Oxford Algorithmic Trading Programme

Gain the skills to develop and implement your own algorithmic trading strategies within a real-world market environment.

About this programme

Algorithmic trading utilises a number of predefined rules that enable automation of the investment process, including identifying market efficiencies, recognising patterns, and making trades at a high frequency. Success in this arena relies on an understanding of these rules, a knowledge of current and future trends and technologies, and a clearly defined trading strategy. This online programme from Oxford Saïd aims to equip you with a comprehensive understanding of the rules that drive successful algorithmic trading strategies and hedge funds, and ensures you receive a grounded introduction to financial theory and behavioural finance. Over the course of six weeks, you'll learn key principles established by Programme Director Nir Vulkan. You'll also discover what biases are present in the market and gain the ability to decide whether a fund is worth investing in based on key evaluation criteria.

What this programme covers

Throughout this programme, you'll observe the use of successful algorithmic trading models in practice, learn to confidently interpret the current state of systematic trading, and see how trading models are created for different financial markets. You'll not only gain insights into the risk factors surrounding algorithmic trading strategies, you'll also walk away with two sets of rules created by Professor Nir Vulkan specifically for this programme, that act as a guide for creating or evaluating algorithmic trading. Develop an up-to-date understanding of the latest trends in the sector, and explore the impact that automation, artificial intelligence, and machine learning will have on the future of systematic trading.
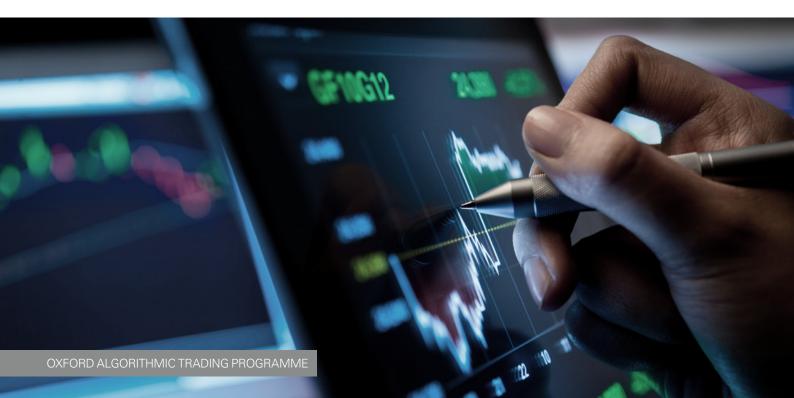
£2,300

6 weeks
excluding orientation

8–10 hours/week of self-paced learning, **entirely online***

Each module is released weekly, allowing a flexible but structured approach to learning. You'll be supported as you engage in individual activities and group discussions, ensuring you feel confident to submit your best work at each Tuesday weekly deadline.

Who should take this programme?

This programme will be of benefit to **traders, investors, and financial professionals** who want to understand what algo trading has to offer as a trading strategy. It will also be of value to **business leaders** who want to leverage algo trading in their firms, and **IT and technology professionals** who want to understand the strategies behind the creation of rule-driven trading models. **MBA graduates and new hires to quantitative finance firms** will gain an essential introduction to the world of automated trading, while **risk, compliance, and legal professionals** seeking to improve their professional knowledge of algo trading and its regulatory framework will find the programme particularly valuable.

This is a non-technical programme and does not require the ability to code.

This programme is for you if you want to:

Upskill
As a financial professional, develop familiarity with algorithmic trading, with unique insights from industry leaders and top systematic trading academics.

Strategise
Business leaders and tech professionals are given insights into the strategy behind rolling out effective trading models, and how future technology trends are set to impact the future of algorithmic trading.

Invest
Traders and investors are equipped to formulate views on whether a trading model or fund is worth investing in, based on key evaluation criteria.

> I took the Algorithmic Trading Programme from Oxford to learn more about quantitative strategies and to validate the models I had been developing for over five years. The course was a turning point in my career. Using what I'd learned from the content and the experienced professors and professionals on the course, I opened my own investment firm – GQS Capital. For two years I have been applying the concepts of algorithmic trading on a daily basis, delivering good results for our investors... The Algorithmic Trading Programme helped me chase my dreams, and I recommend you take the course and open your eyes to the future of investments.

VINICIUS KARAM, QUANT STRATEGIST FOR FASANARA CAPITAL, GQS

What you will learn

Welcome to your Online Campus

ONE WEEK

You'll be welcomed to the programme and begin connecting with fellow participants, while exploring the navigation and tools of your Online Campus. Be alerted to key milestones in the learning path, and review how your results will be calculated and distributed. You'll be required to complete your participant profile, confirm your certificate delivery address, and submit a digital copy of your passport/identity document.

MODULE 1

**Introduction to classic
and behavioural finance theory**

Engage with two fundamental approaches to finance and see how theoretical models are applied.

- Define the efficient market hypothesis and other concepts related to classic finance theory
- Review the fundamental principles of the efficient frontier
- Discuss how behavioural biases impact the market
- Define terminology associated with stock market trends
- Discuss how stock market trends are identified in practice
- Identify rules or principles that can be used to build and evaluate an algorithmic trading model

MODULE 2

**Systematic trading and the state
of the investment industry**

Discover the history of hedge funds, the evolution of systematic trading over time, and the latest innovations in the algorithmic trading industry.

- Review the principles of systematic trading within hedge funds
- Identify the characteristics of hedge funds and their history
- Identify which types of investors tend to invest in hedge funds
- Discuss the factors that contribute to the success or failure of large systematic trading organisations
- Identify the difference between large systematic trading organisations and smaller players
- Interpret the historical and current opportunities and challenges of the systematic trading industry

WHAT IS OXFORD SAID?

Learn more about

**SAID BUSINESS
SCHOOL,
UNIVERSITY
OF OXFORD**

MODULE 3

Technical analysis and the methodology of trading system design

Learn about the primary stages of modelling in financial markets.

- Identify the characteristics of out-of-sample testing and backtesting as methods of statistical verification
- Review appropriate measures of model performance, including their advantages and disadvantages
- Discuss how the Sharpe ratio is used to measure a model's validity
- Identify the origins of trading rules and the importance of futures in algorithmic trading
- Interpret the risks associated with algorithmic trading at the management and programming levels
- Articulate the benefits and challenges of cross-disciplinary collaboration in financial modelling
- Identify the role of APIs and other programming considerations in the modelling of algorithmic trading strategies

MODULE 4

Working with an algorithmic trading model

Discover the process of building a simple trend model, see it in action, verify its validity, and discuss its applications.

- Review the process of building and optimising a simple trend model
- Review important considerations for selecting appropriate in-sample data
- Articulate useful techniques for testing whether a trend model is functional or viable
- Test whether a trend model can be applied to a different set of data
- Reflect on the applications of an algorithmic trading model to a live environment or real-world market circumstance
- Test the functionality and viability of a trend model, given changes in the underlying data

MODULE 5

Evaluation criteria for systematic models and funds

Understand the key evaluation criteria required for a critical overview of systematic models and funds.

- Discuss the opportunities and challenges faced by different participants in the algo-trading ecosystem
- Discuss the different avenues for growth that can help to further develop or improve an algo model
- Investigate the strengths and weaknesses of a systematic fund in order to analyse how it is likely to perform
- Evaluate whether or not a fund is worth investing in based on the four rules for fund evaluation

MODULE 6

Future trends in algorithmic trading

Learn about future trends in the algorithmic trading sector and the technologies poised to facilitate its growth.

- Review the current state of the digital finance technology industry
- Investigate the opportunities and challenge of utilising robo-advisers and algorithmic technology for systematic trading
- Review the ways in which AI and machine learning are utilised for algorithmic trading
- Assess the real value and impact of AI and machine learning for the algorithmic trading industry
- Formulate a view on future trends in algorithmic trading and the relationship between these trends and new technologies

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> This course is value for money and the time management is reasonable. It provides an overview of algorithmic trading and also direct experience shared by industry professionals.
>
> **VIOLA YANGZI QIU, SENIOR PRODUCT MANAGEMENT SPECIALIST, IHS MARKIT**

Who you'll learn from

These subject matter experts from Saïd Business School, University of Oxford guide the programme design and appear in a number of programme videos, along with a variety of industry professionals.

Your Programme Director

Professor Nir Vulkan
Associate Professor of Business Economics at Saïd Business School and a Fellow of Worcester College, both at the University of Oxford

Professor Nir Vulkan is an authority on e-commerce and market design, and on applied research and teaching on hedge funds. His expertise lies in crowdfunding, e-commerce, market design, entrepreneurship, hedge funds, and fintech. Nir has been a lecturer at Saïd Business School since 2001. He was the director of the Oxford Centre for Entrepreneurship and Innovation (OxCEI) and the co-founder and director of OxLab, a laboratory for social science experiments, both at Saïd Business School.

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This six-week programme provided a good taste of what algorithmic trading constitutes. The content and insights gained, particularly from expert presentations, provided real value for money. I enjoyed the materials and the interactive discussion board, seeing other perspectives on the eclectic range of topics covered. The programme has afforded me the base knowledge needed to develop and expand my algo skill set. I would recommend it to anyone looking to start a career in algo trading, but who has no idea where to begin.

STEPHEN OLAYIWOLA, QUANT ANALYST AND ALGO TRADER, VIRGIN MONEY

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Guest Experts

This programme combines esteemed academics and leading industry players to ensure that you get a full 360-degree perspective on algo trading.

Matthew Sargaison
Co-Chief Executive Officer of Man AHL

Martin Lueck
Co-founder of Aspect Capital

Giovanni Daprà
Co-founder and CEO of MoneyFarm

Hans-Jörg von Mettenheim
Chair of Quantitative Finance and Risk Management at IPAG Business School

Ewan Kirk
CEO and Co-founder of Cantab Capital Partners

Anthony Ledford
Chief Scientist at Man AHL

Susi Gorbey
Director of Quantitative Strategies Oversight at Tudor Capital Europe LLP

Terri Duhon
Non-Executive Director of Morgan Stanley, Public Speaker, Educator, Finance and Risk Expert

Daryl Cook
Managing Director and Portfolio Manager, Systems Group at Tudor Investment Corporation and Risk Expert

Stephen Roberts
Director of the Oxford-Man Institute of Quantitative Finance and RAEng/Man Professor of Machine Learning at the University of Oxford

Stefan Zohren
Associate Professor at Oxford-Man Institute of Quantitative Finance at the University of Oxford, former Quantitative Strategist at leading high-frequency-trading firms

Your Success Team

GetSmarter, with whom Saïd Business School, University of Oxford is collaborating to deliver this programme, provide a personalised approach to online education which ensures you're supported throughout your learning journey.

Programme Convenor
A subject expert who'll guide you through content-related challenges

Success Manager
Your one-on-one support available during University hours (8am - 5pm GMT) to resolve technical and administrative challenges

Global Success Team
Available 24/7 to solve your tech-related and administrative queries and concerns

How you'll learn

Every programme is broken down into manageable, weekly modules, designed to accelerate your learning process through diverse learning activities:

- Work through your downloadable and online instructional material
- Interact with your peers and learning facilitators through weekly class-wide forums and small group discussions
- Enjoy a wide range of interactive content, including video lectures, infographics, live polls, and more
- Investigate rich, real-world case studies
- Apply what you learn each week to quizzes and ongoing project submissions, culminating in a certificate of attendance from Saïd Business School, University of Oxford

Technical Requirements

Basic requirements

To complete a programme, you'll need a current email account and access to a computer and the internet, as well as a PDF reader and Excel. You may need to view Microsoft PowerPoint presentations, and read and create documents in Microsoft Word, or similar programmes.

Browser requirements

We recommend that you use Google Chrome as your internet browser when accessing the Online Campus. Although this is not a requirement, we have found that this browser performs best for ease of access to programme material. This browser can be downloaded here.

Additional requirements

Certain programmes may require additional software and resources. These additional software and resource requirements will be communicated to you upon registration and/or at the beginning of the programme. Please note that Google, Vimeo, and YouTube may be used in our programme delivery, and if these services are blocked in your jurisdiction, you may have difficulty in accessing programme content. Please check with a Programme Consultant before registering for this programme if you have any concerns about this affecting your experience with the Online Campus.

OXFORD ALGORITHMIC TRADING PROGRAMME

A powerful collaboration

Saïd Business School at the University of Oxford is collaborating with online education provider, GetSmarter, to create a new class of learning experience – one that is immersive, collaborative, and designed for optimal accessibility for the busy working professional.

About Saïd Business School, University of Oxford

Saïd Business School blends the best of new and old. Deeply embedded in an 800-year-old world-class University, Oxford Saïd strives to educate people for successful business careers. As a community, Oxford Saïd seeks to use business acumen and global networks to address long-horizon phenomena like demographic change, new technologies and natural resource scarcity. Saïd Business School is committed to delivering cutting-edge education and ground-breaking research that transforms individuals, organisations, business practice and society.

About GetSmarter

GetSmarter, a brand of 2U, Inc., is a digital education company that partners with the world's leading universities to select, design and deliver premium online short courses with a data-driven focus on learning gain.

Technology meets academic rigour in our people-mediated model which enables lifelong learners across the globe to obtain industry-relevant skills that are certified by the world's most reputable academic institutions.

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This course provides an important foundation. It requires commitment, but is engaging, enjoyable, and will hopefully open doors.

JAMES ROBERT ACKERLEY, ASSOCIATE DIRECTOR, HSBC

Saïd Business School, University of Oxford certificate of attendance

Upon successful completion of the programme, you'll receive a certificate of attendance from Oxford Saïd as powerful proof of the enhanced skills and thinking abilities you've developed.

Assessment is continuous and based on a series of weekly practical assignments completed online. To be issued with a Saïd Business School, University of Oxford certificate of attendance you'll need to meet the requirements outlined in the programme handbook. The handbook will be made available to you as soon as you begin the programme.

Your certificate of attendance will be issued in your legal name and couriered to you at no additional cost. All certificate of attendance images are for illustrative purposes only and may be subject to change at the discretion of the University.

About the Oxford-Man Institute

The Oxford Algorithmic Trading Programme is developed in collaboration with the Oxford-Man Institute for Quantitative Finance, a world-leading centre for interdisciplinary research into the financial economy. Many of the programme's guest experts serve on the Institute's leadership team.

Join the Oxford Executive Education Alumni Group on LinkedIn

This is an official Saïd Business School, University of Oxford alumni group for all open, online and executive programmes. You'll be able to network with past participants of other online and on-campus Oxford Saïd programmes and gain first access to School news.

Access to this group will only be granted following the participant's successful completion and passing of the programme.

Oxford Algorithmic Trading Programme

Gain the skills you need to reach your financial potential with a world-leading business school and industry experts.

REGISTER NOW

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