Quantitative Finance Cohort'26

by Quantij

- Rigorous
- Application-Oriented
- Research-Driven
- Practical

IMPACT GROWTH

Quantij's Journey: Impact & Reach

Our commitment to excellence in quantitative finance research has yielded significant results, fostering a community of skilled professionals ready to lead the industry.

793

Students & Professionals Trained

Across 2024 and 2025, empowering careers in quant finance.

2

Successful Years

Of dedicated and rigorous application-oriented learning.

Program Overview

At its core, QFC'26 focuses on developing a strong mathematical and computational foundation. Concepts are introduced with clarity, but not diluted, participants engage with probability theory, stochastic processes, trading, and research in a way that directly connects to financial applications such as derivatives pricing, portfolio construction, and risk modeling.

Mathematical Foundation

Probability theory, Statistics, Linear Algebra, Stochastic Calculus

Real world Projects

Projects that actually translate to Trading desks, model development and risk teams

Be Interview Ready

Resume Building, Mock Interviews and Industry Networking

These foundations are further extended into market microstructure, high-frequency trading (HFT), and market making, where participants study limit order books, order flow dynamics, liquidity provision, and optimal execution strategies. The curriculum emphasizes how these components interact within real-world financial systems, especially in latency-sensitive and data-driven environments.

Learning Philosophy

What distinguishes QFC'26 is its emphasis on *doing, not just learning*. Participants work on original, curiosity-driven projects. The goal is to move beyond templated implementations and develop the ability to think critically about models, assumptions, and limitations.

Structured Learning

Video lectures, high quality resources and Interview Prepration

Hands-On Projects

Original, curiosity-driven research

Collaborative Environment

Learning with Quants in the industry, networking opportunity

The learning process is intentionally collaborative. The cohort includes students and working professionals across different experience levels, enabling meaningful peer-to-peer learning. Discussions, group work, and competitions are structured to simulate real research and trading environments, where ideas are debated, stress-tested, and implemented collectively.

Curriculum Alignment

The curriculum is continuously aligned with industry practices. This includes exposure to market microstructure theory, HFT system design principles, liquidity modeling, and modern multi-curve frameworks, Derivatives Pricing, Volatility Modelling, Credit and Market along with an increasing integration of Generative AI tools to enhance research, strategy development, and productivity workflows in finance.

1

Market Microstructure

Limit order books, order flow dynamics, liquidity provision

2

HFT System Design

Latency optimization, smart order routing, event-driven trading

3

Stochastic Calculus

Relevant for Derivatives Pricing and Fixed Income Instruments

4

Derivatives Pricing and Volatility Models

Derivatives pricing, volatility modeling, credit and market risk

5

Portfolio Optimization

Closely follows the optimization techniques used by the Hedge Funds

QFC'26 is not positioned as a theory-heavy course, but as a platform to build long-term capability. By the end of the program, participants are expected to not only understand quantitative models, but also to question them, extend them, and apply them effectively — whether in pricing, risk, or low-latency trading and market making contexts.

Industries & Career Paths

In essence, QFC'26 aims to bridge the gap between academic theory and industry application, preparing participants to think like quants, design like researchers, and operate like practitioners in modern financial markets.

Banks

Quantitative research, risk management, derivatives pricing

Hedge Funds

Systematic trading, portfolio optimization, alpha generation

HFTs

High-frequency trading, market making, execution algorithms

Trading Firms

Proprietary trading, arbitrage strategies, statistical models

Fintechs

Algorithmic trading platforms, robo-advisory, quantitative tools

Rating Agencies

Credit risk modeling, structured products, regulatory compliance

Consulting Firms

Financial advisory, risk consulting, quantitative solutions

Exchanges & Indexes

Index management, market data, exchange operations

Who Should Join?

This cohort is designed for individuals who aspire to develop a deep and rigorous understanding of Quantitative Finance. Participants in previous editions have ranged from first-year undergraduate students to senior professionals, including Vice Presidents and Managing Directors at leading quantitative firms. Despite their diverse backgrounds, they share a common objective: to build strong conceptual foundations and practical expertise in quantitative finance.

Strong Performance

Performance in competitions and interviews conducted by quantitative firms

Conceptual Clarity

Improved clarity in complex financial and mathematical concepts

Professional Growth

Enhanced effectiveness and productivity in professional roles

Career Progression

Tangible career progression, including promotions and salary increases

The program is comprehensive and demanding, making it suitable for individuals who are committed to developing a serious and long-term understanding of the field.

What We Promise

Comprehensive Coverage

In-depth coverage of quantitative finance concepts with a strong emphasis on practical implementation

Hands-On Projects

Exposure to 12+ industry-relevant projects designed to build applied skills

Collaborative Community

Access to a high-quality and collaborative community of quants from top firms

Learning Resources

- Lecture recordings
- Class notes and reference materials
- Mock interviews and curated interview problem sets
- Structured doubt support with personalized attention
- Access to datasets and problem statements from past competitions conducted by quantitative firms

What We Do Not Promise

- Guaranteed job or internship placements
- Trading strategies that claim unrealistic or immediate financial gains

The focus of this cohort is on building strong fundamentals, practical skills, and long-term competence.

Practice Question Bank

Our comprehensive Practice Question Bank is meticulously curated to provide unparalleled preparation for quantitative finance roles. It features an extensive collection of Probability, Puzzles, and Statistics questions, mirroring the complexity and style previously asked by leading Quant firms. This resource is specifically designed for rigorous practice and interview preparation, ensuring participants are not only familiar with theoretical concepts but are also adept at applying them under pressure.

Extensive Collection

Probability, Puzzles, and Statistics questions for broad coverage

Industry-Relevant

Questions sourced from leading Quant firms' past interviews

Rigorous Preparation

Designed to build critical thinking and problem-solving skills for interviews

The value this bank provides extends beyond rote memorization; it cultivates a deep understanding of the problem-solving methodologies required to excel in the competitive quantitative finance landscape. By engaging with these problems, participants develop the analytical acumen and strategic thinking essential for success.

Cohort Details

Duration

16th May 2026 to 31st March 2027

Live Sessions

Every Saturday and Sunday, 11:00 AM to 1:00 PM IST

Access

Lifetime access to lecture recordings and content, subject to adherence to the content privacy policy

Projects

12+ industry-relevant projects

Engagement

Multiple group activities and competitions conducted within the cohort

Complete Curriculum

Primers

Linear Algebra, Calculus, Probability, Statistics, Stochastic Calculus, Finite Difference Methods, Numerical Methods, Python

Time Series Analysis

Time Series Components (Trend, Seasonality, Noise), Stationarity (Strict and Weak), Autocorrelation (ACF), Partial Autocorrelation (PACF), White Noise, AR (AutoRegressive), MA (Moving Average), ARMA, ARIMA, SARIMA, Box-Jenkins Methodology, AIC and BIC, ARCH, GARCH, EGARCH, GJR-GARCH, Volatility Clustering, Leverage Effect, VAR (Vector AutoRegression), Cointegration, VECM, Granger Causality, Hidden Markov Models (HMM), Kalman Filter

Machine Learning

Supervised Learning, Unsupervised Learning, Loss Functions, Gradient Descent, Regularization (L1 and L2), Cross Validation, Linear Regression, Ridge Regression, Lasso Regression, Polynomial Regression, Logistic Regression, k-Nearest Neighbors, Naive Bayes, Decision Trees, Random Forest, Gradient Boosting (XGBoost, LightGBM), Support Vector Machines, Kernel Trick, Perceptron, Feedforward Neural Networks, Backpropagation, Activation Functions, Convolutional Neural Networks (CNN), Recurrent Neural Networks (RNN), LSTM, GRU, Attention Mechanism, Transformers (Introduction), Autoencoders, Sparse Autoencoders, Denoising Autoencoders, Variational Autoencoders (VAE), KL Divergence, Reparameterization Trick, Generative Adversarial Networks (GAN), Wasserstein GAN, Reinforcement Learning, Markov Decision Process (MDP), Q-Learning, Policy Gradients, Feature Engineering for Financial Data, Backtesting, Overfitting in Finance, Walk Forward Validation, Risk Aware Machine Learning Models

Market Microstructure, HFT and Market Making

Market Microstructure Definition, Trading Venues and Market Structure (Lit vs Dark Pools), Order Types (Market, Limit, Stop, Iceberg, Hidden), Limit Order Book (L1, L2, L3 Data), Matching Engine and Price-Time Priority, Tick Size and Lot Size, Bid-Ask Spread and Liquidity, Market Impact (Temporary vs Permanent), Slippage and Transaction Costs, Microstructure Features: Microprice, Bid-Ask Spread Dynamics, Order Book Imbalance, Order Flow Imbalance, Volume Imbalance, Queue Position and Queue Dynamics, Order Arrival Rates, Cancellation Rates, Cumulative Volume Delta (CVD), VPIN (Volume-Synchronized Probability of Informed Trading), Order Flow Toxicity, High Frequency Trading (HFT): Latency, Co-location, Smart Order Routing, Market Data Feeds, Event-Driven Trading, Statistical Arbitrage (Intro), Latency Arbitrage, Limit Order Book Modeling: Queue Models, Markov Models for Order Flow, Poisson Processes for Arrivals, Hawkes Processes (Self-Exciting Processes), Execution Algorithms: VWAP, TWAP, POV, Implementation Shortfall, Almgren-Chriss Model, Optimal Execution under Risk Constraints, Market Making: Inventory Risk, Bid-Ask Spread Optimization, Avellaneda-Stoikov Model, Dynamic Hedging, Skew Adjustment, Adverse Selection, Performance and Risk: Fill Probability Modeling, Execution Quality Metrics, Sharpe Ratio for Strategies, Drawdown, Backtesting with LOB Data

Stochastic Calculus

Random Walk, Weiner Process, Markov Chain, Martingale, Stochastic Differential Equation, Ito's formula, Probability Measures, Change of measures, Radon-Nikodym Derivatives, Girsanov theorem, Ito's Integral, Fractional Brownian Motion, Gyongy's theorem, multi variable stochastic calculus, Feynman-Kac theorem and its applications, Monte Carlo Simulation, Variance reduction techniques like using antithetic variables, control variates etc

Derivatives Pricing

Options Basics, Arbitrage and Hedging, Option Payoff Structures, Time Value and Intrinsic Value, Put-Call Parity, Introduction to Greeks, Black-Scholes Model Assumptions, Derivation of Black Scholes PDE, Risk-Neutral Valuation, Numerical Solutions to Black Scholes (Finite Difference, Binomial Trees, Monte Carlo Simulations), Delta, Gamma, Vega, Theta, and Rho (First Order Greeks), Second Order Greeks (Vanna, Charm, Vomma), Volatility Smile and Skewness, Kurtosis in Options, Implied Volatility and Volatility Surface, Exotic Options (Barrier, Lookback, Asian, Digital), Pricing Exotic Options (Monte Carlo and PDE methods), American Option Pricing (Finite Difference and Binomial Methods), Model Calibration Techniques, American Monte Carlo Method [Longstaff and Schwartz Simulation], Carr-Madan Formula, Implicit, Explicit and CN method of solving PDE for Vanilla options, American options, Barrier options and their stability criteria

Volatility Models

Introduction to Volatility Models, Implied Volatility Basics, Volatility Smile and Skew, Local Volatility Models, Deriving Dupire's Formula, Andreasen & Huge Interpolation, Relationship between Local Volatility and Implied Volatility, Understanding Volatility Surfaces, Calibration of Local Volatility Models, Stochastic Volatility Models, Heston Model Introduction and Derivation, Heston Model Parameter Estimation (Maximum Likelihood, Method of Moments), Solving Heston Model (PDE and Monte Carlo Methods), Volatility of Volatility, SABR Model Basics, Calibration of SABR Model, Comparison between Local and Stochastic Volatility Models, Local Stochastic Volatility Models, Bridging Local and Stochastic Volatility (LSV), Calibration of Local Stochastic Volatility Models, Bergomi Guyon Model, Pricing under Local Stochastic Volatility, Managing Volatility Risk, Applications of Volatility Models in Option Pricing, SVI and SSVI Parametrization, CVI Model

Interest Rates

Introduction to Bonds and Fixed Income Securities, Bond Pricing Basics, Zero-Coupon Bonds (ZCB) and Yield Calculation, Coupon Bonds and Pricing Formulas, Yield to Maturity (YTM) and Yield Curves, Spot Rates and Forward Rates, Bootstrapping Yield Curves, Constructing Discount Curves, Par Yield and Par Yield Curve, Duration and Convexity, Modified Duration and Interest Rate Sensitivity, Introduction to Interest Rate Models, Short Rate Models (Vasicek, CIR, Hull-White), Calibration of Short Rate Models, Pricing Bonds using Short Rate Models, Two factor Interest Rate Models, Heath-Jarrow-Morton (HJM) Framework, Forward Rate Models, Libor Market Model (LMM), Interest Rate Derivatives Basics, Forward Rate Agreements (FRAs), Swaps (Interest Rate Swaps, Currency Swaps), Pricing Interest Rate Swaps, Swap Curve Construction, FX Swaps and Cross Currency Swaps, Options on Bonds, Jamshidian Decomposition, Swaptions and their Pricing, Black Model for Swaptions, Caps and Floors (Basics and Pricing), Caplets and Floorlets, Implied Volatility in Interest Rate Derivatives, Convexity and Timing Adjustments in Swaps, Structured Interest Rate Products, Managing Interest Rate Risk, Applications of Interest Rate Models in Risk Management and Hedging, Recent Developments in Fixed Income and Interest Rate Derivatives

Portfolio Optimization

Return, Risk, Factor Models, MVO (the curriculum closely follows the book "The Elements of Quantitative Investing")

Market and Credit Risk

Introduction to Market and Credit Risk, Market Risk Metrics (Volatility, Beta, Drawdown), Value at Risk (VaR) - Historical, Parametric, and Monte Carlo Methods, Expected Shortfall (CVaR), Backtesting and Stress Testing for VaR, Credit Risk Fundamentals, Probability of Default (PD), Loss Given Default (LGD), Exposure at Default (EAD), Credit Exposure Measurement, Credit Migration and Rating Transitions, Counterparty Credit Risk (CCR), Credit Valuation Adjustment (CVA) and Wrong-Way Risk, Debt Valuation and Spread Analysis, Credit Default Swaps (CDS) - Basics and Pricing, Credit Spread and Default Probability, Credit Risk Models (Structural and Reduced-Form Models), Merton and KMV Models, Basel Accords Regulatory Requirements for Market and Credit Risk, Capital Adequacy and RWA Calculation, Applications of Machine Learning in Risk Management, Recent Trends in Market and Credit Risk Management

Get in Touch

WhatsApp

+91 92899 48389

Email

operations@quantij.in

Website

www.quantij.in

For any query, please let us know at WhatsApp on **+91 92899 48389**, email at **operations@quantij.in**, or visit our website at **www.quantij.in**.