Newcastle Business School

ECON2111: Econometrics
Newcastle City Precinct
Semester 2 - 2025

Our mission is to develop future business leaders who will create economic prosperity, social impact and raise awareness of sustainability issues in the communities that we serve. To achieve our mission, we will provide innovative and inclusive business education, develop entrepreneurial, technologically adept and data conscious graduates and will cultivate and grow a vibrant environment that fosters excellence, sustainability and social justice.

OVERVIEW

Course Description

This course is designed to introduce core econometric techniques that are used to analyse business, finance, and economic data. The course covers the properties of linear regression models, as well as the consequences of violating classical regression assumptions. Diagnostic testing and econometric remedies are discussed, including heteroscedasticity, autocorrelation, omitted variable bias, measurement error, and the use of instrumental variables. The course explores simple linear and multiple regression modelling and then progresses to time-series models, panel data models and limited dependent variable modelling, and the use of dummy variables and instrumental variables. Emphasis is placed on understanding the theory behind econometric modelling and critically analysing the strengths and weaknesses of econometric techniques. Additionally, students will learn about collecting real-world data and using an econometric package to analyse the data and interpret the empirical results to address business, finance and economic policy issues relevant to business decision-making.

Academic Progress Requirements

Nil

Assumed Knowledge

BUSN1010

Contact Hours

Newcastle City Precinct
Integrated Learning Session
Face to Face On Campus
2 hour(s) per week(s) for 13 week(s) starting Week 1

Students are expected to complete 4 hours of guided learning via online preparation, lectures, interactive workshops, tutorials, discussion groups or self-directed learning and an additional 6 hours of independent study per week.

Unit Weighting
Workload

10
Students are required to spend on average 120-140 hours of effort (contact and non-contact) including assessments per 10 unit course.

CONTACTS

Course Coordinator The primary contact for courses is the Course Coordinator, whose details are listed on the course CANVAS site.

Consultation A minimum of one (1) hour of consultation per week. Please see course CANVAS site for details of time and location.

Teaching Staff Please refer to the course CANVAS site for details of teaching staff for ALL course offerings.

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SYLLABUS

Course Content

Topics include:
- Basic regression concepts
- Properties of estimators
- Violations of classical assumptions
- Estimation and hypothesis testing
- Simple linear and multiple regression modelling
- Simultaneous equations models
- Instrumental variable models
- Limited dependent variable models
- Time series analysis
- Panel data analysis

Course Learning Outcomes

On successful completion of this course, students will be able to:
1. Explain the specification issues of linear regression models.
2. Develop econometric skills to critically analyse applied economic research.
3. Implement hypothesis testing and inference in linear regression models.
4. Use appropriate econometric models and techniques to analyse business, finance and economic data and interpret the results.
5. Employ collaborative problem-solving, information literacy and inquiry skills.

Course Materials

Required Text:
- Wooldridge, J. M. (2021). *Introductory Econometrics: A Modern Approach* (7th ed.). Cengage Learning.

    ISBN: 9781337558860 / 9780357693223 (eText)

SCHEDULE

Week	Week Begins	Topic	Learning Activity	Assessment Due
1	21 Jul	Introduction to econometrics	**Class preparation:** Ch 1 Installation of statistical software Rstudio **Self-directed:** Introduction to RStudio	
2	28 Jul	Simple linear model	**Class preparation:** Ch 2 Sections 2.1-2.2 **Self-directed:** estimation of a simple linear model in Rstudio	
3	4 Aug	Properties and assumptions of OLS method	**Class preparation:** Ch 2 Sections 2.3, 2.4, 2 **Self-directed:** Goodness of fit interpretation in Rstudio	
4	11 Aug	Multiple regression modelling: Estimation	**Class preparation:** Ch 3 **Self-directed:** Multiple regression analysis in Rstudio (if not completed in class)	
5	18 Aug	In-Class Test		**Assessment 1 due:** In-Class of Week 5
		Recess		
6	1 Sep	Carrying out an empirical project	**Class preparation:** Ch 19 **Download paper:** Yang and Nino (2023) from Canvas site Comprehensive introduction to data wrangling, descriptive statistics and estimations in Rstudio	
7	8 Sep	Multiple regression modelling: inference	**Class preparation:** Ch 4 **Self-directed:** Hypothesis testing and confidence intervals (if not completed in class)	
8	15 Sep	Multiple regression modelling: further issues	**Class preparation:** Ch 5 and some parts of Ch 2 not covered so far	
9	22 Sep	Panel data	**Class preparation:** Ch 13-14	**Assessment 2 due:** Sunday of Week 9 by 11:59 pm
		Recess		
10	6 Oct	Difference in difference models	**Class preparation:** Ch 13-14, Ch 5, Mostly Harmless Econometrics (see Canvas site)	
11	13 Oct	Instrumental variable models	**Class preparation:** Ch 15, Ch 4, Mostly Harmless Econometrics (see Canvas site)	
12	20 Oct	Limited dependent Variable models: probit and logit models	**Class preparation:** Ch 7 section 7.5 and Ch 17 section 17.1	
13	27 Oct	Q & A		
		Exams		
		Exams		

If a lecture/class is scheduled on a public holiday, a make-up lecture may be announced by the course coordinator on the course CANVAS site.

ASSESSMENTS

This course has 3 assessments. Each assessment is described in more detail in the sections below.

	Assessment Name	Due Date	Involvement	Weighting	Learning Outcomes
1	In-Class Test	In-Class of Week 5	Individual	20%	1, 2, 3, 4
2	Group Project Report	Sunday of Week 9 by 11:59 pm	Group	30%	3, 4, 5
3	Final Examination	Formal Exam Period	Individual	50%	1, 2, 3, 4

Please note: students are advised that all assessments must be submitted in English. Assessment items <u>not</u> submitted in English will receive a mark of zero.

Results of individual assessment items and final results, including those provided via the Learning Management System (LMS) are 'unofficial results' until they are confirmed as finalised by the School Assessment Body and the Head of School or delegate. Finalised results are released directly to students on the Fully Graded Date of the relevant Semester/Trimester.

Time referenced is time in Newcastle, NSW

Late Submissions   The mark for an assessment item submitted after the designated time on the due date, without an approved extension of time, will be reduced by 10% of the possible maximum mark for that assessment item for each day or part day that the assessment item is late. Note: this applies equally to week and weekend days.

Assessment 1 - In-Class Test

Assessment Type   In Term Test
Purpose   The purpose of the In-Class Test is to evaluate a student's comprehension of the fundamental principles and concepts of econometrics taught in the course. Furthermore, it aims to gauge the student's capability to use quantitative techniques to solve business, finance and economic issues and present the findings in a well-informed manner.
Description   This in-class quiz consists of 4 questions: three short-answer conceptual questions and one practical question where you will review and interpret an R output. The short-answer questions require you to determine whether a statement is true or false, providing a justification. The practical question involves reviewing model output, interpreting key results, and applying concepts to practical scenarios. The quiz is worth a total of 20 points, and you will have 1 hour to complete it.
Weighting   20%
Length   60 minutes
Due Date   In-Class of Week 5
Submission Method   In Class
Assessment Criteria   Relevance to the question, accuracy of information, clarity of expression.
Return Method   In Class
Feedback Provided   Returned Work
Opportunity to Reattempt   Students will not be given the opportunity to reattempt this assessment.

Assessment 2 - Group Project Report

Assessment Type	Report
Purpose	The group project report serves the purpose of evaluating the collaborative and teamwork skills of students, as well as their ability to analyse real-world data using econometric techniques. Additionally, it assesses their proficiency in interpreting the results and writing a concise, informative report that can inform business, finance, and economic decision-making.
Description	The group project requires students to retrieve and clean real-world data, conduct econometric analysis using R, and apply relevant methods of multiple regression modelling. Teams will interpret results, and present findings in a professional report that emphasizes analytical accuracy, clarity, and practical insights. This group project report is worth a total of 30 points.
Weighting	30%
Length	Refer to CANVAS
Due Date	Sunday of Week 9 by 11:59 pm
Submission Method	Online
Assessment Criteria	Marking rubric
Return Method	Online
Feedback Provided	Online
Opportunity to Reattempt	Students will not be given the opportunity to reattempt this assessment.

Assessment 3 - Final Examination

Assessment Type	Formal Examination
Purpose	The purpose of the final examination is to evaluate students' comprehension of the fundamental principles and concepts of econometrics taught in the course. It involves testing their capacity to apply quantitative methods, concepts, and techniques to precisely analyse and interpret econometric results. Additionally, the exam aims to assess their ability to communicate the findings in a concise and well-informed manner.
Description	This exam comprises three sections: short questions, mathematical questions, and a practical applied exercise. It assesses your understanding of theoretical concepts, ability to solve mathematical problems, and application of econometric methods focused on the last 5 weeks of the course. The exam is worth 50 points in total. This course has a **RESTRICTED OPEN BOOK** examination. A memory aid is permitted. The memory aid is a single double sided A4 sheet of handwritten or typed notes for use during the examination. Note: memory aids must be left on the examination table and cannot be removed from the examination venue.
Weighting	50%
Length	120 minutes
Due Date	Formal exam period
Submission Method	Formal Exam
Assessment Criteria	Accuracy of answers with detailed workings and clarity of expression
Return Method	Not Returned
Feedback Provided	No Feedback - Examination scripts will not be returned to students. Final examination scripts will be made available for review by students, upon request, in a controlled and monitored setting. Students are required to make requests, directly to the relevant course coordinator. Completed examination scripts are kept by the Newcastle Business School for a period of six (6) months only, from the relevant fully graded date. Request made after the six (6) month period cannot be considered.
Opportunity to Reattempt	Students will not be given the opportunity to reattempt this assessment.

ADDITIONAL INFORMATION

Grading Scheme   This course is graded as follows:

Range of Marks	Grade	Description
85-100	High Distinction (HD)	Outstanding standard indicating comprehensive knowledge and understanding of the relevant materials; demonstration of an outstanding level of academic achievement; mastery of skills*; and achievement of all assessment objectives.
75-84	Distinction (D)	Excellent standard indicating a very high level of knowledge and understanding of the relevant materials; demonstration of a very high level of academic ability; sound development of skills*; and achievement of all assessment objectives.
65-74	Credit (C)	Good standard indicating a high level of knowledge and understanding of the relevant materials; demonstration of a high level of academic achievement; reasonable development of skills*; and achievement of all learning outcomes.
50-64	Pass (P)	Satisfactory standard indicating an adequate knowledge and understanding of the relevant materials; demonstration of an adequate level of academic achievement; satisfactory development of skills*; and achievement of all learning outcomes.
0-49	Fail (FF)	Failure to satisfactorily achieve learning outcomes. If all compulsory course components are not completed the mark will be zero. A fail grade may also be awarded following disciplinary action.

*Skills are those identified for the purposes of assessment task(s).

Communication Methods

Communication methods used in this course include:
- Canvas Course Site: Students will receive communications via the posting of content or announcements on the Canvas course site.
- Email: Students will receive communications via their student email account.
- Face to Face: Communication will be provided via face to face meetings or supervision.

Course Evaluation   Each year feedback is sought from students and other stakeholders about the courses offered in the University for the purposes of identifying areas of excellence and potential improvement.

Learning Analytics   The University uses an evidence-based approach to enhancing student learning and delivering support. Our careful analysis of data through learning analytics informs decision making processes related to student learning, academic outcomes, and support services. Learning analytics may be used to identify targeted individual opportunities for additional support services or interventions.

Interviews on Assessment Items   An Interview may be conducted on any assessment item in this course, in accordance with the Interview on Assessment Items Procedure. The purpose of the interview is to verify the author of the material submitted in response to the assessment task and provide a quality assurance measure.

In the event the Course Coordinator is not satisfied that a student's oral responses are consistent with the work originally submitted, the matter will be referred to the Student Academic Conduct Officer, who will take appropriate action under the Student Conduct Rule.

Academic Integrity and Ethical Academic Conduct Policy   All students are required to meet the academic integrity standards of the University. These standards reinforce the importance of integrity and honesty in an academic environment. Academic Integrity policies apply to all students of the University in all modes of study and in all locations.

Please refer to the Academic Integrity and Ethical Academic Conduct Policy

Adverse Circumstances	The University acknowledges the right of students to seek consideration for the impact of allowable adverse circumstances that may affect their performance in assessment item(s).
	Applications for special consideration due to adverse circumstances will be made using the online Adverse Circumstances system where:
	1. the assessment item is a major assessment item; or
	2. the assessment item is a minor assessment item and the Course Co-ordinator has specified in the Course Outline that students may apply the online Adverse Circumstances system;
	3. you are requesting a change of placement; or
	4. the course has a compulsory attendance requirement.
	Before applying you must refer to the Adverse Circumstance Affecting Assessment Items Procedure.
Use of generative artificial intelligence in course assessments	It is critical that any work submitted for assessment is your own original work. Before using generative AI tools (such as ChatGPT, Perplexity, Microsoft Copilot, etc) in any assessable work you must ensure that such use is in line with the requirements for the course and expectations of your Course Coordinator
	Misuse of AI tools may be considered a breach of the University's Student Conduct Rule and could result in disciplinary action.
	Artificial Intelligence detection software may be used to review any work you submit. If you have used AI in any way other than has been expressly permitted by your course coordinator, you may be engaging in academic misconduct and be subject to penalties. For information, refer to:
	• Generative AI Tools
	• Academic Integrity
Important Policy Information	The Help button in the Canvas Navigation menu contains helpful information for using the Learning Management System. Students should familiarise themselves with the policies and procedures at https://www.newcastle.edu.au/current-students/respect-at-uni/policies-and-procedures that support a safe and respectful environment at the University

This course outline was approved by the Head of School. No alteration of this course outline is permitted without Head of School approval. If a change is approved, students will be notified and an amended course outline will be provided in the same manner as the original.