

OXFORD UNIVERSITY ECONOMICS SUMMER SCHOOLS

FUNDAMENTALS OF GRADUATE
ECONOMICS



22ND - 26TH JULY

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Team details

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OVERVIEW

Are you considering a graduate programme in Economics, but feeling uncertain about your foundational maths and quantitative skills?

Our Fundamentals of Graduate Economics summer school will equip you with the fundamental tools you need to succeed. In just one week, our expert Oxford faculty will guide you through key concepts and techniques that form the backbone of many graduate-level courses in Economics.

But that's not all – we'll also supplement our course content with engaging lectures and career insights from economists working across a range of fields, both within academia but also in industry and civil service. You'll have the opportunity to hear from experienced economists and learn about the diverse paths you can take in this exciting field.

Join us in Oxford for a unique and enriching experience. By the end of the course, you'll have a strong foundation in the essential skills of mathematics and econometrics, and the confidence to take the next step in your career. Don't miss this chance to explore the world of Economics with some of the brightest minds in the field!

INTRODUCTION





Who is this course for?

Our Fundamentals of Graduate Economics course is aimed at undergraduate students who are considering a post-graduate programme in Economics. Our advanced courses will provide you with practical skills, and build on your academic knowledge; surrounded by likeminded economists in a vibrant intellectual environment.

Course delivery

The Summer School will be held in person, in the Department of Economics, Oxford. Lectures will be held in the morning from 9:30am, with tutorials and independent study sessions taking place in the afternoons. These sessions provide you with an opportunity to unpack the topic further in small groups.

Networking opportunities

Not only are our courses excellent for your professional and academic development, they also offer a great opportunity to socialise. Alongside the our academic offering there will be opportunities for the full Oxford Experience, including career insight sessions, drinks receptions and a formal college dinner for everyone who is able to join us in person.

INTRODUCTION TO MATHEMATICAL METHODS

Objective: This course will introduce students to elements of mathematical analysis and of probability theory with a special emphasis on methods that are important in economics.

Economists use mathematical models to think about social and economic interactions, develop predictions about the outcomes of those interactions, and design policy interventions. This course will introduce some of the standard mathematical tools that are used in economics. The course will focus on the maths rather than on the economics, but examples will be used throughout to illustrate how mathematical tools are useful for tackling economic questions.

The course is divided into two parts: mathematical analysis and probability theory.

Mathematical Analysis

Topics Covered

- Logic and proofs
- Set relations, sequences and limits
- Continuity and differentiability

The focus will not be on proving results in mathematical analysis but rather on understanding key results in mathematical analysis and seeing how they are useful in tackling economic questions. Examples will draw on elements of decision theory and of game theory.

Probability Theory

Topics Covered

- Probability axioms, correlation and independence
- Conditional probability and Bayes' rule
- Discrete and continuous distributions
- Expectations and Moments
- The law of large numbers
- The central limit theorem

Examples will include decisions under risk and mitigation of risk.

INTRODUCTION TO ECONOMETRICS

Objective: To introduce students to two of the fundamental statistical methods used in applied economic research: regression analysis and instrumental variables.

1. Introduction to statistical inference

How can we learn about economic theories from data? And how much certainty can we reasonably have about what that data tells us? An introduction to hypothesis testing, confidence intervals, and the measurement of uncertainty.

2. Introduction to linear regression

Economists typically want to learn about causal effects: the effects that policy interventions may have on social or economic outcomes. But how can we learn about causal effects from observational data, when many factors may simultaneously affect the outcome of interest? Linear regression provides a powerful tool for disentangling the effects of these factors, so as to obtain estimates of the causal effects of interest.

3. More on regression: inference and nonlinearities

Regression provides us with an estimate of a causal effect, but how precise is that estimate? To answer this question, we combine regression with the approaches to inference developed in Lecture 1. We also discuss how to extend the basic regression model to allow for the more realistic possibility of nonlinear relationships between variables. With an application to effects of university and degree choice on mid-career earnings.

4. Dealing with endogeneity

What are the limits to the use of linear regression to estimate causal effects? When do those estimates cease to be reliable? This lecture discusses the challenges posed by unobserved factors (omitted variables) and reverse causation, both of which create what econometricians term endogeneity. We discuss how endogeneity can sometimes be overcome by the use of regression in conjunction with a carefully designed randomised control trial (RCT). With an application to the effect of class size on test scores.

5. Introduction to instrumental variables

Sometimes the problems discussed in Lecture 4 cannot be solved by running an RCT, and regression fails to reliably estimate the causal effects of interest. We discuss how instrumental variables may provide an alternative avenue for the estimation of causal effects in such cases. With an application to the returns to schooling.

TUTORS



Ines Moreno De Barreda

Introduction to Mathematical Methods

Ines is an Associate Professor in Economics at the University of Oxford and an official Fellow of St Peter's College. Her research interests are Microeconomic Theory, Game Theory, Economics of Information, Political Economy and Social Choice.



James Duffy

Introduction to Econometrics

James was a Postdoctoral Fellowship at Nuffield College before taking up an Associate Professorship in Economics and a Tutorial Fellowship at Corpus Christi College. His research is econometric theory, and is principally concerned with non-linear and non-stationary time series models.

WHY CHOOSE FUNDAMENTALS OF GRADUATE ECONOMICS?

- Upon successful completion of the course, you will be offered a letter of recommendation for future graduate studies from an Oxford University Economics Professor.
- 15 hours lectures with Oxford Professors
- 5 hours of Oxford style (5-7 people) tutorials to help implement knowledge learnt in lectures
- Drinks reception at the start of the week
- Guest speakers in the evening. Speakers from industry and academia to help you decide your path with Economics
- A formal college dinner on the Thursday evening
- Oxford Activities, including a walking tour and punting
- Breakfast, Lunch, refreshments, and snacks for the duration of the course (5 days)
- Support with travel arrangements and accommodation
- A personalised course certificate to showcase your newly acquired knowledge and skills

FEES AND HOW TO APPLY

How to apply

Applications are open for 2024. Complete the application form for the Summer Schools Course and then pay the application deposit to secure your place.

There are limited numbers available, apply early to avoid disappointment.

Once your registration and deposit has been submitted, you will receive a link to pay the course fees. Once payment has been received, you will receive confirmation of your place on the course(s), and further information so you have everything you need.

Apply Here:



Pay the Deposit:



Fees

The course fee for Fundamentals of Graduate Economics is £2,700.

Accepted Payments

Please note we can only accept payment for the summer school via MasterCard, Visa credit card, Maestro or Visa debit card.

Accommodation

The course fees do not include accommodation, however, please contact summerschools@economics.ox.ac.uk for help and assistance. We are able to help you book hotel accommodation, college accommodation and homestays. Please get in touch if you have any questions!



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