FACULTY OF NATURAL, MATHEMATICAL & ENGINEERING SCIENCES

KING'S College LONDON

# Department of Mathematics

## PARTNER WITH US TO DRIVE INNOVATION

The Department of Mathematics at King's College London combines world-class research with strong industry engagement to deliver practical, data-driven solutions across sectors including finance, healthcare, cybersecurity, and climate science.

Through strategic partnerships, technical consultancy, and access to top-tier academic talent, the Department helps organisations innovate, solve complex challenges, and gain competitive advantage. Whether through joint research, bespoke modelling, or interdisciplinary collaboration, Mathematics at King's offers a responsive, expert partner for organisations seeking impactful, real-world outcomes.

# Foreword

The Department of Mathematics is committed to expanding its engagement with industry, strengthening existing partnerships while actively developing new ones. The inaugural Maths with Industry Day in May 2025 was designed to highlight successful collaborations and foster meaningful connections between representatives from industry and our community of mathematicians, physicists, and engineers. Looking ahead, we aim to provide businesses with a platform to present real-world challenges – barriers to growth or untapped opportunities – to our in-house team of mathematical experts, with the goal of sparking innovative solutions and paving the way for future collaborations.



**Professor Anne Taormina**
Head of Department



**Dr Cristin Buescu**
Enterprise & Engagement Lead

**Our research strengths include:**

- mathematical modelling
- statistics
- financial mathematics
- machine learning.

This expertise is particularly valuable in areas requiring high-level quantitative analysis, such as risk assessment, optimisation, and systems modelling.

Academics work closely with partners on bespoke projects, using advanced methods to improve operational efficiency, forecast outcomes, and support policy development.

# Case studies



### Predicting future energy demands in a complex market

With EVs, AI and renewables reshaping the grid, accurate forecasting is critical. Working with the Low Carbon Contracts Company, King's has created a new model that captures uncertainty and improves long-term electricity demand predictions, for a secure Net Zero transition.



### Protecting AI Intellectual Property from theft: A robust tool for businesses

As organisations increasingly invest in developing capable AI models and tools, protecting their intellectual property from competitors, state-linked groups, or cybercriminals has become critical. King's has partnered with Synoptix to explore technical safeguards for neural network IP.



### Safeguarding critical infrastructure through better modelling of natural disasters

Predicting rare and extreme hazards is key to protecting infrastructure such as energy systems. King's has collaborated with EDF Energy to develop statistical tools capable of predicting the unpredictable – within the confines of limited observational data, against a backdrop of growing climate uncertainty.

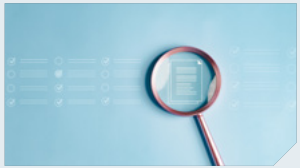
# Collaborate with us

Partnering with the Department of Mathematics gives you direct access to cutting-edge research and academic expertise. The Faculty Enterprise team supports collaborations that drive innovation, solve complex problems, and accelerate product and service development. Through tailored partnerships, consultancy and research projects, the team helps organisations tap into King's strengths in areas like health, AI, sustainability and security. These collaborations deliver practical, evidence-based solutions and strategic transformation.



### Consultancy

Consultancy gives businesses access to academic expertise for solving problems or providing strategic advice. Projects may involve product or service design, testing, data analysis, use of research facilities, expert presentations, specialist training, or acting as expert witnesses.



### Collaborative Research

We drive innovation through joint research, helping to develop new products, systems, and models. These partnerships can be supported by funding from bodies like Innovate UK, and King's has a strong track record in securing such funding. Our teams provide the expertise and infrastructure to manage complex, large-scale collaborations.



### Industry-funded Studentships

We are training mathematicians through tailored programmes that address national skills gaps and industry needs. Our doctoral students work across disciplines and in collaboration with external partners, applying advanced mathematical approaches to real-world challenges.



### Continuing Professional Development

In today's changing landscape it's crucial to stay abreast of the latest methods and technologies, and our CPD courses are packed with insights and learning that help you fulfil your potential and boost your career prospects. We can tailor our courses to your needs and offer the flexibility that you require.

# Academic spotlight

Connect with our academics in the Mathematics Department at King's College London to explore partnerships that apply advanced mathematical techniques – such as statistical modelling, algorithm design, and quantitative analysis – to transform complex, data-driven challenges into clear, actionable solutions tailored to your organisation's needs. Email us at **nmes-enterprise@kcl.ac.uk**



**Professor Tiziana Di Matteo**
Tiziana's research focuses on econophysics, applying methods from statistical physics to finance, alongside data analytics, complex systems, and the science of networks to understand and model intricate economic behaviours.



**Professor Steve Gilmour**
Steve's research advances statistical methods for designing and analysing complex experiments, focusing on factorial and nonlinear designs, treatment allocation, and linking experimental design with modelling to address real-world industrial research challenges.



**Dr Spyros Pougkakiotis**
Spyros' research develops algorithms for optimisation, addressing large-scale deterministic and stochastic problems. With applications in data science, engineering, and operational research, his research supports risk-aware decision-making in complex, real-world industry settings.



**Dr Maria Kalli**
Maria's research advances Bayesian nonparametric methods, Markov Chain Monte Carlo algorithms, and Bayesian regression with global-local shrinkage priors, focusing on high-dimensional data, time series modelling, and applications in macroeconomics and finance.

# Engaging with our student talent

Collaborating with students in the Department of Mathematics at King's College London gives industry partners access to fresh ideas, analytical expertise and innovative approaches to real-world challenges, while students gain practical experience and industry insight. MSc projects and studentships provide focused postgraduate research addressing specific organisational challenges. Year in Industry placements (9–12 months) bring undergraduates into industry partner organisations after Year 2 (BSc) or Year 3 (MSci), where they contribute to live work. A new BSc Quantitative Mathematics degree, developed in close collaboration with industry partners and to be launched in September 2027, will create further opportunities to engage through projects, datasets, mentorship and placements, supporting the development of graduates who can thrive in the workplace from the outset.



## Partner with us on an MSc project opportunity



## Drive innovation by accessing student talent

# About the Department of Mathematics

The Department of Mathematics at King's College London is a world-leading centre for the research and education in mathematics.

Our research covers a broad range of sub-disciplines in applied and pure mathematics, including analysis, disordered systems, geometry, financial mathematics, statistics, probability and theoretical physics and more.

We explore new ways of looking at familiar issues and develop new tools to solve complex problems.

Find out more:
**kcl.ac.uk/mathematics**

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