

# EC203-30 Applied Econometrics

**23/24**

**Department**

Economics

**Level**

Undergraduate Level 2

**Module leader**

Han Zhang

**Credit value**

30

**Module duration**

20 weeks

**Assessment**

Multiple

**Study location**

University of Warwick main campus, Coventry

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## Description

### Introductory description

This module allows students to develop an understanding of fundamental and intermediate concepts of statistical analysis, such as regression analysis. Students will also develop the capacity to apply statistical techniques to real world problems/data sets using the statistical package STATA.

[Module web page](#)

### Module aims

The module aims to provide students with important skills which are of both academic and vocational value, being an essential part of the intellectual training of an economics and social scientist and also useful for a career.

### Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

The module will typically cover the following topics:

Review of random variables, associated distributions and moments; review of statistical

estimation, estimator sampling distributions and population inference; causality and selection bias; experimental versus non-experimental data; simple linear regression (SLR) model, assumptions, interpretation and hypothesis testing; multiple linear regression (MLR) model, assumptions, interpretation and hypothesis testing; modelling non-linear relationships; dummy variables; interaction terms; the failure of MLR assumptions; tests and implications for hypothesis testing; problems of endogeneity; instrumental variables; short panel data methods; Stata.

## Learning outcomes

By the end of the module, students should be able to:

- Subject Knowledge and Understanding:...demonstrate understanding of random variables, associated distributions and moments; statistical estimation, estimator sampling distributions and population inference; causality and selection bias; experimental versus non-experimental data; simple linear regression (SLR) model, assumptions, interpretation and hypothesis testing; multiple linear regression (MLR) model, assumptions, interpretation and hypothesis testing; modelling non-linear relationships; dummy variables; interaction terms; the failure of MLR assumptions; tests and implications for hypothesis testing; problems of endogeneity; instrumental variables; short panel data methods; Stata.
- Knowledge and understanding of:... (i) Economic Principles including analysis of economic decisions in microeconomics. (ii) An awareness of the empirical approach to economics and social science. (iii) Reviewing and extending fundamental statistical concepts, including causal analysis and (iv) Regression analysis, its extensions and applications.

## Indicative reading list

Please see Talis Aspire link for most up to date list.

[View reading list on Talis Aspire](#)

## Research element

Students will be required to undertake a 2000 word data research project.

## Subject specific skills

Students will have the opportunity to develop skills in:

Analytical thinking and communication

Analytical reasoning

Critical thinking

Creative thinking

Strategic thinking

Problem-solving

Abstraction

Policy evaluation

Analysis of incentives

Concepts of Simultaneity and Endogeneity

Understanding of Uncertainty and Incomplete Information

## Transferable skills

Students will have the opportunity to develop:

Research skills

Numeracy and quantitative skills

Data-based skills

IT skills

Written communication skills

Oral communication skills

Team work skills

Mathematical, statistical and data-based research skills

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## Study

### Study time

Type	Required
Lectures	20 sessions of 2 hours (13%)
Seminars	20 sessions of 1 hour (7%)
Private study	240 hours (80%)
Total	300 hours

### Private study description

Private study will be required in order to prepare for seminars/classes, to review lecture notes, to prepare for forthcoming assessments, tests, and exams, and to undertake wider reading around the subject.

### Costs

No further costs have been identified for this module.

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## Assessment

You do not need to pass all assessment components to pass the module.

Students can register for this module without taking any assessment.

### Assessment group C

	<b>Weighting</b>	<b>Study time</b>
Test 1	10%	
A paper which examines the course content and ensures learning outcomes are achieved.		
Test 2	10%	
A paper which examines the course content and ensures learning outcomes are achieved.		
Empirical Assignment	10%	
A paper which examines the course content and ensures learning outcomes are achieved.		
Empirical Assignment	20%	
A paper which examines the course content and ensures learning outcomes are achieved.		
Examination	50%	
A paper which examines the course content and ensures learning outcomes are achieved.		

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- Students may use a calculator
- Economics dept. statistical tables (yellow/ red)

### **Assessment group R4**

	<b>Weighting</b>	<b>Study time</b>
Examination - Resit	100%	
A paper which examines the course content and ensures learning outcomes are achieved.		

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- Students may use a calculator
- Economics dept. statistical tables (yellow/ red)

### **Feedback on assessment**

The Department of Economics is committed to providing high quality and timely feedback to students on their assessed work, to enable them to review and continuously improve their work. We are dedicated to ensuring feedback is returned to students within 20 University working days of their assessment deadline. Feedback is returned on a standardised assessment feedback cover sheet which gives information both by tick boxes and by free comments. Students are informed how to access their feedback, either by collecting from the Undergraduate Office, from seminar tutors or within their seminar group sessions. Module leaders often provide generic feedback for the cohort in addition to the individual-specific feedback on assessment performance.

[Past exam papers for EC203](#)

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# Availability

## Pre-requisites

Any of

EC106-24 Introduction to Economics

EC107-30 Economics 1

All of

EC121-12 Mathematical Techniques A

EC122-12 Statistical Techniques A

EC125-6 Computing and Data Analysis

All of

EC123-12 Mathematical Techniques B

EC124-12 Statistical Techniques B

EC125-6 Computing and Data Analysis

All of

IB122-15 Business Analytics

To take this module, you must have passed:

- Any of
  - [EC106-24 Introduction to Economics](#)
  - [EC107-30 Economics 1](#)
  - All of
    - [EC121-12 Mathematical Techniques A](#)
    - [EC122-12 Statistical Techniques A](#)
    - [EC125-6 Computing and Data Analysis](#)
  - All of
    - [EC123-12 Mathematical Techniques B](#)
    - [EC124-12 Statistical Techniques B](#)
    - [EC125-6 Computing and Data Analysis](#)

## Post-requisite modules

If you pass this module, you can take:

- EC343-15 Topics in Applied Economics (3b)
- EC346-15 Research Methods in Economics
- EC349-15 Data Science for Economists
- EC350-15 Behavioural Insights and Applications in Economics
- EC318-15 Labour Economics
- EC318-15 Labour Economics
- EC331-30 Research in Applied Economics
- EC331-30 Research in Applied Economics
- EC310-15 Topics in Development Economics
- EC310-15 Topics in Development Economics

- EC338-15 Econometrics 2: Microeconometrics
- EC342-15 Topics in Economic History
- EC342-15 Topics in Economic History
- EC343-15 Topics in Applied Economics (3b)
- EC340-15 Topics in Applied Economics (3a)
- EC340-15 Topics in Applied Economics (3a)
- EC348-15 Research in Policy Evaluation

## Anti-requisite modules

If you take this module, you cannot also take:

- EC226-30 Econometrics 1

## Courses

This module is Core optional for:

- Year 2 of UIPA-L1L8 Undergraduate Economic Studies and Global Sustainable Development
- UECA-3 Undergraduate Economics 3 Year Variants
  - Year 2 of L116 Economics and Industrial Organization
  - Year 2 of L116 Economics and Industrial Organization
- UPHA-L1CA Undergraduate Economics, Psychology and Philosophy
  - Year 2 of L1CC Economics, Psychology and Philosophy (Behavioural Economics Pathway)
  - Year 2 of L1CD Economics, Psychology and Philosophy (Economics with Philosophy Pathway)
- UPHA-V7MM Undergraduate Philosophy, Politics and Economics (with Intercalated year)
  - Year 2 of V7MS Philosophy, Politics and Economics (Bipartite with Economics Major) (with Intercalated Year)
  - Year 2 of V7MS Philosophy, Politics and Economics (Bipartite with Economics Major) (with Intercalated Year)

This module is Optional for:

- UPHA-L1CA Undergraduate Economics, Psychology and Philosophy
  - Year 2 of L1CA Economics, Psychology and Philosophy
  - Year 2 of L1CE Economics, Psychology and Philosophy (Philosophy and Psychology Pathway)
  - Year 3 of L1CA Economics, Psychology and Philosophy
  - Year 3 of L1CE Economics, Psychology and Philosophy (Philosophy and Psychology Pathway)
- UPHA-L1CB Undergraduate Economics, Psychology and Philosophy (with Intercalated Year)
  - Year 4 of L1CJ Economics, Psychology and Philosophy (Philosophy and Psychology Pathway) (with Intercalated Year)

- Year 4 of L1CB Economics, Psychology and Philosophy (with Intercalated Year)
- Year 4 of L1CB Economics, Psychology and Philosophy (with Intercalated Year)
- UPHA-V7ML Undergraduate Philosophy, Politics and Economics
  - Year 2 of V7ML Philosophy, Politics and Economics (Tripartite)
  - Year 2 of V7ML Philosophy, Politics and Economics (Tripartite)
  - Year 2 of V7ML Philosophy, Politics and Economics (Tripartite)
  - Year 3 of V7ML Philosophy, Politics and Economics (Tripartite)
  - Year 3 of V7ML Philosophy, Politics and Economics (Tripartite)
  - Year 3 of V7ML Philosophy, Politics and Economics (Tripartite)
- Year 4 of UPHA-V7MM Undergraduate Philosophy, Politics and Economics (with Intercalated year)

This module is Unusual option for:

- UPHA-L1CA Undergraduate Economics, Psychology and Philosophy
  - Year 2 of L1CA Economics, Psychology and Philosophy
  - Year 2 of L1CC Economics, Psychology and Philosophy (Behavioural Economics Pathway)
  - Year 3 of L1CA Economics, Psychology and Philosophy
- UPHA-V7ML Undergraduate Philosophy, Politics and Economics
  - Year 2 of V7MR Philosophy, Politics and Economics (Bipartite with Economics Major)
  - Year 2 of V7MP Philosophy, Politics and Economics (Bipartite)
  - Year 2 of V7MP Philosophy, Politics and Economics (Bipartite)
  - Year 2 of V7ML Philosophy, Politics and Economics (Tripartite)
  - Year 2 of V7ML Philosophy, Politics and Economics (Tripartite)
  - Year 2 of V7ML Philosophy, Politics and Economics (Tripartite)
  - Year 3 of V7MR Philosophy, Politics and Economics (Bipartite with Economics Major)
  - Year 3 of V7MP Philosophy, Politics and Economics (Bipartite)
  - Year 3 of V7MP Philosophy, Politics and Economics (Bipartite)
- UPHA-V7MM Undergraduate Philosophy, Politics and Economics (with Intercalated year)
  - Year 4 of V7MS Philosophy, Politics and Economics (Bipartite with Economics Major) (with Intercalated Year)
  - Year 4 of V7MS Philosophy, Politics and Economics (Bipartite with Economics Major) (with Intercalated Year)
  - Year 4 of V7MQ Philosophy, Politics and Economics (Bipartite) with Intercalated Year
  - Year 4 of V7MM Philosophy, Politics and Economics (Tripartite) (with Intercalated year)

This module is Core option list A for:

- Year 2 of ULNA-R1L4 Undergraduate French and Economics (4-year)
- Year 2 of ULNA-R3L4 Undergraduate Italian and Economics (4-year)
- Year 2 of UPHA-V7ML Undergraduate Philosophy, Politics and Economics

This module is Core option list B for:

- UECA-4 Undergraduate Economics 4 Year Variants
  - Year 2 of LM1H Economics, Politics & International Studies with Study Abroad
  - Year 2 of LM1H Economics, Politics & International Studies with Study Abroad

- UECA-LM1D Undergraduate Economics, Politics and International Studies
  - Year 2 of LM1D Economics, Politics and International Studies
  - Year 2 of LM1D Economics, Politics and International Studies
- Year 2 of ULNA-R2L4 Undergraduate German and Economics (4-year)
- Year 2 of ULNA-R4L1 Undergraduate Hispanic Studies and Economics (4-year)
- Year 2 of ULNA-R9L1 Undergraduate Modern Languages and Economics (4-year)

This module is Core option list C for:

- Year 3 of ULNA-R1L4 Undergraduate French and Economics (4-year)

This module is Core option list D for:

- Year 3 of ULNA-R2L4 Undergraduate German and Economics (4-year)
- Year 3 of ULNA-R3L4 Undergraduate Italian and Economics (4-year)
- Year 3 of ULNA-R9L1 Undergraduate Modern Languages and Economics (4-year)

This module is Option list B for:

- Year 2 of ULNA-R1L5 Undergraduate French and Economics (3 year)
- UPHA-V7ML Undergraduate Philosophy, Politics and Economics
  - Year 2 of V7MP Philosophy, Politics and Economics (Bipartite)
  - Year 2 of V7MP Philosophy, Politics and Economics (Bipartite)

This module is Option list C for:

- UPHA-V7ML Undergraduate Philosophy, Politics and Economics
  - Year 3 of V7MP Philosophy, Politics and Economics (Bipartite)
  - Year 3 of V7MP Philosophy, Politics and Economics (Bipartite)
  - Year 3 of V7ML Philosophy, Politics and Economics (Tripartite)
  - Year 3 of V7ML Philosophy, Politics and Economics (Tripartite)
  - Year 3 of V7ML Philosophy, Politics and Economics (Tripartite)
- UPHA-V7MM Undergraduate Philosophy, Politics and Economics (with Intercalated year)
  - Year 4 of V7MS Philosophy, Politics and Economics (Bipartite with Economics Major) (with Intercalated Year)
  - Year 4 of V7MS Philosophy, Politics and Economics (Bipartite with Economics Major) (with Intercalated Year)
  - Year 4 of V7MQ Philosophy, Politics and Economics (Bipartite) with Intercalated Year
  - Year 4 of V7MM Philosophy, Politics and Economics (Tripartite) (with Intercalated year)