

# **Postgraduate Certificate in Econometrics**

## **STUDENT HANDBOOK 2019-20**

**Department of Economics, Mathematics & Statistics  
Birkbeck, University of London  
[www.ems.bbk.ac.uk](http://www.ems.bbk.ac.uk)**

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## **Helping you get the best possible start to your course**

At Birkbeck we want to make sure you get all the help you need to get your studies off to a great start and to provide you with support during your course. On the Get Ahead: Stay Ahead website you can access a range of online resources to help you:

- **consider how you can achieve your goals**
- **find out what studying at Birkbeck is like**
- **improve your study skills and succeed on your course**

The online materials are interactive tutorials that are free to use and you can work through them at your own pace.

[www.bbk.ac.uk/ahead](http://www.bbk.ac.uk/ahead)



## INTRODUCTION

This Handbook is a 'Users' Manual' for your academic programme. It describes the structure of your programme, what resources are available, and how to seek help when you need it. It directs you to the various resources on the Department website ([www.ems.bbk.ac.uk](http://www.ems.bbk.ac.uk)) and the College website ([www.bbk.ac.uk](http://www.bbk.ac.uk)).

### People, and how to reach them..

The **Programme Administrator** handles all administrative aspects of the Programme, and is usually the first point of contact for students.

**Jo Kwok** ([jo.kwok@bbk.ac.uk](mailto:jo.kwok@bbk.ac.uk))

Room: 720 Malet St

Tel: 020 7631 6429

The **Course Lecturers** are in charge of academic issues specific to any lecture course, and first point of contact if you need any clarifications or help with the material covered in lectures. The easiest way to initiate contact with your lecturers is via email. The email address of faculty members is on the Department website, and is usually of the form: initial.surname@bbk.ac.uk

The **Programme Director** is in charge of the overall academic content of the programme. The Programme Director for Postgraduate Certificate in Econometrics is **Prof Ron Smith** ([r.smith@bbk.ac.uk](mailto:r.smith@bbk.ac.uk))

**Personal Tutors** are members of academic staff who can serve as an alternative point of contact. You can talk to your tutor about things like, choice of modules and options on your course of study, difficulties meeting deadlines, and problems outside of Birkbeck that may affect your progress on the programme. To find out who your personal tutor is, see [www.ems.bbk.ac.uk/for\\_students](http://www.ems.bbk.ac.uk/for_students).

## **Information Technology (IT) Resources**

### **Department IT Resources**

The Department of Economics, Mathematics has its own Workstation Room, Room 742, for software specific to economics, finance, mathematics and statistics.

***The Department Student Help Desk*** is run by the department computing staff,

Awuku Danso (room 758; tel 020 7631 6433).

Email: [helpdesk@ems.bbk.ac.uk](mailto:helpdesk@ems.bbk.ac.uk) at the following times

Term:            Mon – Fri     16.00 – 18.00

Vacations:    Mon – Thurs 16.00 – 18.00

### **College IT Resources**

#### ***Workstation Rooms***

For more general software, College ITS manages multiple Workstation rooms in various parts to the College. These include

- College Main Building: Rooms 402, 412, 413, 422, 423 and 536;
- Gordon Square: Rooms 10 and 11, 43

#### ***College IT Services Reception/ Help Desk***

Ground floor, College Main Building, telephone 020 7631 6543

Term:            Mon – Fri     09.00 – 20.00

Vacations:    Mon – Fri     09.00 – 18.00

## Calendar

### Term Dates

For Term dates see the College Calendar at [www.bbk.ac.uk/about-us/term-dates](http://www.bbk.ac.uk/about-us/term-dates)

### Significant Dates in the Academic Calendar\*

<b>Quantitative Techniques Lectures and examination</b>	September
<b>Examination for Econometrics I</b>	January
<b>Deadline for submission of proposal for Econometrics project</b>	December
<b>Deadline for submission of Econometrics project</b>	May
<b>Examination for Econometrics II and options</b>	May/June

Specific dates for exams and submission deadlines are posted on our virtual learning platform, Moodle.

## Programme Structure

The Postgraduate Certificate in Econometrics consists of Econometric modules from the MSc in Economics.

### Required modules

- **Quantitative Techniques for Postgraduate Certificate** (15 credits)  
*Assessed through examinations in September*
- **Econometrics** (30 credits)  
*Assessed through exams in January and June, and project report*
- **Options**
  - *Either **Advanced Econometrics** (15 credits)*
  - *Or **Forecasting Economics and Financial Time Series** (15 credits)**Options are assessed through two-hour exams in June*

### Degree Classification

For those who complete the requirements for the award of a PgCert, the award is classified as one of the following: **Distinction, Merit or Pass**. The classification is based on the Common Awards Scheme (CAS). Information about this scheme is at: <http://www.bbk.ac.uk/registry/policies/documents/CAS-regs-18-19.pdf>

### Results

The Assessment is overseen by a Board of Examiners, which meets in July. After the meeting, the Examiners usually give each student an indication of their likely degree classification (that is Distinction, Merit, Pass or Fail), conditional on successful completion of the Dissertation. University Regulations do not allow us to reveal the precise marks at this stage. These are notified routinely by the College in December. Information about the publication of results can be found at: [www.bbk.ac.uk/mybirkbeck/services/administration/assessment/exams/results](http://www.bbk.ac.uk/mybirkbeck/services/administration/assessment/exams/results)

### Failure and Re-assessment

Our postgraduate programmes are quite challenging. The primary method of teaching involves lectures, typically held between 6pm and 9 pm in the evening. These are supplemented with problem-solving classes (mostly in the evening too, but sometimes in the afternoons for full-time students) that allow you to reinforce the principles and techniques covered in lectures. Attending lectures and classes are only part of the overall learning experience. Private study and independent research are crucial – this involves independent reading of texts and journal articles, working through problems and exercises, completing assignments, revising for examinations. Students must devote enough time each week to keeping up with the programme.

Inevitably some students fall short of the challenge. College regulations allow the Board of Examiners to offer students a second attempt at a module that they have not passed. This second attempt may take one of the following forms:



- **Re-take** for modules where a student obtained less than 40% at first attempt. In this case the student will be required to re-enrol on the module, attend lectures and classes and retake all the assessment associated with that module. **Students re-taking a module will be charged for that module.**
- **Re-assessment** for modules where a student obtained between 40% and 49% on the first attempt. The student is not required to attend lectures and will only need to re-attempt any failed element of that module (in most cases, the examination). The re-assessed mark will be capped at a pass (50%).

The earliest you can retake or seek re-assessment is the subsequent academic year. The content of courses evolves from one year to the next, and it is your responsibility to keep track of any variations in the material. If you require further guidance about re-assessments, please contact the Programme Director.

Please note students cannot seek reassessment purely to improve their performance in a module that they have already passed.

For further information about the Exam and Assessment procedures at Birkbeck, please see:

<http://www.bbk.ac.uk/mybirkbeck/services/administration/assessment>

Further information can be found in the 'Common Award Scheme Regulations' document located on the Birkbeck website:

<http://www.bbk.ac.uk/registry/policies/documents/CAS-regs-18-19.pdf>

## PgCert Econometrics Programme structure

You need a total of 60 credits

CODE	Title	Credits	When
BUEM007H7	Quantitative Techniques	15 credits	September
EMEC026S7	Econometrics	30 credits	Autumn & Spring
Option module: choose one of the following			
EMEC035H7	Advanced Econometrics	15 credits	Spring Monday
BUEM033H7	Forecasting Economic & Financial Time Series	15 credits	Spring Friday

Module BUEM007H7

## **Quantitative Techniques for Postgraduate Certificate**

A compulsory course (15 credits)

September

### ***COURSE AIMS AND OBJECTIVES***

Certificate students follow only the statistical module essential for the MSc programme. This is mainly for revision, as it is assumed that students have studied statistics before and are also familiar with matrix algebra. On completing the course, you should be able to:

- use matrices for algebraic manipulations;
- understand the basic of probability distributions and statistical inference

***COURSE PRE-REQUISITES: none***

### ***TEACHING ARRANGEMENTS AND ASSESSMENT***

The course is taught through a sequence of lectures, three evenings a week for four weeks in September. Performance in this module is assessed through examinations in September. You **MUST** pass the September examinations in order to proceed.

### ***TEXTBOOKS***

Lecture notes are provided but most students find it helpful to use a textbook to supplement these. We do not recommend any particular text, but in the past students have found the following useful.

- Greene, WH, *Econometric Analysis*, 7<sup>th</sup> ed., Pearson, 2011.
- Verbeek, M, *A guide to modern econometrics*, 3<sup>rd</sup> ed, Wiley, 2008.
- Hogg, R V, *Introduction to Mathematical Statistics*, Prentice-Hall 1995
- Rice, J. (2006). *Mathematical Statistics and Data Analysis*, 3<sup>rd</sup>. ed., Cengage.
- Wackerley D., Mendenhall, W. and Schaerer, R. (2008) *Mathematical Statistics with Applications*, 7<sup>th</sup> ed., Cengage

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Module EMEC026S7

## **Econometrics**

A compulsory course (30 credits)

Autumn and Spring Terms

### ***AIMS AND OBJECTIVES***

This course provides an introduction to theoretical and applied econometrics. It emphasizes time-series methods in the first term, and cross-section and panel data methods in the second term. The course, especially the project, aims to help you in actually doing applied econometrics. This involves combining economic theory, statistical methods and an understanding of the data, with the ability to use the appropriate software and interpret the output.

At the end of the course students will be able to demonstrate that they can:

- derive standard estimators (e.g. OLS, ML, IV) using matrix algebra and understand their properties
- explain the basis for standard exact and asymptotic tests and use them in practice
- develop and analyse basic univariate and multivariate time-series models for integrated and cointegrated data and know how to choose between alternative models
- use standard econometrics packages and interpret their output
- read, understand and explain empirical articles in the literature.

***COURSE PRE-REQUISITES: Quantitative Techniques (BUEM007H7)***

### ***ASSESSMENT***

Two exams, held in January and June, plus project work

### ***INDICATIVE READING***

A course booklet will be distributed, which will contain a fuller reading list.

- Marno Verbeek's *A guide to modern econometrics*, 3rd edition, Wiley 2008, covers most of the material in the course at a similar level.
- W. Greene, *Econometric Analysis*, 7th edition, Prentice Hall, 2012, provides a more extended treatment.
- P. Kennedy, *A Guide to Econometrics*, 6th edition Blackwell 2008, is not a text-book, but provides an excellent explanation of what econometrics is about.
- Angrist, J.D. and J.S. Pischke (2009): *Mostly Harmless Econometrics*, Princeton University Press provides an excellent explanation of micro-econometrics.

EMEC035H7

## **Advanced Econometrics**

An optional module (15 credits) for Full-time and Part-time 2 students  
Spring Term

### ***AIMS AND OBJECTIVES***

This option covers a variety of econometric topics not covered in the main Econometrics course, at a slightly more advanced technical level. The objective of this course is to introduce students to selected econometric linear and nonlinear techniques that are used on cross-section and cross-section panel data, with applications in demand analysis and empirical industrial organisation. If time permits, students will also be introduced to non-parametric estimation and inference methods, and to quantile regression.

Students who complete this course successfully will be able to demonstrate that they can:

- understand the principles and numerical methods for non-linear econometric models using Maximum Likelihood (ML) and Generalized Method of Moments (GMM) methodologies;
- choose appropriate models for non-standard data (e.g. panel, limited dependent variable, ordered, count and duration data) and proceed to estimate these models based on the likelihood function or conditional and unconditional moment conditions for those models;
- understand the implications of unobserved or latent variables for the observed data and use this understanding in modelling;
- derive properties of ML and GMM estimators based on asymptotic arguments as well as the bootstrap;
- apply some such models in the context of applied demand analysis and certain applications in empirical industrial organisation;
- competently critique applied micro-econometric analyses;
- understand and apply non-parametric estimation methods, their benefits and limitations, and compare non-parametric to parametric estimators;
- understand and apply quantile regression.

***COURSE PRE-REQUISITES:*** Quantitative Techniques (BUEM027S6), Econometrics

### ***ASSESSMENT***

A take-home assignment in May (referee report on an empirical research paper using methods covered in the course) and a one-hour examination in June.

### ***INDICATIVE READING***

A reading list with suggested textbook chapters and journal articles will be distributed, and the additional reading is covered in the same books as listed in Econometrics. The lectures are accompanied by a full set of lecture notes and slides that are available from the start of the course.

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BUEM033H7

## **Forecasting Economic and Financial Time Series**

An optional module (15 credits) for Full-time and Part-time 2  
Spring Term

### ***AIMS AND OBJECTIVES***

This module examines the principles and practice of making forecasts of economic and financial time series for decision making in government, business and economics more generally. **Prior training in time-series econometrics is a pre-requisite.**

We will use EViews to build forecasting models and to make and assess forecasts. We sometimes invite professional forecasters to give the practical forecasting lectures.

Students who complete the course should be able to:

- use a range of models to produce point, interval and density forecasts;
- undertake both economic and statistical evaluation of point forecasts;
- understand the role of judgment and the limitations of forecasts.

***COURSE PRE-REQUISITES:*** Statistics, and MSc-level course in time-series econometrics

### ***COURSE ASSESSMENT***

A two-hour examination.

### ***RECOMMENDED TEXTS***

The technical level of the material in the option will be between

- Diebold, F.X. (2008), *Elements of Forecasting*, South Western. 4th edition, (introductory)
- Elliott G. and A. Timmermann (2016), *Economic Forecasting*, Princeton University Press (advanced)

### **Outline**

1. Introduction to forecasting, loss functions and forecasting with regression models
2. Trends, deterministic and stochastic, cycles and seasonality.
3. AR, MA, ARIMA and VAR models.
4. Basic Bayes for forecasting, and Bayesian VARS.
5. Practical Forecasting I.
6. Forecast evaluation,
7. Factor Models and combining forecasts
8. Volatility modelling, ARCH and GARCH, Density forecasting.
9. Practical Forecasting II
10. Revision and round up: using economic models in forecasting.



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[www.bbk.ac.uk/ahead](http://www.bbk.ac.uk/ahead)