Introductory Econometrics (BUSI2053)

This Course Outline should be read in conjunction with the Student Handbook on Moodle.

Programme:	Undergraduate
Semester:	Spring 2024-25
Level:	2
Credits:	10
Co-requisites:	Modules that a student must be taking in the same academic year, or have taken in a previous academic year: BUSI2055 Quantitative Methods 2A

Introduction

Econometrics means "economic measurement". Although measurement is an important part of econometrics, its importance extends far beyond the scope of economics. Econometrics is a set of research tools also employed in the business disciplines of accounting, finance, marketing, and management. Econometrics introduces scientific means and methods into economics (business & management) and bridges the gap between economic theory and economic data. This breadth of interest in econometrics arises in part because economics is the foundation of business analysis and is the core social science.

Details of Module Convenor

Module Convenor:	Dr Myint Moe Chit
Office	Room: EB30
Email	moechit.myint@nottingham.edu.my
Consultation Hours:	Wednesday: 2pm-4pm Thursday: 10am-1pm

Please book a slot at Book time with MYINT MOE CHIT for consultation (or) email me for an appointment if you want to see me outside these consultation hours.

Details of External Examiner

Name:	Marco Barassi
Position:	Associate Professor of Econometrics
Institution:	University of Birmingham

Breakdown of Student Learning Hours

This module has 29 hours of contact time (24 hours of lecture and 5 hours of computer lab workshops) **with the remaining 71 hours independent study** (10 hours for computer lab workshop assignments preparation and 61 hours for revision and exam preparation). Total student learning hours for this module is 100.

Method and Criteria of Assessment

The course will be assessed by 5 computer lab tests and a final examination.

- Five 1-hour computer lab tests (20%)
- 2 hours (120 minutes) Exam (80%)

[You may obtain the past exam papers from Moodle.]

Default Reassessment Method

- 2 hours (120 minutes) Exam

Method of Delivery and Frequency of Class
12 weekly 2-hour lectures at F1A13 from 11:00AM to 1:00PM on Wednesdays (Week 23 to 30 and 33 to 35) plus five 1-hour Computer Labs and Workshop Tests at TCR (See the class schedule for TCR number) in Week 27, 28, 30,32, 34).

Attendance policy
As a student, you are required to "**attend all teaching activities necessary for the pursuit of your studies, undertake all associated assessments and attend meetings and other activities as required by the school of the University**" (Quality Manual, University of Nottingham).

You must attend at least 80% of the classes/activities in each of your modules. Nonattendance and non-engagement in your modules may result in being awarded a mark of zero for the module or suspension of your registration. For our international students, failure to meet the 80% attendance rule could also result to the cancellation of student visas and/or difficulties in renewing your student pass.

Summary of Content
This module will provide an introduction to the theory and practice of quantitative economic modelling at an introductory level. The theoretical framework will be developed around the classical regression model and its extensions, with theoretical understanding being supplemented with computer-based practical examples of model construction and data analysis.

Econometrics Softwares
An open source software, GRETL, and the SAS Studio will be used to run regressions in the computer-based learning and workshop assessment. To increase awareness of other available software packages for econometric studies, examples of output generated via STATA and R will also be referred to.

Course contents and suggested readings

Topic	Suggested Reading:
1. Introduction: Econometrics for Business & Analytics:	• Hill, et al. (2012) Chapter 1, pp. 1-15 • Ajmani (2009) 1.1, 1.3 • Gujarati and Porter (2009) Chapter 1, pp. 1-28. • Dougherty (2011) Chapter 1, pp.1-4.
2. Probability for Econometrics	• Hill, et al. (2012) Probability Primer, pp. 17-34 • Westhoff (2013) Chapter 2 & Appendix 1.1 • Gujarati and Porter (2009) Appendix A, pp. 801-836. • Dougherty (2011) Review, pp.5-72.
3. Statistics for Econometrics	• Hill, et al. (2012) Appendix C, pp. 692-716 • Westhoff (2013) Chapter 3.1, 3.2, 4.1 • Gujarati and Porter (2009) Appendix A, pp. 801-836. • Dougherty (2011) Review, pp.5-72.
4. The Simple Linear Regression Model	• Hill, et al. (2012) Chapter 2, 3 & 4.1, 4.2, pp. 39-110 • Ajmani (2009) 1.6, 1.7, 2.1, 2.2, 2.7, 3.2 • Westhoff (2013) Chapter 5-8, 15.2 • Gujarati and Porter (2009) Chapter 1-5, pp. 34-117. • Dougherty (2011) Chapter 1 & 2, pp. 83-147.
5. Multiple regression	• Hill, et al. (2012) Chapter 5 & 6.1, 6.4, pp. 167-229; 240-242 • Ajmani (2009) 2.5, 2.6, 2.9, 3.3, 3.4 • Westhoff (2013) Chapter 10-11, 14 • Gujarati and Porter (2009) Chapter 7 & 8, pp. 188-253. • Dougherty (2011) Chapter 3, pp. 83-147.
6. Further Topics in the Multiple Regression	• Hill, et al. (2012) Chapter 4.3-4.6, 5.6, 5.7, 6.3 • Westhoff (2013) Chapter 12-13

	• Gujarati and Porter (2009) Chapter 6.4-6.6 & 7.9, 7.10, pp. 159-165 & 206-212. • Dougherty (2011) Chapter 4, pp. 192-221.
7. Dummy Variable	• Hill, et al. (2012) Chapter 7 pp. 233-236 & Chapter 7 pp. 258-270 • Ajmani (2009) 3.7 • Westhoff (2013) Chapter 13 • Gujarati and Porter (2009) Chapter 9 pp. 277-294 & Chapter 13 pp. 467-474 • Dougherty (2011) Chapter 3 pp. 83-147 & Chapter 5 pp. 224-244.
8. Heteroscedasticity and Autocorrelation	For Heteroscedasticity: • Hill, et al. (2012) Chapter 8, pp. 298-320 • Ajmani (2009) 5.1-5.6 • Westhoff (2013) Chapter 16 • Gujarati and Porter (2009) Chapter 11, pp. 365-400. • Dougherty (2011) Chapter 7, pp. 280-297. For Autocorrelation: • Hill, et al. (2012) Chapter 9, pp. 335-364 • Ajmani (2009) 6.1-6.4 • Westhoff (2013) Chapter 17 • Gujarati and Porter (2009) Chapter 12, pp. 412-448. • Dougherty (2011) Chapter 12, pp. 429-456.

Reading List

Core Textbook:

- Hill, R.C., Griffiths W.E. and Lim, G.C. Principles of Econometrics, fourth edition, Wiley, 2012.

Textbook website: http://principlesofeconometrics.com/poe4/poe4.htm

Note: The library has 10 copies of the fifth edition of this book. Suggested reading sections in the fifth edition should be the same.

Recommended Textbooks

- Vivek B. Ajmani. Applied econometrics using the SAS system, Wiley, 2008,

eBook: https://ebookcentral.proquest.com/lib/nottingham/detail.action?docID=448863

- Hill, R.C., Griffiths W.E. and Lim, G.C. Using SAS for Principles of Econometrics, 4th Edition, Wiley, 2012.

Supplementary Textbooks:

- Westhoff, F. An introduction to econometrics: a self-contained approach, MIT Press, 2013

eBook: https://ebookcentral.proquest.com/lib/nottingham/detail.action?docID=3339681

- Alan C. Elliott and Wayne A. Woodward., SAS essentials: Mastering SAS for data analytics, Second edition. Wiley 2016

eBook: https://ebookcentral.proquest.com/lib/nottingham/detail.action?docID=2146552

- Gujarati, D.N. Econometrics by Example, 2nd ed., Bloomsbury Publishing Plc, 2014.

eBook: https://ebookcentral.proquest.com/lib/nottingham/detail.action?docID=4763757

- Gujarati, D.N. and Porter D.C. Basic econometrics, 5th ed., McGraw-Hill, 2009
- Dougherty, Christopher. Introduction to econometrics. 4th ed. Oxford University Press, 2011
- Gujarati, D.N. and Porter D.C. Essentials of econometrics. 4th ed., McGraw-Hill, 2010

For FMBA students:

- Econometrics for Business Analytics by Jose Fernandez. The materials (based on R programming) might be of an interest to FMBA students. We will cover a few relevant topics in our lectures as and when appropriate.

Note: There are plenty of alternative econometric textbooks which will also cover most of the module topics. You can use any basic or introductory econometric textbooks as a reference for this module. The only issue you need to take note is that different textbooks might use different terminology and notations for underlying statistical concepts. It is due to the fact that terminology and notation are not wholly standardised amongst econometricians and such discrepancies are often encountered.

This module relies heavily on many of the concepts and techniques taught in Quantitative Methods 1B (BUSI1039) in Semester 2 of Year 1 and Quantitative Methods 2A (BUSI2055) in Semester 1 of Year 2. **For students who had difficulty in the mentioned module, it is recommended that elementary topics in probability and statistics are thoroughly reviewed.** Most students do find it challenging in their efforts to grasp statistical concepts. You are strongly advised to revise the lecture notes and the recommended textbooks for Quantitative Methods 2A and Quantitative methods 1B.

Class Schedule (The teaching week numbers are just indicative and subject to change)

Week	Date of Lecture	Lecture Topics	Workshop Topic
23	05/02/2025	1. Introduction: Econometrics for Business & Analytics	
24	12/02/2025	2. Probability for Econometrics	
25	19/02/2025	3. Statistics for Econometrics (via MS Teams)	
26	26/02/2025	3. Statistics for Econometrics	
27	05/03/2025	4. The Simple Linear Regression Model (I)	
28	12/03/2025	5. The Simple Linear Regression Model (II)	Workshop 1: Introduction, Probability and Statistics for Econometrics
29	19/03/2025	6. Multiple regression (I)	
30	26/03/2025	7. Multiple regression (II)	Workshop 2: Simple Regression Analysis
31	**Hari Raya Puasa**		
32	09/04/2025	8. Further Topics in the Multiple Regression Model	Workshop 3: Multiple Regression Analysis
33	16/04/2025	9. Dummy (Indicator) Variables	Workshop 4: Model Specification and Further topics in regression
34	23/04/2025	10. Heteroscedasticity & Autocorrelation	Workshop 5: Dummy variables, heteroscedasticity and Autocorrelation
35	30/04/2025	Revision	

Please note that weekly lecture topics and the schedule are indicative only. Some topics might require additional time to cover.
All lecture topics covered in this module are examinable. To prepare for the examination and workshop assessments, you should focus on studying the lecture notes, the exercise questions, and the recommended readings.

Small-group Teaching Arrangements (Computer Lab Workshops)

Workshop assessments (20% of overall assessment):
In each of the workshop sessions (except workshop 1) you will learn how to conduct econometric analysis using GRETL and SAS. During the lab session, you will receive a ExamSys (ROGO)

worksheet and your task is to attempt to answer the questions thereon by conducting relevant econometrics analysis using GRETL or SAS. The module convenor will be available to assist, but will obviously not extend his/her assistance to telling you the answers, nor to confirm whether your proposed answers are correct. **You have to work individually**. You are allowed to refer to lecture notes and textbooks during the session. It should go without saying that if you prepare the topics beforehand you will be able to work faster and more accurately, and therefore be more likely to answer the questions correctly and comfortably within the allowed time allowed. **Make sure you bring your lecture notes as well as stationery and a calculator to the workshops.**

Attendance at Computer lab sessions is compulsory. The Lab exercises you complete during each session (mark to be average of the best four) comprise the coursework element of this module (20%).

Each lab session will start punctually. Selected questions will be discussed during the workshop sessions. The workshop discussion questions will be made available prior to the workshop sessions. Please attempt the questions before the workshop. **The workshop session will not be about how to answer the question in detail, but for students to check their answers and methodology, ask questions to the convenor and discuss wider issues.**

During each workshop session, you will have to complete lab exercises and submit your worksheet via ExamSys (ROGO) at the end of your workshop session. **The ExamSys test will be closed at the end of your workshop session.** Once you have started your test session, the timer will start counting and you must complete it within the time period allowed (45 minutes for Workshop 1, and 30 minutes for Workshop 2-5). Your answer sheet will be marked and returned in the next week.

If you fail to submit your worksheet, **attempt the workshop outside the workshop venue**, do not show up for the test or **turn up at the workshop venue 30 minutes late**, you will receive a zero mark for that particular workshop assessment.

All workshop tests on ExamSys platform are password protected. Sharing the password with other students is an academic offence.

Workshop group registration:

Students must sign up for one workshop group via Moodle. Each workshop group is limited to **only 30 students**. You can sign up for workshop group (first-come-first-served) anytime between 2pm February 12 and 11pm February 25, 2025. If you failed to sign up for a particular workshop group, you would be registered in a group with available slot.

You should sign up for only ONE workshop group. The workshop groups available are:

Group 1: Fridays 03:00-03:50PM (Week 28, 30, 32, 33, 34 at TCR3)
Group 3: Thursdays 02:00-02:50PM (Week 28 at TCR2, 30, 32, 33, 34 at TCR3)
Group 4: Thursdays 03:00-03:50PM (Week 28 at TCR2, 30, 32, 33, 34 at TCR3)
Group 5: Fridays 04:00-04:50PM (Week 28, 30, 32, 33, 34 at TCR3)

You must attend the group for which you are registered. Attending a different group without prior approval will lead to receiving a zero mark for that particular workshop
In exceptional circumstances (e.g. illness) and with appropriate documentation, you may attend another group subject to space availability and approval of the lecturer.
Any prior decision or plans for events made by students that result in missing a scheduled computer lab session are not considered exceptional circumstances. The academic calendar is available on the university website for your reference, so students shouldn't be facing the stated situation. Note that transportation related issues are not considered as exceptional circumstances.

Module Aims
This module aims to teach econometrics to students whose primary interest is not in econometrics. These are the students who simply want to apply econometric techniques sensibly in the context of real-world empirical problems. Therefore, the theory and practice of applied econometric modelling will be introduced in this module.

Learning Outcomes

Knowledge and understanding
This module develops a knowledge and understanding of:
- Relevant quantitative and computing techniques, including mathematical and statistical methods, econometrics and the use of econometric software to estimate models using actual economic data. Economic data and its appreciation.

Professional practical skills
This module develops:
- Numeracy and quantitative skills to manipulate data, evaluate, estimate and model business problems, functions and phenomena.
- Facility with key concepts used in decision-making, including expectations.

Transferable (key) skills
This module develops:
- Subject specific transferable skills including abstraction, analysis, deduction and problem framing.

Knowledge and understanding (Industrial Economics)
This module develops a knowledge and understanding of:
- Econometrics, and its use on actual economic, financial or social data, using suitable statistical or econometric software
- Mathematical methods for economics
- Statistical methods for economics
- The nature, sources and uses of quantitative data and an ability to select and apply appropriate methods that economists might use to analyse such data.

Course Details on Moodle
The module outline for Introductory Econometrics will be posted on Moodle. Lecture slides, practice questions and answers to Computer Lab questions will also be available on Moodle.
The web address for the course Moodle page is:
https://moodle.nottingham.ac.uk/course/view.php?id=129481

Moodle contains the definitive module outline (including all assessment details), and assessment feedback and review pages. You can see information on previous student performance and SEM feedback on the course. Moodle also contains course forums, news and announcements, and a course home page that provides access to online materials.

Feedback on Teaching
The school operates a system of formal teaching appraisal (termed SET/SEM). You may be asked to complete a short on-line questionnaire relating to the teaching on this module. Your co-operation would be very much appreciated, as we value feedback to maintain the quality of our programmes. SET/SEM is completed online using Evaluate.

Accessibility/Disability
If you would like a hard copy of this or subsequent documents in an alternative format, or have other concerns around issues of accessibility, please contact the Module Convenor or the School's Disability Liaison Officer (Dr Tan Chee Meng). Further guidance on accessibility or disability issues are available from:
https://www.nottingham.edu.my/Wellbeing/Home.aspx