



**Stellenbosch**

UNIVERSITY  
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UNIVERSITEIT

**Departement Ekonomie - Department of Economics**

Introductory Econometrics for  
Postgraduate Students 771

2023

Prof DP von Fintel & Prof WH Boshoff

# 1 Background

Econometrics is a sub-discipline of economics which relates strongly to statistics. It allows its users to quantify daily economic occurrences, verify theoretical relationships and provide practical evidence for most economic hypotheses and questions. Much of modern economics is substantiated with the use of data, and in particular econometric techniques.

Econometrics has developed as a discipline separate from statistics in the last century. This is because statistics largely uses experimental data, that are often not available in the social sciences. To accommodate the non-experimental data most often used in the latter, techniques have been adapted to most credibly measure the impacts referred to above (and many more hypotheses). Econometric models are often built to find causal results, which statistical models can only achieve if experimental data are used. More recently, econometricians have also adopted the tools of Data Science to make predictions with big data.

This course is designed to provide a comprehensive introduction to *linear econometrics*, which will assist you to understand the basic technical aspects of most papers you read in many postgraduate courses. The course will also equip you with the important tools to start conducting applied analyses with your own data. The material allows students to gather a foundational theoretical background in econometrics, but more importantly has a strong practical component to enable students to embark on their own studies (be it for an essay, an Honours/Masters dissertation, a first published academic paper or simply to provide real-world evidence on a question you have). Every sub-field in economics uses this tool in different ways. For instance, cross section analysis is most often applied to microeconomic settings (hence the sub-field of microeconometrics), while time series analysis is useful for macroeconomic analyses. Each of these sub-fields has its own peculiarities (in terms of technique, software and understanding), and both will be briefly introduced in this course. The discipline of econometrics is an integral tool for postgraduate study in Economics and is highly marketable in both the public and private sectors.

Though some students may already have a background in statistics or econometrics, it should be emphasised that this is not an explicit prerequisite for this course. Furthermore, students with a strong undergraduate grounding in these disciplines may find some of the introductory concepts repetitive: these students should be warned, however, that econometrics has a slightly different flavour and emphasis to pure statistics, and that attendance of lectures and particularly the completion of practical work is strongly advised.

## 2 Course Contacts

Role	Name	E-mail	Room	Consultation
Instructor	Prof Dieter von Fintel	dieter2@sun.ac.za	619A	By appointment
Instructor	Prof WH Boshoff	wimpie2@sun.ac.za	511	By appointment
Tutor	Gabriella Neilon	22581340@sun.ac.za		During Lab session
Postgrad Administrator	Carina Smit	carina@sun.ac.za	506A	-

## 3 Prescribed Text and Course Resources

- The core text for this course is  
Wooldridge, J.M., 2019. *Introductory Econometrics - A Modern Approach*, 7th Edition. South-Western.
- All information, announcements, lecture notes, assignments and tutorials will be posted on SunLearn:
  - <https://learn.sun.ac.za/>

## 4 Course Structure

The Honours programme is a full-time residential programme. Students are expected to attend lectures and tutorials in person. Lectures will not be recorded, bar for exceptional circumstances that are discussed with the lecturing team ahead of scheduled times.

### 4.1 Lectures

One formal lecture is scheduled for most weeks of the semester. Lectures are presented in person. The purpose of the lectures is to (i) introduce the mechanics of the linear regression function; (ii) allow students to critically assess the assumptions required for estimates to be unbiased and efficient; (iii) introduce statistical inference; (iv) expose students to other important variations in econometrics, including non-linearity, qualitative variables, linear probability models, instrumental variables, and time series econometrics.

### 4.2 Lab Sessions and Software

In addition to formal lectures, a computer lab session is scheduled in most weeks. The purpose of the lab sessions is to prepare students for practical assessments and also for the final exam, by teaching students to (i) practically implement

economic and econometric theory; (ii) organise, manipulate, and analyse economic data; (iii) perform quantitative analysis and estimate economic models using probabilistic tools; and (iv) assess, interpret, and present the results from econometric analyses.

Students will learn to use STATA, though anyone is welcome to experiment with packages that suit their purposes and preferences.<sup>1</sup> The software is available in the student computer user areas.

## 5 Assessment

### 5.1 Dates and assessment weights

The final mark for this course will be calculated with the following weights (please note the relevant dates of assessment/ for hand-in):

Assessment	Weight	Date	Content	Time	Format
<i>Theory test</i>	10 %	14 Mar	Ch 1-3; Appendix B & E	2 hours	Invigilated closed book
<i>Practical test</i>	9 %	11 Apr	Work in Stata	24 hours	Take home
<i>Online quizzes</i>	1 %	TBC	Complete quiz/ data work		
<i>Formative</i>	0 %	TBC	Tutorials		
<i>Project 1</i>	15 %	25 Apr	Cross Section		Presentation
<i>Project 2</i>	15 %	16 May	Time Series		Presentation
<i>Final exam</i>	50 %	TBC	Ch 4-12; 16; 18	3 hours	Invigilated closed book

### 5.2 Assessment rules and guidelines

#### 5.2.1 General

All assessments are compulsory. Students may only miss assessments for medical reasons - please refer to section 5.2.2. To receive a final mark for this module, all assessments must be completed at an acceptable standard.

#### 5.2.2 Medical certificates

Students who miss any assessments that carry a positive weight are required to submit a medical certificate for each missed assessment via e-mail to Prof von Fintel within 48 hours of missing the assessment. Should students not submit a valid medical certificate within these timeframes, their final module mark will be recorded as “incomplete” and they will be required to register for the module in the next academic year. There are no exceptions to this rule.

Medical certificates should, at a minimum contain the following information:

<sup>1</sup>Note that only limited help may be offered if students use alternative packages.

- Name of patient (student)
- Date and time of medical examination
- An indication that the certificate has been issued after a personal observation (this excludes telephonic consultation or communication) of the student by a suitably registered medical practitioner
- Confirmation that the student will not be able to or was not able to attend class or take the class test(s) or carry out the class work, due to illness
- Any other information which, in the judgement of the practitioner would be required or relevant

### **5.2.3 Tests**

There will be one theory and one practical test during course of the semester. All students are required to write these tests at the first opportunity. Second opportunities are only granted for medical reasons. The medical theory test will be written on the same day as the examination.

### **5.2.4 Projects**

Two group projects contribute to the final module mark. The first will cover a cross section topic and the second a time series topic. The aim is to expose students to the practical aspects of econometrics . Further instructions will be communicated during lectures

### **5.2.5 Online quizzes**

From time to time students will complete SunLearn quizzes about theoretical concepts and based on data manipulation. 1% of the module mark is awarded to students who complete all quizzes. 0.5% is awarded to students who complete between 50-100% of the quizzes. No marks are awarded to students who complete less than half of these quizzes.

### **5.2.6 Formative Assessments**

From time to time students will be given formative assessments that follow from the lab sessions. These will not carry weight in the final mark, but will help students to prepare for other assessments.

### 5.2.7 Examination

- Students who missed the theory test for medical reasons will write this test directly after the examination, following a short controlled break of 30 minutes.
- Students may not write the second opportunity of the theory test if they have attempted it during the term.
- **Students who miss both the theory test and the examination** will not be awarded the credits for this module, and their results will be recorded as “incomplete”. They will not be able to write the supplementary or medical exams, since no mark will be available for the theory test. *Students who miss the first opportunity of the theory test therefore face the risk of not completing the module if they fall ill during the main examination period.*
- **Students who miss the examination due to illness** are obliged to present a valid medical certificate to the department, after which they may qualify to write the medical exam. Only students who wrote the theory test can qualify for a medical examination. This assessment will take place together with the supplementary exam, and will be scheduled in the same week as all other supplementary exams of the postgraduate programme. The date will be announced in due course.
- **Students who write the first exam may qualify for a supplementary examination**, which will be written in the same week as all other supplementary exams of the postgraduate programme. After the first examination, passes, fails and supplementaries are awarded according to the following classifications:

		Exam mark	
		<40%	≥ 40%
Final	≥ 50%	Fail	Pass
Mark	<50%	Fail	Supplementary*

\*with the possibility of improving the final mark to a maximum of 50%

- **Students who are ill and submit a medical certificate for the first examination** will not receive a mark for any of the assessments completed on the day of the examination. No mark will therefore be awarded for the medical theory test. Should this occur, module results will be recorded as “incomplete” and students should register again for the course in the following academic year.

- **Students who miss both the theory test and the exam**, will not be awarded the credits for this module, and results will be recorded as “incomplete” and students should register again for the course in the following academic year. This includes students who are ill during the first exam period.

### **5.3 Repeating the module**

Students may repeat this module if they fail at a first attempt or if their mark is recorded as “incomplete”. Students may only repeat this module once to continue with the Honours programme.

## 6 Preliminary Schedule

### Preliminary Schedule

<b>Lectures</b>		<b>Lab Sessions (Gabriella Neilon)</b>	
Monday 12:00-14:00 <i>Schumann 225</i>		Tuesday 16:30-18:30 <i>Van der Sterr 3054</i>	
<i>Introduction &amp; Cross Section Econometrics (Prof DP von Fintel)</i>			
06-Feb	Ch 1	07-Feb	Appendix B (Lecture)
13-Feb	App B	14-Feb	Stata Intro
20-Feb	Ch 2 & 3	21-Feb	Basic Estimation
27-Feb	Ch 4	28-Feb	Inference
06-Mar	<b>RECESS</b>	07-Mar	<b>RECESS</b>
13-Mar	Ch 5 & 6	14-Mar	<b>THEORY TEST</b>
20-Mar	Ch 7	21-Mar	<b>HUMAN RIGHTS DAY</b>
27-Mar	Ch 8 & 9	28-Mar	Non-linearity and qualitative data
03-Apr	<b>RECESS</b>	04-Apr	<b>RECESS</b>
10-Apr	<b>RECESS</b>	11-Apr	<b>PRACTICAL TEST</b>
17-Apr	Ch 15	18-Apr	2SLS and other issues
<i>Time Series Econometrics (Prof WH Boshoff)</i>			
24-Apr	Ch 10	25-Apr	<b>CROSS SECTION GROUP PROJECTS</b>
01-May	<b>WORKERS DAY</b>	02-May	Time Series Tut I
08-May	Ch 11	09-May	Time Series Tut II
15-May	Ch 12 & 18	16-May	<b>TIME SERIES GROUP PROJECTS</b>