

RHODES UNIVERSITY
DEPARTMENT OF ECONOMICS AND ECONOMIC HISTORY
ECO 315: ECONOMETRICS
COURSE OUTLINE
2023

Lecturer: Professor M. Rogan
[course coordinator]
Material covered: Term 1 & 2 [8 weeks]
Office: E8
Tel: 046 603 8302
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(Consultation time- every Friday from 10:00-12:00 or by appointment)

Lecturer: Dr. S.A Khumalo
Material covered: Term 2 [2 weeks]
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(Consultation time- by appointment)

Lecturer: Professor J Marire
Material covered: Term 2 [3 weeks]
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1. INTRODUCTION

1.1 COURSE OVERVIEW

This course introduces students to the theory and practice of econometrics. The course aims to enable students to apply statistical techniques to economic data to analyse the relationships suggested by economic theory. The course should also aid the student to formulate hypotheses regarding economic theory and successfully test these hypotheses with appropriate econometric techniques. In addition, students are taught a variety of potential problems that may be encountered during the estimation procedure, and ways of addressing these issues are illustrated with the aim of obtaining reliable and robust results. Where relevant, practical econometric exercises are also completed using Excel or econometric software, which exposes students to the real-world estimation and analysis of economic relationships.

1.2 CREDIT VALUE AND TIME

The course has a credit value of 30. Students should therefore spend a minimum of 10 notional hours on the course each week. This includes lectures, the weekly tutorial and self-study. Students are strongly advised to spend at least **6 hours per week** on the course aside from the contact time.

1.3 ASSUMPTIONS OF PRIOR LEARNING

The following assumptions are made regarding prior learning:

- Students have knowledge of economic theory at second-year level.
- Students understand some basic principles of statistical theory.

2. LEARNING OUTCOMES

By the end of this course, students should:

- Know the various steps followed in analysing certain relationships suggested by economic theory and based on this be able to apply the appropriate econometric technique in order to validate or refute these relationships.
- Be comfortable with testing hypotheses within different contexts.
- Be acquainted with the assumptions made in the application of the classical linear regression model, and be able to test and correct for violations of these assumptions.
- Be able to perform regression analysis on selected economic variables, using the Ordinary Least Squares (OLS) method, and interpret the regression results.
- Have a basic understanding of time series econometrics.

3. ASSESSMENT

Coursework assessment consists of two tests, an assignment, tutorials, and an examination. The tests are scheduled for the following dates:

Test 1:

06 March 2023 (Monday)

Test 2:

8 May 2023 (Monday)

Further details regarding the tests will be communicated during lectures. Any clashes with other tests should be reported immediately.

NOTE: In the event of a test not written, a valid Leave of Absence (LOA) must be submitted. Failure to submit an LOA will result in loss of the DP certificate. Also note that, should a student not write a test, there will be a compulsory make-up test. **Please read appendix A for more information on LOAs.**

Note that a DP requirement for the course is that a class mark of at least 35% needs to be obtained. There are also additional DP requirements for third-year Economics courses, which students should familiarise themselves with.

The examination is a three-hour paper. Students will be required to answer *all* the questions in the paper. Further information regarding the structure of the exam paper and marks assigned to each question will be provided towards the end of the course.

The final mark for the course is calculated as follows:

Test 1 (06 March):	12,5%
Test 2 (08 May):	12,5%
Assignment (29 April)	10%
Tutorials:	5%
<u>Examination:</u>	<u>60%</u>
Final mark	100%

4. TEACHING METHODS

4.1 LECTURES

There are three lectures every week per group. Students must remain in their chosen group for the duration of the course. [All lectures are in Arts Major](#). The lecture times for the respective groups are as follows:

Period	Time	Day
GROUP A		
2	08h40-09h25	Monday
3	09h35-10h20	Tuesday
4	10h30-11h15	Wednesday
GROUP B		
3	09h35-10h20	Monday
4	10h30-11h15	Tuesday
1	07h45-08h30	Thursday

4.2 TUTORIALS

There will be one tutorial every week (See the Eco III general information booklet), and will be held on Wednesdays, starting from the 1st of March 2023, at times and venues to be advised by the second week of term. Tutorials have historically proven to be extremely helpful in assisting students with an understanding of the course material, and therefore active participation in and attendance of tutorials is crucial.

IMPORTANT: Tutorial exercises must be completed *prior* to the tutorial session. Completed tutorial exercises should be handed in to your tutor on the Monday before the Tutorial. Any tutorial exercises submitted after the tutorial session will NOT be accepted and will be treated as a *failure to submit, unless* the lecturer has granted permission for an extension *prior* to the tutorial session. *Failure to submit the requisite number of tutorial exercises over the semester will result in an immediate DP refusal.* In addition, students are allowed to miss one tutorial session (but **not a tutorial submission, even with an LOA for any reason**) without an LOA. Any further absences must be supported by a valid LOA which may be granted only on medical or compassionate grounds, or if a student is officially representing the university. The DP will be withdrawn should a student fail to attend two or more tutorials without an LOA.

NOTE: Copying or plagiarism of tutorials are easily detected and such cases will be referred to the Economics Departmental plagiarism committee and, if necessary, the Rhodes Senate standing committee on plagiarism. In addition, such cases will result in the removal of the DP.

5. RESOURCES

5.1 Prescribed e-textbook

Woolridge, J. (2016). *Introductory Econometrics: A Modern Approach, 7th Edition*. Boston: Cengage.

5.2 Additional sources

Gujarati, D. (2006). *Essentials of Econometrics, 3rd Edition*. McGraw-Hill, New York.

Gujarati, D. (2012). *Econometrics by Example*. Basingstoke: Palgrave Macmillan [Part IV]

Gujarati, D. & Porter, D.C. (2009). *Basic Econometrics, 5th Edition*. New York: McGraw-Hill.

5.3 Course website

All students must register on RUConnected. Lecture material will be made available on the course website, as well as any additional reading material and resources. (No enrollment key required)

5.4 MindTap

MindTap is the platform through which the course readings and a number of other activities and exercises will be made available throughout the semester. You can access MindTap through the course RUConnected page and the platform can be used on a laptop or on a smart phone. An introduction to MindTap will be given during the first week of lectures.

6. COURSE CONTENT

Topic	Contents	Lecturer	Weeks
Prof M. Rogan 8 weeks: 13 Feb – 14 April			
Fundamental concepts in regression analysis Woolridge: Chapter 1 Chapter 2 (2.1-2.3, 2.5) Math Refresher A-B	<ul style="list-style-type: none"> • Covariance analysis • Correlation analysis • Regression analysis • Assumptions of classical linear regression analysis • Estimation in a bivariate context 	Prof M. Rogan	2 weeks 13 -16 Feb 20 Feb-24 Feb
Basics of Inference and Hypothesis testing Woolridge: Math Refresher C Chapter 4 (4.2-4.3)	<ul style="list-style-type: none"> • Point estimation • Confidence interval analysis (interval estimation) 	Prof M. Rogan	1 week 27 Feb-3 March
Functional forms Woolridge: Chapter 2 (2.4, 2.6) Chapter 6 (6.2)	<ul style="list-style-type: none"> • Log-linear model • Semi-log model • Reciprocal model • Logarithmic reciprocal model 	Prof M. Rogan	1 week 6-10 March
Econometric problems related to the error term Woolridge: Chapter 8 (8.1, 8.3-8.4) Chapter 12 (12.1, 12.3b)	<ul style="list-style-type: none"> • Non-constant error variance (Heteroscedasticity) • Interdependent successive error terms (Autocorrelation) 	Prof M. Rogan	2 weeks 13-17 March 20-24 March
<i>End of First Term- (27-31 March: VACATION)</i>			
Multiple linear regression analysis Woolridge: Chapter 3 (3.1-3.6)	<ul style="list-style-type: none"> • The problem of estimation • Partial regression coefficients 	Prof M. Rogan	1 week 3-7 April
Multiple linear regression analysis Woolridge: Chapter 4 (4.5)	<ul style="list-style-type: none"> • The problem of inference • Hypothesis testing 	Prof M. Rogan	1 week 10-14 April

Prof J Marire and Dr AS Khumalo (5 weeks): 17 April – 19 May			
Multiple Regression including binary explanatory variables Woolridge: Chapter 7	<ul style="list-style-type: none"> • Analysis with qualitative information 	Dr S.A Khumalo	2 weeks 17-21 April 24-28 April
Introduction to time series econometrics Woolridge: Chapter 10 (10.1-10.3, 10.5)	<ul style="list-style-type: none"> • Nature of time series data • Static versus dynamic time series models • OLS under classical assumption in time series • Trends and seasonality 	Prof. J. Marire	1-5 May
Further issues in using OLS with time series data Wooldridge: Chapter 11 (11.1-11.3)	<ul style="list-style-type: none"> • Stationarity & weakly dependent time series • Properties of OLS • Regression with highly persistent time series 	Prof. J. Marire	8-12 May
Further issues in using OLS with time series data Wooldridge: Chapter 11 (11.4-11.5)	<ul style="list-style-type: none"> • Dynamically complete models • Homoscedasticity assumption under time series 		15-19 May

Appendix A: Extracts from the RU Policy for Leave of Absence (LOA)

Note that there are 2 kinds of LOAs:

General Leave of Absence: A period of time granted to a student to be absent from university due to genuine circumstances beyond their control (which can be on medical; psychological; tradition/religious/leadership or ceremonial grounds) the period **may not exceed two weeks**. May be granted by the course co-ordinator or HoD.

Extended Leave of Absence: A period **exceeding two weeks** granted to a student to be away from the University due to medical/ psychological/ other circumstances covered by this policy. May only be granted by the Director of Student Affairs. Students on an extended LOA are temporarily de-registered from all courses.

Guidelines on applying for **General LOA**

LOA on medical grounds

Must be supported by a qualified health practitioner.

It is assumed those who sign in support of such an application have had the opportunity to assess the health of the student, and to perform their own on-site observation of the symptoms displayed, in order to satisfy themselves that there is clear evidence that the student is ill at the time of the observation.

LOAs will NOT normally be supported in the following circumstances: when a healthy student comes to claim a retrospective LOA for being sick at a time prior to the consultation; when a student misses a lecture or test while waiting to be seen, but proves to be in good health when attended to.

The evidence should normally be supplied within 2 weeks of the student returning to the University.

LOA on Psychological grounds

All applications must be supported by a registered Psychologist.

LOA on compassionate grounds

In the case of the death or terminal illness of a close family member (grandparents, parents, siblings, child or a significant other), or friend, students will be granted a reasonable period of compassionate leave.

The Head of Department may request evidence (e.g. a certified copy of the relevant death certificate or an affidavit confirming the death) before the LOA is granted. This evidence should normally be supplied within 2 weeks of the student returning to the University.

LOA for traditional/ religious ceremonies

All applications must be supported by a recognised traditional leader, religious leader, a ward or local government councillor, or justice of peace in the student's community.

In the cases of cultural ceremonies that are planned at specific times of the year (e.g. circumcision, umhlanga, or umkhosi/incwala/ weddings) students are required to get approval at least one week before the ceremony.

Support for students participating in sporting/extra- mural activities/ leadership activities

Students may apply for an LOA for a competitive sporting event or extra- mural commitment, at provincial, national or international level.

Students may apply for an LOA for attendance at practices which take place after 17h00 on a weekday and over weekends during the two weeks preceding a scheduled provincial, national or international event.

No late applications (submitted after an event) will be supported. The application should normally be

made at least ONE week in advance of the event, and must be accompanied by all relevant supporting documentation.

The application for sporting activities should be supported by the Head of Sports Administration.

The SRC may apply for an LOA for leadership commitments and those will be supported by the Student Development and Support Officer.

The application should be supported by Student Development and Support Officer for extra- mural activities/ university meetings or conferences.

The extent of absence should be taken into consideration and the student must be aware that academic requirements need to be met for DP approval and course requirements.

Note

Depending on the course requirements, Economics students may be expected to make-up the work missed when an LOA is granted. For example, an LOA would normally allow late submission of an essay without a penalty, but the essay would still need to be submitted within an agreed time period for the student to retain their DP for the course.

It is the responsibility of the student to contact the course coordinator to find out what make-up work is required.

LOA requests submitted after the 2 week cut off period will not normally be considered.