte Carlo simulations in bond pricing
- Machine learning in credit risk

- Predictive modeling for spreads
- Quant tools for portfolio optimization
- **Case Study:** Applying machine learning to credit spread forecasting

Module 8: Emerging Trends in Fixed Income

- ESG integration in fixed income
- Climate risk and sustainable bonds
- Digital transformation in bond markets
- Blockchain applications in debt securities
- Future of AI in fixed income analytics
- **Case Study:** ESG bond evaluation for portfolio allocation

Training Methodology

- Interactive expert-led lectures
- Real-world case study analysis
- Group discussions and problem-solving exercises
- Hands-on use of quantitative tools and software
- Simulations of market scenarios and risk management strategies

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:

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