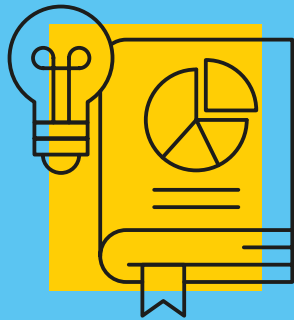




THE LONDON SCHOOL
OF ECONOMICS AND
POLITICAL SCIENCE



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Research Methods, Data Science, and Mathematics

ME314: Introduction to Data Science and Machine Learning

Apply now

Course details



Department

Department of Methodology

**Application code**

SS-ME314

**Dates****Session one****Not running in 2023****Session two****Open - 10 Jul 2023 - 28 Jul 2023****Session three****Not running in 2023**

Overview

Data Science and Big Data Analytics are exciting new areas that combine scientific inquiry, statistical knowledge and computer programming.

Organisations are turning to customer data in order to innovate and respond quickly to shifts in the market. Meanwhile, Governments are using to data to help guide policy decisions, making this a prime area for social scientists with an interest in quantitative methods.

This course aims to provide an introduction to the quantitative analysis of data, blending classical statistical methods with recent advances in computational and machine learning. You will cover key topics such as the challenges of analysing big data using statistical methods, and how machine learning and data science can aid in knowledge generation and improve decision-making. You will also explore quantitative methods of text analysis, including mining social media and other online resources.

Engaging with leading faculty, you will cover the main analytical methods from this field and the hands-on application of these methods using example datasets. As a result, the course allows you to gain experience and confidence in using the methods covered during the course in different contexts.

[Overview](#)[Key information](#)[Is this course right for you?](#)[Outcomes](#)[C](#)

Introduction to Summer School



Hear from some of our alumni and discover why 98% of Summer School students would recommend us.

Key information

Prerequisites: Students should already be familiar with quantitative methods at an introductory level, including linear regression analysis. Familiarity with computer programming or database structures is a benefit, but not formally required.

If you are not using R, we strongly encourage you to familiarise yourself before the start of the course. This will enable you to spend less time building familiarity with the tools, and more time focussing on the methods.

Level: 300 level. Read more information on levels in our [FAQs](#)

Fees: Please see [Fees and payments](#)

Lectures: 36 hours

Classes: 18 hours

Assessment: Two take-home assessments

Typical credit: 3-4 credits (US) 7.5 ECTS points (EU)

Please note: Assessment is optional but may be required for credit by your home institution. Your home institution will be able to advise how you can meet their credit requirements. For more information on exams and credit, read [Teaching and assessment](#)

Is this course right for you?

This course is suitable if you already have prior training in quantitative methods and coding, and want to enhance this training with the fundamental concepts and techniques of Data Science and Data Analytics. It is also suitable for practitioners from industry, government, or research organisations with some basic training in quantitative analysis or computer programming.

The course surveys diverse techniques and methods, making it an ideal foundation for more advanced or specific training. If you are targeting a role in government, politics, data science, research, law, business management, consulting or marketing you should consider this course.

Outcomes

- Gain an introduction into the challenge of working with big data using statistical methods
- Understand how to integrate the insights from data analytics into knowledge generation and decision-making
- Analyse how to acquire data, both structured and unstructured; process it, store it, and convert it into a format suitable for analysis
- Discuss approaches to normalising data, using a database manager (SQLite) and working with SQL database queries
- Understand the basics of statistical inference including probability and probability distributions, modelling and experimental design
- Gain an overview of classification methods and related methods for assessing model fit and cross-validating predictive models

- Analyse the difference between supervised and unsupervised learning approaches
- Discuss quantitative methods of text analysis, including mining social media and other online resources

Content

Key topics



Course structure and assessments



Reading materials



Course outline



The fundamentals of my course are covered at my home institution, but the summer school course gives me an extra

breadth into how the industry works. It's been a really good experience in diversifying my skill set.

Faculty

The design of this course is guided by LSE faculty, as well as industry experts, who will share their experience and in-depth knowledge with you throughout the course.



Professor Kenneth Benoit

Summer School Programme Director, Research Methods, Data Science and Mathematics - Professor of Computational Social Science

[View profile](#)



Dr Jack Blumenau

Guest Lecturer

[View profile](#)

Department

LSE's [Department of Methodology](#) is an internationally recognised centre of excellence in research and teaching in the area of social science research methodology. The disciplinary backgrounds of the staff include political science, statistics, sociology, social psychology, anthropology and criminology. The Department coordinates and provides a focus for methodological activities at the School, providing methods training to students from across the School.

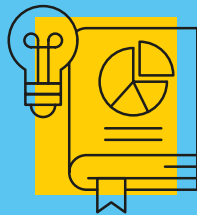
With the training in the core social scientific tools of analysis and research offered by the Department of Methodology, coupled with its numerous workshops in other transferable skills such as computer programming and the use of methods-related software, the Department of Methodology ensures that the School's students and staff have the expertise and training available to maintain the School's excellence in social scientific research. We also work closely with colleagues in the Departments of Statistics and Mathematics to cover advanced topics, including in the interdisciplinary area of social applications of data science.

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Related Courses



Research Methods, Data Science, and Mathematics

ME315: Machine Learning in Practice



Research Methods, Data Science, and Mathematics

ME200: Computational Methods in Financial Mathematics



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