



THE LONDON SCHOOL
OF ECONOMICS AND
POLITICAL SCIENCE ■

Department of Statistics

Virtual Graduate Open Day

14 NOVEMBER 2022, 10:00-11:00AM

Professor Pauline Barrieu,

Head of Department of Statistics

Professor Umut Cetin,

Programme Director for MSc Quantitative Methods for Risk Management

Dr. Tengyao Wang,

Programme Director for MSc Statistics (Financial Statistics) and MSc Statistics (Financial Statistics) (Research)

Professor Zoltan Szabo,

Programme Director for MSc Data Science

Dr Sara Geneletti, Professor Andrew Street and Dr Miqdad

Asaria,

Joint Programme Directors for MSc Health Data Science (joint with Department of Health Policy)

Dr. Kostas Kalogeropoulos,

Programme Director for MSc Statistics, MSc Statistics (Research), MSc Statistics (Social Statistics) and MSc Statistics (Social Statistics) (Research)

Alex Taylor,

MSc Programmes Manager



Department of Statistics ■

Plan for today

- Welcome from Professor Pauline Barrieu
- Presentations from Programme Directors of each of our MSc programmes
- Q&A Session

A few points:

- *Please type questions in Q&A box*
- *Detailed/specific questions – please submit at www.lse.ac.uk/ask-lse or via Student Marketing and Recruitment Live Chat*
- *Other sessions taking place on Applying to LSE, Financial Support and LSE LIFE*

Why do an MSc?

- Develop advanced quant skills: probability, modern statistical methods, statistical computing, data analysis
- Chance to specialise (theory and/or applied)
- Better prepared for quant career. Learn how to:
 - *Choose appropriate methods for given problem and data*
 - *Implement in software (or program yourself)*
 - *Interpret and communicate results*

The Department of Statistics

- Home to internationally respected experts in statistics and data science
- Thriving research environment and varied seminar series
- Many career, alumni and social events
- We are a relatively small, friendly department

Our MSc Programmes

- **MSc Statistics*** - Dr. Kostas Kalogeropoulos
 - **MSc Statistics (Social Statistics)*** - Dr. Kostas Kalogeropoulos
 - **MSc Statistics (Financial Statistics)*** - Dr. Tengyao Wang
 - **MSc Quantitative Methods for Risk Management** - Professor Umut Cetin
 - **MSc Data Science** - Professor Zoltan Szabo
 - **MSc Health Data Science** - Dr Sara Geneletti, Dr Andrew Street and Dr Miqdad Asaria
- *9- and 12-month (“Research”) versions



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MSc Statistics

Degree Structure

■ Compulsory

- ST425 Statistical Inference: Principles, Methods and Computation (F)
- **Research branch only: ST499 Dissertation (F)**

■ Options

- 3 units (**2 units for Research branch**)
- Most options are 0.5 unit

Optional Courses (a selection)

■ Probability theory

- Stochastic Processes

■ Statistical modelling and data analysis

- Multivariate Methods, Multilevel Modelling, Time Series,
- Generalised Linear Modelling & Survival Analysis,
- Longitudinal Data Analysis

■ Computational

- Computational Data Science
- Machine Learning & Data Mining,
- Bayesian Machine Learning

Research branch?

- 12 months, involves a dissertation (1 unit, 25%)
 - Choose topic from list (or develop own)
 - Work on throughout year

- Why?
 - Chance to work in-depth on subject of choice
 - Some projects with industry partner
 - Develop computing and analysis skills
 - Experience of research and report writing



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MSc Statistics (Social Statistics)

What? Degree Structure

■ Compulsory

- ST425 Statistical Inference: Principles, Methods and Computation (F)
- ST411 Generalised Linear Modelling and Survival Analysis (H)

■ One of:

- ST405 Multivariate Methods (H)
- ST416 Multilevel Modelling (H)
- ST442 Longitudinal Data Analysis (H)

- Research branch only: ST499 Dissertation (F)

What? Degree Structure

■ Options

- 2 units (1 unit for Research branch)
- Most options are 0.5 unit

What next? Careers

■ Statistics

- Any quant position!
- Common destinations: finance sector, tech industry, public sector, research

■ Social Statistics

- All of the above, plus positions with a social science flavour:
 - Market or survey research
 - Government department, NGO
 - Social research (university)

ESRC 1+3 Funding

- Enables students to do an MSc followed by a PhD in the Department of Statistics
- Available on MSc Data Science and the MSc Statistics (Research) programmes (all streams).
- Open to students from all nationalities
- If you would like to be considered, submit an application for relevant MSc programme, including a research proposal for the PhD element



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MSc Statistics (Financial Statistics)

Why Financial Statistics?

- Statistical models/methods most related to finance
- Knowledge in finance; listed optional courses from the Finance department
- Data analytic/machine learning approach to modern problems in finance, estimation/forecast/interpretation

Degree Structure

■ Compulsory

- ST425 Statistical Inference: Principles, Methods and Computation (F)
- ST422 Time Series (H)
- ST436 Financial Statistics (H)
- Research branch only: ST499 Dissertation (F)

Degree Structure

■ Options

- 2 units (1 unit for Research branch)
- Most options are 0.5 unit, including courses offered by Department of Finance, e.g.,
 - FM402 Financial Risk Analysis (H)
 - FM413 Fixed Income Markets (H)
 - FM429 Asset Markets A (H)
 - FM441 Derivatives (H)

What next? Careers

■ **Financial Statistics**

- Mostly quant positions!
- Common destinations:
 - finance sector, tech industry, or further study
 - E.g. Investment analyst, Equity trader, Asset manager, Risk controller, etc.



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MSc Quantitative Methods for Risk Management

Course Structure

■ Foundation

- **MA400** Introductory Course
- **ST409** Stochastic Processes (MT)

■ Core:

Financial and Insurance Risk	Computational Skills
ST429 Statistical Methods for Risk Management (MT)	ST433 Computational Methods in Finance and Insurance (LT)

Course Structure

■ Optional Courses

Applied Probability	Statistics
ST452 Probability and Mathematical Statistics I (MT) ST453 Probability and Mathematical Statistics II (LT) ST426 Applied Stochastic Processes ST440 Stochastics for Derivatives Modelling	ST422 Time Series (MT) ST436 Financial Statistics (LT) ST443 Machine Learning and Data Mining (MT) Plus others

Course Structure

■ Optional Courses

Mathematics	Finance
MA416 The foundations of Interest Rate and Credit Risk Theory (LT) MA420 Quantifying Risk and Modelling Alternative Markets (MT) Plus others	FM404 Forecasting Financial Time Series (LT) FM441 Derivatives (LT) FM442 Quantitative Methods for Finance and Risk Analysis (MT) Plus others

Teaching Format

- Lecture – 2 hours per week
- Seminar – 1 hour per week
- Office hours

■ Assessment

- Some (written) exam, some partly coursework. 2-hour exam for 0.5 unit, most in Summer Term
- ST429 is a January exam

Making the most of your year at LSE

- Develop multi-tasking and time management skills
- Group work
- Keep up with your study
- Make use of office hours
- Presentation Skills (project presentations, Practitioner's Challenge)
- Career, alumni and industry events (various events organised by LSE Careers)

Career

- LSE Careers
- Careers with a Statistics Degree Panel
- Alumni Mixer Event
- LSE Practitioner's Challenge
- Various presentations from industry practitioners

Career

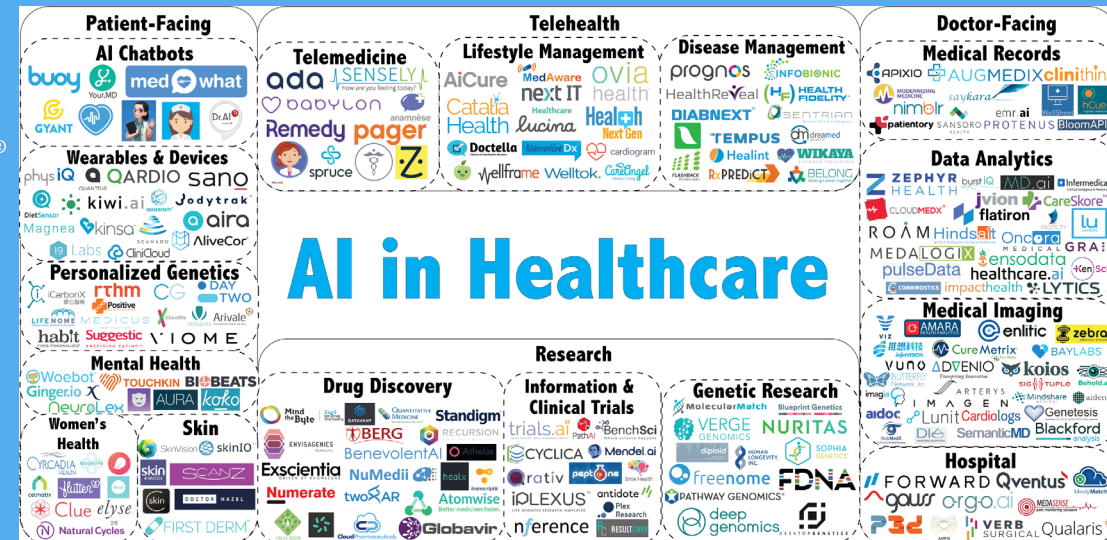
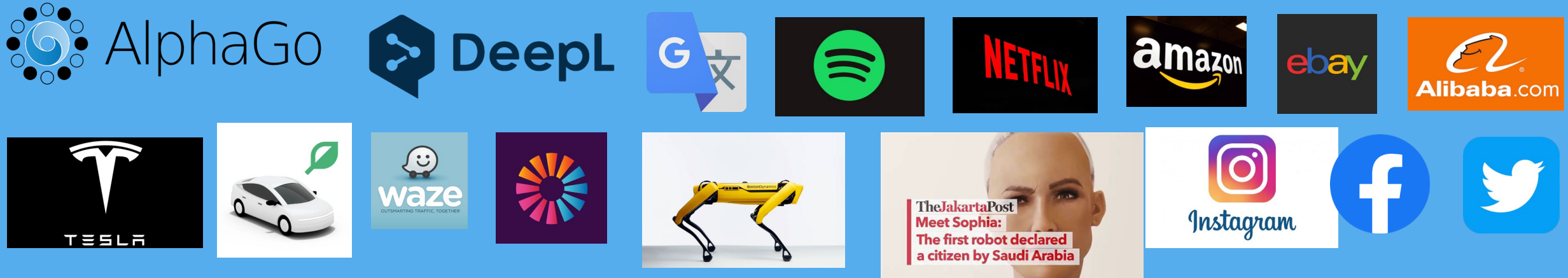
- Banks
- Asset management firms
- Insurance and reinsurance companies
- Data analytics companies
- Consulting firms
- World-wide research institutions.



THE LONDON SCHOOL
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MSc Data Science

Data Science is everywhere! - \$3 trillion revenue per year



- Games,
- Machine translation,
- Music, Movie, and Product recommendation,
- Autonomous driving,
- Robotics,
- Social media,
- Search engines,
- Fraud detection,
- Email filtering,
- Route planning and navigation,
- Art,
- Healthcare,
- Finance,
- and more!...

What? Degree Structure (4.0 Units)

■ Compulsory

- ST443 Machine Learning and Data Mining (H)
- ST445 Managing and Visualising Data (H)
- ST447 Data Analysis and Statistical Methods (H)
- ST498 Capstone Project (F)

■ 2.5 units

➤ 3 half-units (0.5) + 1 full unit (1.0) = 2.5 units

■ Optional Courses: 1.5 units

What? Degree Structure (cont'd)

Data Science Options:

- ST444 Computational Data Science (H)
- ST446 Distributed Computing for Big Data (H)
- ST449 Artificial Intelligence (H)
- ST451 Bayesian Machine Learning (H)
- ST455 Reinforcement Learning (H)
- ST456 Deep Learning (H)
- ST457 Graph Data Analytics and Representation Learning (H, *New*)

What? Degree Structure (cont'd)

Other Statistics Options:

- ST405 Multivariate Methods (H)
- ST411 Generalised Linear Modelling and Survival Analysis (H)
- ST422 Time Series (H)
- ST429 Statistical Methods for Risk Management (H)
- ST436 Financial Statistics (H)
- ST454 Applied Spatio-Temporal Analysis (H)

What? Degree Structure (cont'd)

Outside Options:

- MA407 Algorithms and Computation (H)
- MA424 Modelling in Operations Research (H)
- MY459 Quantitative Text Analysis (H)
- MY461 Social Network Analysis (H)
- MY470 Computer Programming (H)

Capstone Projects: Real-world data science project with a company (Nov – Aug):





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MSc Health Data Science

*Joint Programme with the
Department of Health Policy*

Why study Health Data Science?

- A lot of Big data comes from healthcare and it is getting bigger:
 - *Administrative (e.g. NHS)*
 - *Patient data (e.g. diagnostics, imaging)*
 - *Treatment data (e.g. Public Health, pharmaceuticals)*
 - *Private health care providers (e.g. insurance)*
- Now is a great time to get into this fast-paced multi-disciplinary field and make your mark.

Why study HDS at the LSE?

- Best of both worlds.
- The MSc HDS is a joint programme run with the department of Health Policy.
- This means you get a strong foundation in both:
 - Data Science/Statistics techniques
 - Health Policy: quantitative and qualitative
- Giving you the bigger picture of this field.

Degree Structure

- 9 Month Taught MSc programme
- 4 units composed of 8 half-unit modules
- 4 modules from Statistics and 4 from Health Policy
- Each course includes
 - Lectures,
 - seminars or computer workshops
- Students are allocated Academic mentors in Statistics or HP

Compulsory Courses

Michaelmas Term (Oct - Dec)

HP426: Applied Health Econometrics

ST445: Managing and Visualising data

ST447: Data Analysis and Statistical methods

Exam period (May - June)

Lent Term (Jan – April)

HP434: Methods and Data for Health Systems Performance Assessment

Optional Courses

Michaelmas Term (Oct - Dec)

HP420: Health Economics

HP422: Health Care Economic Evaluation

HP407: Evidence Review and Synthesis for Decision Making

ST443: Machine Learning and Data mining

ST449: Artificial intelligence

Exam period (May - June)

Lent Term (Jan – April)

ST451: Bayesian Machine Learning

ST446: Distributed Computing for Big Data

ST405: Multivariate Methods

ST416: Multilevel Modeling

ST454: Applied Spatio-temporal Analysis

ST456: Deep Learning

ST455: Reinforcement Learning

*HP425: Statistical Methods in Health Care
Economic Evaluation*

*HP428: Randomised Evaluations of Health
Programmes: from design to implementation*

What next?

- **Graduates from last year went on to roles in:**
 - *GSK: Data Analytics*
 - *33n: Healthcare consultancy in London, working mainly with the NHS*
 - *UN Healthcare management and Occupational safety*
 - *Lane Clark and Peacock: Insurance*
 - *Swiss Institute of Bioinformatics*

What next?

- And we anticipate our our graduates will go on to find jobs in:
 - *International: World Health Organisation;*
 - *National: NHS, HPA and equivalents in other countries;*
 - *Private health care providers and insurers;*
 - *Pharmaceutical industry;*
 - *Academia/Private research firms.*

Contacts – Programme Directors

MSc Statistics

Dr Kostas Kalogeropoulos -
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MSc Statistics (Social Statistics)

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MSc Statistics (Financial Statistics)

Dr. Tengyao Wang - T.Wang59@lse.ac.uk

MSc Quantitative Methods for Risk Management

Professor Umut Cetin – U.Cetin@lse.ac.uk

MSc Data Science

Professor Zoltan Szabo – Z.Szabo@lse.ac.uk

MSc Health Data Science

Dr Sara Geneletti - S.Geneletti@lse.ac.uk

Professor Andrew Street – A.Street@lse.ac.uk

Dr Miqdad Asaria – M.Asaria@lse.ac.uk

***“ Thank you for attending our
Virtual Graduate Open Day –
please feel free to ask us
any questions. ”***

**SHOULD YOU HAVE ANY QUESTIONS AFTER THIS EVENT, PLEASE DO
NOT HESITATE TO GET IN TOUCH WITH US AT STATISTICS@LSE.AC.UK**