



Algorithmic Trading and Market Microstructure Course: Execution Algorithms, Liquidity and TCA



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Introduction:

Algorithmic trading and market microstructure, covering execution algorithms, liquidity and TCA, is the subject of this 5-day course for broker execution, buy-side dealing, portfolio implementation and trading venue staff, ending with an Execution Policy and TCA Plan. Institutions lose value quietly when large orders move prices, spreads are crossed without need and algorithm choices are never measured against a benchmark. Nominees already route or supervise orders on order-driven equity markets, and teaching is by modelling build on order book snapshots and fill data. CoreConcept Training Center delivers this algorithmic trading and market microstructure course.

Course Objectives:

- Interpret limit order book depth, queue position and tick size to judge the liquidity available for an order
- Measure quoted, effective and realised spread and estimate price impact for different order sizes
- Select and parameterise VWAP, TWAP, percentage of volume and implementation shortfall algorithms for a given order and urgency
- Assess market-making quotes for inventory risk and adverse selection and set skewing and hedging rules
- Run pre-trade cost estimates and post-trade TCA against arrival price and interval benchmarks, attributing slippage to its drivers
- Design pre-trade risk limits, kill switches and algorithm testing steps for an electronic trading desk

Target Audience:

- Broker execution staff who work client orders through algorithms and direct market access
 - Buy-side dealing staff who place portfolio orders and select brokers and execution strategies
 - Portfolio implementation staff who turn rebalancing decisions into tradable order lists
 - Trading venue operations staff who monitor order book quality, auctions and liquidity provision schemes
 - Market quality analysts who review execution data, spreads and liquidity indicators for oversight purposes
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Course Outline:

Day 1: Order-Driven Market Structure and Liquidity Foundations

- Continuous Limit Order Book with Price-Time Priority Matching
- Order Types Including Market, Limit, Iceberg and Fill-or-Kill
- Tick Size, Lot Size and Queue Position Effects on Fills
- Opening and Closing Call Auction Price Determination Mechanics
- Liquidity Dimensions of Tightness, Depth, Resilience and Immediacy

Day 2: Spread Decomposition, Price Impact and Price Formation

- Quoted, Effective and Realised Spread Calculation From Trade Data
- Spread Decomposition Into Order Processing, Inventory and Adverse Selection
- Square-Root Price Impact Estimation for Large Institutional Orders
- Temporary Versus Permanent Impact and Transitory Volatility Patterns
- Order Flow Imbalance and Informed Trading Signals in Book Data

Day 3: Execution Algorithms and Order Routing in Practice

- VWAP Algorithm Volume Curve Forecasting and Participation Schedules
- TWAP Slicing Logic and Randomisation Against Predictable Footprints
- Percentage of Volume Algorithm Settings for Liquid and Illiquid Names
- Implementation Shortfall Algorithm Urgency and Cost-Risk Efficient Frontier
- Smart Order Routing and FIX Protocol Order Message Flow

Day 4: Market Making, Algorithm Risk Controls and Failure Cases

- Two-Sided Quoting Models with Inventory Skew and Spread Widening
- Adverse Selection Losses Against Informed Flow and Quote Fading
- Pre-Trade Risk Limits for Price Collars, Order Size and Exposure
- Kill Switch Design, Throttles and Self-Trade Prevention Settings
- Algorithm Conformance Testing and Runaway Algorithm Incident Reviews

Day 5: Modelling Build for the Execution Policy and TCA Plan

- Pre-Trade Cost Estimate Model for a Case Rebalancing Basket
 - Post-Trade TCA Workbook Using Arrival Price and VWAP Benchmarks
 - Slippage Attribution by Order Size, Volatility, Spread and Timing
 - Broker and Algorithm Scorecard With Execution Quality Indicators
 - Execution Policy and TCA Plan Assembly and Peer Challenge
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Skills You Will Gain:

- Order Book Liquidity Reading
- Spread and Price Impact Measurement
- Execution Algorithm Selection
- Algorithm Parameter Calibration
- Inventory Risk Management
- Transaction Cost Analysis
- Slippage Attribution
- Electronic Trading Risk Control

Why Attend This Course:

- Deliver an Execution Policy and TCA Plan to the head of dealing and the investment or best execution committee
- Choose between VWAP, TWAP, percentage of volume and implementation shortfall strategies with evidence on cost and timing risk
- Avoid avoidable market impact, unmeasured slippage and runaway algorithm incidents that erode portfolio returns and client trust
- Equip portfolio managers and operations colleagues to read TCA reports and question broker execution quality

Conclusion:

Back at work, the participant hands the Execution Policy and TCA Plan to the head of dealing and the best execution committee, who use it to set default algorithm choices by order size and liquidity, approve broker panels and agree risk limits for electronic orders. Portfolio managers receive the pre-trade cost model before large rebalances. After the first quarter of use, the unit should compare realised slippage with the pre-trade estimates and recalibrate the impact assumptions, benchmark choices and broker scorecard weightings that missed.

Frequently Asked Questions FAQ:

What should participants know before an algorithmic trading and market microstructure course?

Participants should already place, route or supervise equity orders and be at ease with spreadsheets. Bringing anonymised fill data or a sample order list from their own desk makes the modelling build on transaction cost analysis more useful.

How does an algorithmic trading and market microstructure course differ from an options or equity valuation course?

It studies how orders are executed and what trading costs, not what a share or option is worth. Valuation and derivatives courses price instruments; this course measures liquidity, price impact, algorithm choice and slippage once the investment decision is made.

Why does market microstructure matter for algorithmic trading on order-driven equity markets?

Because every algorithm interacts with the limit order book. Tick size, queue priority, auction rules and depth decide how fast an order fills and how far it moves the price, so algorithm settings that ignore microstructure raise trading cost.

What do participants take back from the algorithmic trading and market microstructure course?

Participants take back an Execution Policy and TCA Plan: a pre-trade cost model, a post-trade TCA workbook, a slippage attribution method, a broker and algorithm scorecard and a set of electronic trading risk limits, ready to adapt to their own desk.
