Algorithmic Trading Certificate (ATC)

Level up your career: Understanding advanced trading strategies, Impact of Machine Learning and methods for research into new alpha sources.

ONLINE PROGRAMME: STARTS MONDAY 3rd MARCH 2025

WBS

Algorithmic Trading Certificate (ATC): A Practitioner's Guide

This course is an up-to-date version of the course, Algorithmic Trading Strategies.

Nick taught a version of this course at University College London, to Computational Finance and Risk Management PhD and MSc students from 2015 – 2023, and online through QuantsHub and other platforms.

With over 500 students having successfully completed earlier versions of this course, and the curriculum continually being re-jigged, it seemed an appropriate time for a larger update to broaden the perspective and make the course more applied, with the goal of having students be able to implement methods, models and frameworks themselves. Changes to previous courses include:

- In addition to looking at the returns of QIS, Risk-premia or Factor-based strategies (e.g., trend-following, carry, etc and equities momentum, value, etc factors), this course explicitly considers larger returns-forecasting models and the value of including factors as exogenous features.
- While including much of the university course material, this course goes beyond the merely academic to focus on practical implementations. The academic literature is of interest only in that we can use it as a starting point for delving deeper into real-world applications.
- We expect a working knowledge of programming and can focus more on greater value added material.

Unlike the earlier courses, the new Algorithmic Trading: Practitioners Guide course takes a hands-on approach to building trading pipelines, from data to features to modelling to allocation to execution to performance measurement, guiding the student through common practice as well as areas of innovation.

It is designed to go far beyond the purely academic remit of the UCL course and the more practical online course.

Details

ONLINE PROGRAMME: Monday 3rd March 2025.

DURATION: 12 lecture weeks / 32 hours of Lectures + Hands on examples

TIME COMMITMENT: 8 - 10 hours weekly. Weekly recorded lectures accessible any time in your educational portal.

SELF-PACED ONLINE: Students will have the opportunity to apply what they learn in hands-on projects throughout the course.

FACULTY: Dedicated Faculty Support available every step of the way. Weekly seminar & student forum. Access the same lessons, techniques and methods taught inside global financial institutions.

EVALUATION: Final Project + Certificate

ASSESSMENTS:
One written assessment at the end (PDF + Python Notebook), describing a strategy in detail: its behaviour, its rationale (with quoted references if applicable), implementation and performance and limitations and room for improvements. Marks for sensibility of coverage and exposition, for following the methodology, etc. (i.e., good performance only is not sufficient – you have to display it and explain it).

COURSE FEE: £3950.00 (Regional & Group Discounts available).

EARLY BIRDS:
20% until 17th January 2025.
10% until 14th February 2025.

CERTIFICATE: Students are awarded the prestigious Algorithmic Trading Certificate from WBS Training.

What, why and who

Algorithmic trading is a broad term for trading which uses mathematical models and algorithms.

As markets have become more automated over time, banks and retail brokerages increasingly make markets for their clients using algorithms (e-trade). Some quant hedge funds have relied heavily on algorithms from the start, with a notable few enjoying huge success, while others have employed algorithms as one of many elements in their approach.

In recent times, high-frequency market-makers and proprietary trading shops have come to dominate the exchange traded (and some OTC) markets, with increased volume and speed leading to higher net returns.

Algorithms can be used for all aspects of the business, from trade decisions to portfolio allocations to placing market and limit orders with the time horizons involved being anywhere from a nanosecond to many days.

The rationale is simple – *efficient, scalable models with consistent and testable performance.* The aim is to use a scientific approach which can generate extremely fast responses to market events.

While some exchange traded markets (liquid futures, equities, ETFs) and some highly liquid OTC markets (FX, US Treasuries) have been dominated by algorithmic trading for some time, more recent developments include increasing algo presence in less liquid markets such as non-liquid energy futures (energy futures outside of WTI, Brent, and standard energy complex), OTC rates markets (USD and EUR swaps), highly illiquid corporate bonds and even in areas once fully dominated by voice-trading such as EUR government bonds.

Some of this evolution is the quest for new markets in which to apply what has been successfully developed elsewhere but much of it is just the natural diffusion of talent into areas which are both more risky and possibly more lucrative. Irrespective of whether it be market-making in banks and speciality prop shops or finding and executing on alphas, balancing portfolios and optimising execution in asset managers, today's traders, quants and managers must know about systematic trading.

The goal of this class is to provide students with a strong foundation in algorithmic trading as well as the tools and techniques used in the industry. The class will cover everything from basic programming concepts to advanced trading strategies and methods for research into new alpha sources. Students will have the opportunity to apply what they learn in hands-on projects throughout the course.

Pre-requisites

- **Intermediate or Experienced Programmer** – preferably with **working knowledge of Python** – all examples in the class will be in Python, in Jupyter Notebooks, using Numpy and Pandas. While other languages may be considerably faster and more stable, Python is particularly noted for the speed of development, the access to a wide range of libraries (stats or ML-stack), and interoperability with other languages. Python also is a noted teaching language and
  a vast number of students have been educated in Python.

- **Statistics or Econometrics or (Statistical) Machine Learning** – We will assume strong familiarity with a lot of statistical concepts, although there will be some review of Time Series Econometrics (e.g., ARIMA models and concepts of stationarity). Understandings of basic distributions, statistical hypothesis testing and OLS will be a bare minimum.

- **Basic Finance and familiarity with Economics** – We will assume a basic knowledge of financial markets. Our focus will be markets which are less model-dependent (i.e., less Fixed Income and Vol, more FX, Equities, Futures), although there will be illustrations from each. We will also assume a basic understanding of utility theory from Economics. And Economics impacts all markets and knowing this will take the student a long way.

- **A plus:** Some familiarity with SDEs (e.g., as in Black-Scholes), and differential equations.

Learning goals

This course is for:

Discretionary Traders / Risk Managers

Understand the mechanics of the market and develop the tools to devise and manage new and improved algorithmic strategies of different types including multi-asset strategies. Learn the importance of allocation frameworks, execution models and performance testing. Recognise pros and cons of various approaches to designing strategies and the common pitfalls encountered by algorithmic traders.

Algorithmic Traders / Quants

Appreciate when commonly-used strategies work and when they don't. Understand the statistical properties of strategies and discern the mathematically proven from the empirical. Expand your technology toolkit to incorporate the latest techniques including open-source tools and models from other areas of the quant industry.

Academics / Students / Data Scientists

Gain familiarity with the broad area of algorithmic trading strategies. Master the underlying theory and mechanics behind the most common strategies. Acquire a solid understanding of the principals and context necessary for new academic research into the large number of open questions in the area.

Syllabus

Module 1 Intro and Industry Overview

1.1 Trading Basics
- Types of Trading
- Trading Strategies
- Introduction to Algorithmic Trading

1.2 Industry Overview
- Industry Structure
- Size and growth
- The different sub-sectors

1.3 Approaches
- Some simplified frameworks
- Full On Approaches
- Execution styles
- Trading Platform Architecture

Module 2 Data and Features

2.1 Data
- Data Sources

2.2 Futures
- Information on Futures Markets
- Bloomberg for Futures
- Futures research sources
- Futures Master Table
- Rolling Futures
- Futures Expiry files
- Futures Naming Convention
- Updating Futures

2.3 Commodities
- Commodities Sources

2.4 Equities
- Equity Tickers
- Creating The Universe
- Things to Consider

2.5 Fixed Income
- Swaps
- Bonds

2.6 Other Libraries
- Fixed Income – Volatility
- Adjustments in Equities

2.7 Light Reading
- Background Books
- Background Books II

2.8 Features
- Data Processing
- Missing Data
    - Multiple Imputation
- Outliers
    - Problem with Outliers
    - Outlier Detection
- Data Types
- Databases – SQL and NoSQL
- Feature Stores
- Asset classes
- Quant Packages

2.9 Signals
- Overview
- Price-based technical features

Module 3 Statistics and Time Series

3.1 Statistics - Describing the world
- Density and Distribution
- Density
- Expected Value and Mean
- Variance
- Skewness
- Kurtosis
- Sample vs Population

3.2 Motivation - Asset Prices
- Return time series
- Compounding
- Period Log Returns in Discrete Time

3.3 Stylised facts about asset returns

3.4 Compounding and Discounting
- Future Value
- Compound Interest
- Future Values, Discounting and Present Values

3.5 Probability and Random Variables
- What is Probability?
- Random Variables

3.6 Types of Distribution
- Distribution Types
- Uniform Distribution
- The probability density function of a standard uniform distribution
- Normal Distribution
- Lognormal Distribution
- Student's t Distribution

3.7 Maximum Likelihood Estimation

3.8 Multivariate Distributions
- Introduction to Multivariate Statistics
- Bivariate Distribution
- Independent Random Variables
- Covariance
- Correlation
- Multivariate Normal Distribution

3.9 Statistical Inference
- Introduction to Statistical Inference
- Central Limit Theorem
- Confidence Intervals for Means
- Hypothesis Testing
- Non-Parametric Tests on Distributions

3.10 Time Series
- Stationarity
- Trend models
- Integrated models
- Examples

3.11 General Framework
- Mean and Autocovariance
- Stationarity
- White Noise
- Lags and Differencing

3.12 Autoregressive Process
- AR(1)
- The general AR(p) model
- AR(p) models and stationarity

3.13 Moving Average processes
- Simple Moving Average
- Moving Average of order q
- Identifying p and q in ARMA(p,q)
- PACF and AR models
- Model estimation

3.14 ARMA Processes
- ARMA(p,q) process
- ARMA(1,1) Case
- Properties under the general framework
- Choosing the orders p and q

3.15 Differencing
- Random Walks
- ARIMA Models
- Exponentially Weighted Moving Averages (EWMA) Models
- MA Processes into AR processes
- Wold Decomposition
- ARIMAX Models

3.16 Maximum likelihood estimation
- Maximum likelihood estimation of the ARMA model
- MLE in the AR(1) special case
- MLE in the general ARMA(p,q) case

3.17 History of Forecasting

Syllabus

4 Machine Learning

4.1 What is Machine Learning?
- Supervised vs Unsupervised learning

4.2 Introduction to Classification
- Classification: Predicting discrete labels

4.3 Regression
- Regression: Predicting continuous labels
- Simple linear regression
- Choose model hyperparameters
- Predict labels for unknown data

4.4 Support Vector Machines
- Motivating Support Vector Machines
- Maximising the Margin
- Support Vector Machines: Maximizing the Margin
- Fitting a support vector machine
- Beyond linear boundaries: Kernel SVM
- Tuning the SVM: Softening Margins

4.5 Kernels
- Introduction to Kernels
- Kernel Idea
- Kernel Trick
- Complexity
- Common Kernels
- Gaussian Kernel
- Considerations
- Kernel Matrix

4.6 Decision Trees
- Maths of Decision Trees
- Entropy
- Information gain
- Pruning a tree
- Numerical Variables
- Creating a decision tree
- Overfitting

4.7 Random Forests
- Ensemble Methods
- Summary of Random Forests

4.8 Neural Networks
- History of Neural Networks
- Perceptron Training
- Activation functions
- Updating Weights
- Convergence
- Linear Separation
- Multi-layer Perceptron
- Nonlinear decision boundaries
- Backpropagation

4.9 Reinforcement Learning
- When to use RL?
- Markov Decision Processes
- Transition matrix
- Discounted Rewards
- State-Value Function
- State-Action-Value Function
- Optimal Policy
- Bellman equation
- Generalized Policy Iteration

Module 5 Trend Following

5.1 Trading Strategies
- Dynamic Trading Strategies
- Example signals
- Final Comments on Signals
- Example Strategies
- Buy-and-Hold

5.2 Trend Following
- Trend-Following
- Defining Momentum
- 200 Years of Trend Following
- Momentum Factoids

5.3 Momentum and Skewness
- Skewness Analysis
- Calculating Skewness
- Skewness by Horizon
- Fascinating skewness
- Skewness and Risk Premia
- Taxonomy of filtering methods
- Skewness in Practice
- Skewness and Nonlinear Transforms

5.4 Momentum and Responsiveness
- Responsiveness
- Trend via SDEs
- SDE approach and Fung-Hsieh's "momentum=straddle "
- Trade-offs in design between responsiveness and option cost

5.5 Cross-Sectional Momentum
- Cross-Sectional vs Time-Series
- Common portfolio formation methods
- Ranking or Sort for Portfolios

5.6 Other Topics in Momentum
- Short, intermediate and long time-scales
- Mean-Reversion, Momentum, Mean-Reversion - common time-series behaviour
- Momentum - Over Utilised?
- Momentum in "less liquid assets"

5.7 Trading Futures
- Information on Futures Markets
- Bloomberg for Futures
- Futures research sources
- Futures Master Table
- Rolling Futures
- Futures Expiry Tables
- Futures Naming Convention
- Updating Futures Data
- Other Considerations

Module 6 Carry and Volatility

6.1 Foreign Exchange
- Foreign Exchange - The Market
- Leverage
- FX Forwards
- Covered Interest Rate Parity (CIP)
- Uncovered Interest Rate Parity (UIP)

6.2 The Carry Trade
- Carry
- FX Carry Trade
- Historic Carry
- FX Carry vs Global Carry
- Global Carry Drawdowns
- Example of an FX Carry Trade
- Carry for Swaps
- Carry for Futures, Derivatives, FX

6.3 Physical and Risk-Neutral measures
- A Note on Black-Scholes
- Q-measure (Risk Neutral)
- P-measure (Physical)
- Rain premia and changes of measure.

6.4 Margin
- Mechanics of Margin
- Margin Calls
- Margin & Leverage

6.5 Volatility Strategies
- Types of Volatility
- Types of Volatility Strategy
- Variance Risk Premium
- Short Volatility Strategies
- Modelling Volatility
- Volatility Regimes

Syllabus

- Forecasting volatility
- Long Volatility strategies
- Long-Short Strategies
- Practical aspects of vol trading
- Links to primary market
- Option PL

Module 7 Mean Reversion

7.1 What is Mean Reversion?
- Mean Reversion and Stationarity
- Augmented Dickey-Fuller Test
- Hurst Exponent and Variance Ratio Test
- Half-Life of Mean Reversion
- Why Bother With the Statistical Tests?

7.2 Cointegration
- What is cointegration and why does it matter
- Cointegrated Augmented Dickey-Fuller Test
- Johansen test

7.3 Implementing Mean-Reverting Strategies
- Summary of Mean-Reverting Strategies
- Mean-reverting strategy
- Mean-Reversion Example

7.4 Mean Reversion as Liquidity Provision
- Market making – providing liquidity
- Mean reversion is a measure of the liquidity risk premium
- Reversal strategies do well in volatile and illiquid markets
- Mean-Reversion and Market Impact

7.5 Changepoint Detection
- Model-Based Methods
  - Regime Switching, Regime Detection
- Model-Free Methods - Testing
- Regime Switching and HMMs
- RS vs Changepoints
- Regime Switching State-Space Models / Switching KFs
- Bayesian Online Changepoint Detection / Switch Reset Models
- L1-based trend following methods
- Online Detection with testing

7.6 Pairs Trading
- Overview of a Pairs Trading Strategy
- Finding Pairs
- Pairs Trading
- Avellaneda & Lee

7.7 Statistical Aribitrage
- Create Universe
- Trade Constraints
- Transaction Costs
- Bias
- Shrinkage

7.8 Factor Models PCA
- Factor Models
- Linear Factor Model
- Normal Factor Model
- Types of Factor
- Principal Components Analysis (PCA)

Module 8 Features, Factors and Forecasts

8.1 Algo Trading Systems
- Structure
- Structure - Explanatory
- Structure of the Future

8.2 Features
- Data Processing

8.3 Missing Data
- Multiple Imputation
- Multiple Imputation Details
- Bayesian methods - references

8.4 Outliers
- Problem with Outliers
- Outlier Detection

8.5 Data Processing
- Data Types
- Databases – SQL and NoSQL
- Database Examples
- Feature Stores
- Asset classes
- Quant Packages

8.6 Signals
- Overview
- Types of Signal
- Pure Signals
- Price-based technical features
- Relative Value
- Carry
- Equity Factors
- Data Types

8.7 Factor Trading
- Asset Pricing Models
- CAPM
- CAPM in Pictures
- APT
- Fama-French Model
- Fama-French Portfolios
- Fama-French Model Explanation

8.8 Factors
- Factors and more Factors
- Factor Portfolios
- Factor Zoo
- A Growing Factor Zoo
- Factor Significance
- Multiple Hypothesis Testing
- Jelly Beans
- False Positives vs False Negatives
- FWER, FDR etc
- Significance vs Power

8.9 Dimension Reduction
- Principal Components Analysis
- PCA for the Yield Curve PCA for the Yield Curve - Loadings PCA for the Yield Curve - Scores

8.10 Regularization
- Model Selection and Regularization
- AIC
- BIC
- Sparsity
- Regularization-Bias and Variance
- Discussion

8.11 Double Descent
- DNNs and NTKs
- Faster Kernel methods and random Fourier features models
- RFFs as 2-Level NNs
- Wide RFFs and double descent
- Overparameterisation and non-classical regime
- Benign Overfitting
- PCA-OLS

8.12 Adaptive filters
- State space models / KFs
- Kalman Filters and ARIMA
- KFs and Recursive LS
- Exp Wtd RLS
- Over-parameterisation and adaptive filters

8.13 Forecasting vs Allocation
- What measure to optimise
- MSE, MAPE, etc

Syllabus

- OLS vs TLS

8.14 Product-Specific Features and Info
- Futures
- Information on Futures Markets
- Bloomberg for Futures
- Futures research sources
- Futures Master Table
- Rolling Futures
- Futures Expiry files
- Futures Naming Convention
- Updating Futures

8.15 Data Processing
- Commodities
- Commodities Sources

8.16 Data Processing
- Equities
- Equity Tickers
- Creating The Universe
- Things to Consider

8.17 Data Processing
- Fixed Income
- Swaps
- Bonds
- Other Libraries
- Fixed Income – Volatility
- Adjustments in Equities

Module 9 Order Execution and Market Making

9.1 Market Microstructure
- Market Structure
- Quote-Driven Markets
- Order-Driven Markets
- Market Types
- Price Formation and Price Discovery
- Information and Disclosure
- Liquidity

9.2 Algorithmic Trading
- Growth of Algorithmic Trading
- Types of Algorithmic Trading
- Agency Algorithms
- Proprietary Algorithms
- Algorithmic Trading and Trading Cost

9.3 Order Types
- Market Orders
- Limit Orders
- Some other types of Market Orders
- Limit Order Book
- Limit Orders as Options
- Stop orders and Liquidity

9.4 Market Impact
- What is market impact?
- What causes market impact?
- Market Impact Over Different Horizons
- Intraday Market Impact
- Market Impact vs Market Risk
- Bars
- TWAP
- VWAP
- The Limit Order Book
- Order Book Dynamics
- Optimal Order Placement
- Almgren-Chriss Optimal Liquidation
- Permanent Market Impact
- Temporary market Impact
- Execution Loss
- Minimum Impact
- Minimum Variance
- More General Solutions
- General Solutions
- Optimal Trajectories

9.5 Market Making
- Order Book
- Impact of a New Order
- Order Book Dynamics
- Setup
- Markov Decision Process
- Efficient Market Hypothesis
- Adverse Selection
- Managing Inventory
- Ho & Stoll Model

Module 10 Portfolio Theory and Allocation

10.1 Asset Pricing Models
- CAPM
- APT
- Fama-French Model
- Fama-French Portfolios

10.2 Optimal Portfolios
- Portfolio Theory
- Optimal portfolio theory
- Generalisations
- Two Assets portfolio
- N assets portfolio
- Optimal Sharpe ratio
- Equivalent Formulations of MVO
- Max Return with Risk Constraint
- Min Risk with Return hurdle
- Budget Constraints
- Utility

10.3 Transaction Costs
- Adding Transaction Costs
- Transaction Costs as QP
- Transaction Costs - Solutions and No Trade Zones
- Single Asset vs Multiple Assets Closed Form Solutions
- Transaction Costs - Explanation

10.4 Quadratic Programs
- QP and Slack Variables
- CVXPY and symbolic coding - generating matrix python or matrix C++ code
- Examples

10.5 Tactical Asset Allocation
- MVO as Regression

Module 11 Backtesting and Performance

11.1 Performance Indicators
- Sharpe Ratio
- Calmar
- Omega
- Sortino
- Tail Ratio

11.2 Drawdowns
- Analysing Drawdowns
- DD plots
- Drawdown
- Depth - MaxDD
- Length
- MaxDD Length

11.3 Using Python for Analysis - example code

11.4 Annualising
- Returns
- SR etc
- Value-at-risk
- Performance Indicator Comparisons

11.5 Backtesting - A Realistic Backtest
- Trading and Settlement (t+1, t+2, etc) and Financing
- Leverage
- Margin - initial and maintenance
- Gross limits, Net limits, Capital Constraints
- PnL reinvestment or Capital top-up
- Alphas and Allocations - MVO or Other

Syllabus

– Recording Backtests
11.6 Optimizing Hyperparameters
– Common Methods
– Tuning Algos
– Bayesian Optimisation
– Multi-Objective Optimization
– Multiple Objectives
– Pareto optimal “solutions”
– Many Objective Optimisation
– Common Software - Optuna, Hyperopt, Sk-Learn etc

Module 12 Risk Management

12.1 Risk Management
– Market Risk
– Delta
– Basis Risk
– Non-linear Products
– Gamma
– Vega
– Theta
– Taylor Expansions
12.2 Operational Risk
– Fund Characteristics
– Fund Correlation
12.3 Risk-Management Framework
– Governance
12.4 Optimal Scaling for Strategies
– Optimal Capital Allocation
– Kelly for Risk Management
– Stop-Losses
– Model Risk
– Software Risk
– Psychological Biases
12.5 Value at Risk and Related Approaches
– Value at Risk
– Why not VaR?
– Expected Shortfall
– Features of a Good Risk Measure
– Choice of Parameters
– Changing the Horizon
– Historical Simulation
– Extreme Value Theory
12.6 Factor Models
– Covariance Estimation
– Covariance Shrinkage
– Principal Components Analysis
12.7 Recap

Programming Languages and Platforms

Python Programming Language
Faster Methods – C, C++, Rust and Java
Trading Platforms
Risk Management

Final Project

– Project Description
– Project Requirements
– Project Grading Criteria

Summary

– Key takeaways
– Designing your own strategies
– Doing active research
– Sourcing and cleaning data
– Algorithmic Trading Bootcamp: A Practitioner’s Guide
– Keeping tech stack up-to-date
– Maintenance and Improvement
– Next steps

Self-paced learning option

Take The ATC now with full flexibility to fit your own schedule.

Algorithmic Trading Certificate (ATC):
A Practitioner's Guide – Self-Paced.

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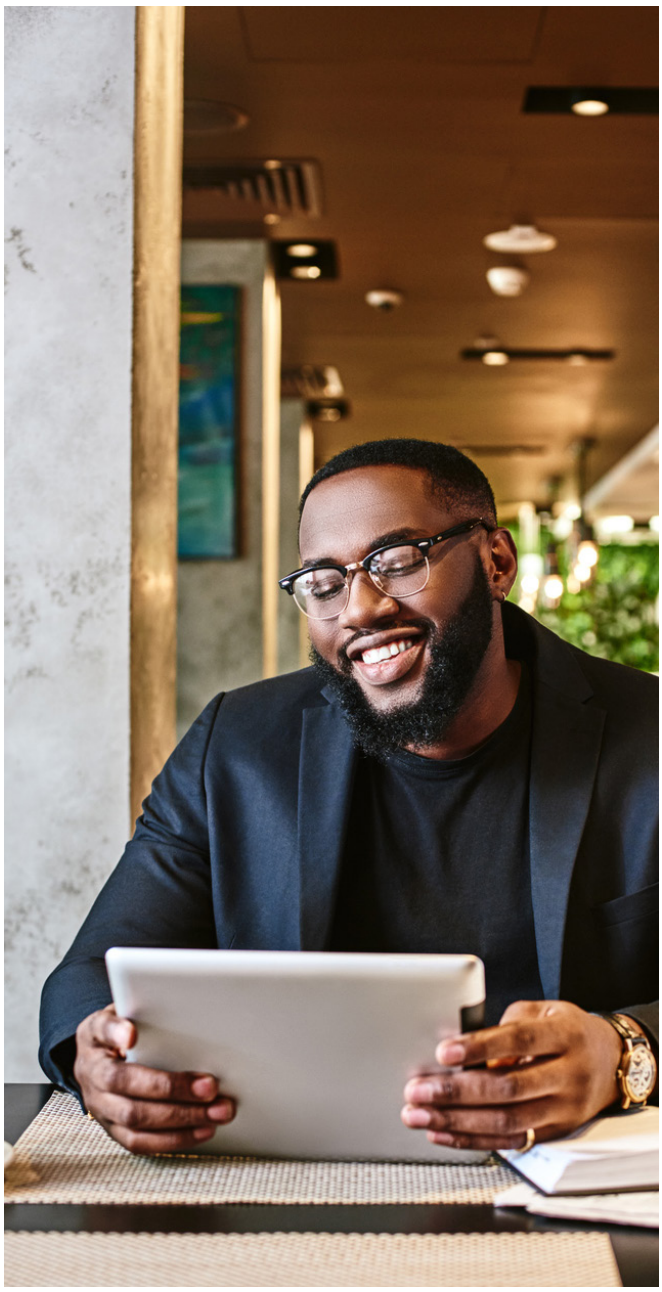
Quants Hub link: https://shorturl.at/NEKyW

Self-paced online learning

- Progress through the course independently at your own pace.
- Enjoy maximum flexibility to fit your own schedule, with no set deadlines to follow.
- Access the real-world final project when you are ready to implement the knowledge and skills you have acquired during the course of the programme.



Course leaders

Dr. Nick Firoozye

Dr. Nick Firoozye is a mathematician with over 20 years of experience in the finance industry, in both buy and sell-side firms, in research, structuring and systematic trading.

He is currently Managing Director and Head of FI Systematic Trading at a small securities trading shop in NY. He is an Honorary Professor in Computer Science at University College London, focusing on OnlineLearning, Reinforcement Learning, Robust Machine Learning and of course Statistics in Finance. He co-authored a book, entitled *Managing Uncertainty, Mitigating Risk*, about the role of uncertainty in finance, in light of the many recent financial crises.

Nick began teaching Algorithmic Trading Strategies as a PhD reading course in 2015 and since then Nick adapted the material to create an MSc course which has run for the past 4 years. Nick has had over 500 students successfully taking his online and UCL courses to date. Nick got his PhD at Courant Institute, NYU, and taught for a number of years at U of MN, Heriot-Watt, University of Bonn, NYU, and then finally at University of Illinois where he was an Asst Prof, before leaving academia for Wall Street.

Dr Brian Healy

Dr Brian Healy is a mathematician with over 20 years experience in financial markets as a quant, trader, researcher and strategist. He began his career as an exotic options quant & trader with extensive experience in all asset classes, particularly fixed income and foreign Algorithmic Trading: A Practitioner's Guide 16 exchange, at leading investment banks including Citigroup, Barclays Capital and Deutsche Bank.

Since leaving banking he has run a very successful consultancy business which specialises in building models using the latest mathematical, statistical and machine learning techniques. Clients include asset managers, market-making firms, private capital firms as well as tech companies.

Brian is an expert in all aspects of markets, particularly quantitative strategies, options and other derivatives and predictive modelling. In addition to his work with industry he is also an industry professor of machine learning and data analytics at UCL, a lecturer in finance at UCD, a researcher and lecturer in mathematical and computational finance at Stanford University, is an author of many peer reviewed papers in mathematical finance and frequent speaker at conferences and seminars.

Registration Form

Start date: Monday 3rd March 2025

Regular Course Fee

☐ Full Course Fee: £3950.00 + UK VAT

20% VAT IS ONLY CHARGEABLE FOR RESIDENTS IN THE UK AND EU

Early Bird Discounts

☐ 20% until 17th January 2025

☐ 10% until 14th February 2025

☐ Discount code

To register, please fax or scan and email the completed booking form to:

E-mail: sales@wbstraining.com

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REGIONAL & GROUP DISCOUNT:

The Algo Trading Certificate (ATC) offers global regional & group discount fee structures.

Group Discount: If 2 or more people from your institution wish to take The Algo Trading Certificate (ATC) please contact us. If you have a wider interest, preferred supplier agreements offer best value.

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