



# ECON241 Introductory Econometrics

First Semester, 2011

## **UNIT OUTLINE**

*Department of Economics*

## 1. Overview of ECON241

**NOTE: Commencing in 2010, the code for this unit changed from ECON141 to ECON241, but in all other respects, apart from differences in the method of assessment from semester to semester, ECON241 this year is exactly the same as ECON141 in the first semester each year prior to 2010. It is also exactly the same as ECON241 in the first semester of 2010, but it is not the same as ECON241 in the second semester of 2010. A number of substantial one-off changes, including the choice of text-book, and the method of assessment, were made to ECON241 in the second semester of 2010. Those changes will NOT be continued in the unit this year.**

The aim of ECON241 is to acquaint students with econometric techniques frequently used in the analysis of economic, financial and marketing data. A basic level of competence in using these techniques, together with an appreciation of their strengths and limitations, is essential for economists, financial analysts and market researchers.

The unit builds on statistical techniques covered in STAT170 (Introductory Statistics) with emphasis given to applications in economics, finance and marketing. Mathematical proofs and derivations are considered only to the extent necessary to facilitate an understanding of key concepts and the interpretation of results.

During the semester students will be required to use the WINDOWS based computer program ECSTAT, which runs in EXCEL. The use of this computer program is an integral component of tutorial exercises, supplementary and revision exercises, and the assignment. Instruction in the use of the computer program will be given in lectures, tutorials and practicals as required. The computing component of the unit is not examinable in the End-of-Semester (Final) Examination.

"Louis Armstrong was an economist. Every note was important, and it counted for something."

–ABC television program on Jazz.

"Econometrics is the quantitative arm of economics. It is the closest that economics gets to being a science."

–Roger Tonkin  
Lecturer in Econometrics  
Macquarie University

## 2. Prerequisites

ECON241 has two prerequisites. Students must have obtained at least a PC, CQ or P in:

- (i) STAT170, or STAT171;
- and**
- (ii) ECON110, or ECON111, or BBA103

## **2a. Mathematics prerequisite for ECON241**

Prior to 2009 students enrolling in ECON241 must have obtained a pass grade in mathematics at a level equivalent to 2 Unit Mathematics for the New South Wales Higher School Certificate (HSC). Commencing in the first semester 2009, that formal mathematics prerequisite no longer applies. However, commencing in 2010, the University has determined that for students who enrol in ECON241 it will be assumed that they have satisfied the mathematics prerequisite that applied prior to 2009. That is, it is now assumed that students who enrol in ECON241 have obtained a pass grade in mathematics at a level equivalent to 2 Unit Mathematics for the New South Wales Higher School Certificate (HSC). In particular, the material covered in ECON241 now assumes that students who have enrolled in the unit are familiar with elementary concepts associated with the use of exponentials, logarithms, and calculus. For students who have not previously studied these aspects of mathematics, or for students who feel they need to revise their High School mathematics, it is strongly recommended that they enrol in ECON131: Quantitative Methods in Business, Economics and Finance, and obtain a pass grade in that unit, before enrolling in ECON241.

## **3. ECON241 Web Page**

The web address for the Online Teaching Facility at Macquarie University is: <http://learn.mq.edu.au>. Students enrolled in ECON241 can access the Blackboard web site for ECON241 from the Online Teaching Facility.

## **4. Workload**

Students are expected to devote AT LEAST nine hours each week to ECON241, including attendance at Lectures, Tutorials and the Computing Practical.

## **5. Text-book**

The prescribed text-book for the unit is:

*Gujarati, D.N., and D.C. Porter*  
*ESSENTIALS OF ECONOMETRICS, Fourth Edition*  
*McGraw-Hill/Irwin, 2010*

The Lecture Notes used in ECON241 can be downloaded from the ECON241 web-site on Blackboard. The Lecture Notes, together with the lectures and text-book references, provide students with a clear indication of the content and scope of the unit.

Students enrolled in ECON241 are strongly advised to bring with them a copy of the relevant section of the Lecture Notes to each lecture, and to ensure that they have access to a copy of the text-book.

## 6. Recommended Reference Books

The following reference books are highly recommended for all students enrolled in ECON241:

*Studenmund, A.H.*  
*USING ECONOMETRICS: A PRACTICAL GUIDE, Sixth Edition,*  
*Pearson/Addison-Wesley, 2011*

*Dougherty, C.*  
*INTRODUCTION TO ECONOMETRICS, Third Edition,*  
*Oxford University Press, 2007*

These two books have excellent non-technical discussions of the material discussed in ECON241. Some of the notation and some of the mathematical conventions used in formulae and equations in Studenmund's book differ from the notation and conventions used in many introductory econometric text-books and in ECON241. For that reason, and only for that reason, Studenmund's text-book cannot be recommended as a prescribed text-book for ECON241. However, there is a strong argument that students should be made aware of the differences in notation and conventions that exist in the econometric literature. The book by Studenmund serves that purpose for students enrolled in ECON241, in addition to providing a clear non-technical discussion of basic econometric concepts and procedures.

## 7. Supplementary Reading

There are a number of introductory books on Economic Statistics, Regression Analysis and Econometrics. Students may find the following books useful:

*Bechtold, B., and R. Johnson,*  
*STATISTICS FOR BUSINESS AND ECONOMICS,*  
*PWS-Kent, 1989*

*Berenson, M.L., and D.M. Levine*  
*BASIC BUSINESS STATISTICS, 5th Edition,*  
*Prentice-Hall, 1992*

*Berry, W.D., and S. Feldman*  
*MULTIPLE REGRESSION IN PRACTICE*  
*Sage Publications, 1985*

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*Cameron, S.*  
*ECONOMETRICS*  
*McGRAW-Hill, 2005*

*Croucher J.S., and E. Oliver*  
*STATISTICS: A MODERN INTRODUCTION FOR BUSINESS AND*  
*MANAGEMENT,*  
*McGraw-Hill, 1986*

\* *Halcoussis, D.,*  
*UNDERSTANDING ECONOMETRICS,*  
*South-Western (Thompson), 2005*

\* *Eastman, B.D.*  
*INTERPRETING MATHEMATICAL ECONOMICS AND*  
*ECONOMETRICS*  
*St Martin's Press, 1984*

\* *Griffiths, W., R.C. Hill & G.G. Judge*  
*LEARNING AND PRACTICING ECONOMETRICS*  
*Wiley, 1993*

\* *Harrison, S.R., and R.H.U. Tamaschke*  
*APPLIED STATISTICAL ANALYSIS*  
*Prentice-Hall, 1984*

\* *Harrison, S.R., and R.H.U. Tamaschke*  
*STATISTICS FOR BUSINESS, ECONOMICS AND MANAGEMENT*  
*Prentice-Hall, 1993*

*Hebden, J.*  
*STATISTICS FOR ECONOMISTS*  
*Philip Allan, 1981*

*Hey, J.D.*  
*STATISTICS IN ECONOMICS*  
*Martin Robertson, 1974*

\*\* *Hill, C., W. Griffiths and G. Judge*  
*UNDERGRADUATE ECONOMETRICS*  
*John Wiley & Sons, 1997*

\*\* *Kelejian, H.W., and W.E. Oates*  
*INTRODUCTION TO ECONOMETRICS, 2nd Edition*  
*Harper & Row, 1981*

- \* *Kennedy, P.*  
*A GUIDE TO ECONOMETRICS, 5th Edition*  
*Blackwell, 2003*
  
- Kenkel, J.L.*  
*INTRODUCTORY STATISTICS FOR MANAGEMENT & ECONOMICS,*  
*3rd Edition, PWS-Kent, 1984*
  
- \*\* *Kmenta, J.*  
*ELEMENTS OF ECONOMETRICS*  
*Macmillan, 1971*
  
- \* *Koutsoyiannis, A.*  
*THEORY OF ECONOMETICS, 2<sup>nd</sup> Edition*  
*Macmillan, 1977.*
  
- \* *Lewis-Beck, M.S.*  
*APPLIED REGRESSION: AN INTRODUCTION*  
*Sage Publications, 1980*
  
- \* *Lewis, D.E., D.T. O'Brien and D. Thampapillai*  
*STATISTICS FOR BUSINESS AND ECONOMICS*  
*Harcourt Brace Jovanovich, 1990.*
  
- Mansfield, E.*  
*STATISTICS FOR BUSINESS & ECONOMICS, 2nd Edition*  
*Norton, 1983*
  
- \*\* *Mirer, T.W*  
*ECONOMIC STATISTICS & ECONOMETRICS,*  
*Macmillan, 1983*
  
- \*\* *Pindyck, R.S., and D.L. Rubinfeld*  
*ECONOMETRIC MODELS AND ECONOMIC FORECASTS, 4<sup>th</sup> Edition,*  
*McGraw-Hill International, 1998*
  
- Round, D.K., and A.J. Arnold*  
*ECONOMIC AND BUSINESS STATISTICS PRACTICAL APPLICATIONS*  
*WITH MINITAB AND SAS,*  
*Harper & Row, 1988*
  
- \* *Schroeder, L.D., D.L. Sjoquist and P.E. Stephan*  
*UNDERSTANDING REGRESSION ANALYSIS: AN INTRODUCTORY*  
*GUIDE,*  
*Sage Publications, 1986*

*Selvanathan, A., Selvanathan S., Keller G., Warrack B., and H. Bartel*  
**AUSTRALIAN BUSINESS STATISTICS**  
*Thomas Nelson Australia, 1994*

*Thomas, J.J.*  
**AN INTRODUCTION TO STATISTICAL ANALYSIS FOR ECONOMISTS**  
*Weidenfeld and Nicolson, 1983*

\*\* *Thomas, R.L.*  
**MODERN ECONOMETRICS: AN INTRODUCTION**  
*Addison-Wesley, 1997.*

*Webster, A.*  
**APPLIED STATISTICS FOR BUSINESS AND ECONOMICS**  
*Irwin, 1992*

*Wonnacott, T.H., and Wonnacott R.J.*  
**INTRODUCTORY STATISTICS FOR BUSINESS AND ECONOMICS,**  
*4th edition, Wiley, 1990*

\* Very good non-technical references

\*\* Very good technical references

## **8. Other Entry-Level and Intermediate-Level Econometric Text-books**

Students who are majoring in Economics, Applied Econometrics or Applied Finance, or who are considering a major in these areas, may find the following recently published books useful:

*Carter Hill, R., W.E. Griffiths, and G.G. Lim,*  
**PRINCIPLES OF ECONOMETRICS, 3<sup>rd</sup> Edition,**  
*Wiley, 2008*

*Gujarati, D.N.*  
**BASIC ECONOMETRICS, 4<sup>th</sup> Edition,**  
*McGraw-Hill, 2003*

*Koop, G.*  
**ANALYSIS OF ECONOMIC DATA, 3<sup>rd</sup> Edition,**  
*Wiley, 2009*

*Heij, C., P. de Boer, P.H. Franses, T. Kloek and H.K. van Dijk*  
**ECONOMETRIC METHODS WITH APPLICATIONS IN BUSINESS AND ECONOMICS,**  
*Oxford University Press, 2004*

*Murray, M.P.*  
*ECONOMETRICS: A MODERN INTRODUCTION*  
*Addison-Wesley / Pearson International, 2006*

*Patterson, K.*  
*AN INTRODUCTION TO APPLIED ECONOMETRICS: A TIME SERIES APPROACH, Palgrave, 2000*

*Schmidt, S.J.*  
*ECONOMETRICS*  
*McGraw-Hill Irwin, 2005*

*Stock, J.H., and M.W. Watson*  
*INTRODUCTION TO ECONOMETRICS, 2<sup>nd</sup> Edition,*  
*Addison-Wesley / Pearson International, 2007*

*Verbeek, M.*  
*A GUIDE TO MODERN ECONOMETRICS, 3<sup>rd</sup> Edition,*  
*Wiley, 2009*

*Vogelvang, B.*  
*ECONOMETRICS: THEORY AND APPLICATIONS WITH EVIEWS*  
*Pearson Education / Prentice-Hall, 2005*

*Wooldridge, J.M.*  
*INTRODUCTORY ECONOMETRICS: A MODERN APPROACH, 2<sup>nd</sup> Edition,*  
*South-Western College Publishing / Thomson Learning, 2005*

## **9. Learning Outcomes**

All academic programs at Macquarie University seek to assist students develop generic skills in a range of areas. One of the aims of ECON241 is to assist students develop skills in numeracy, information technology, critical analysis and problem solving.

## **10. Teaching, Learning and Assessment Strategy**

The purpose of the final examination for ECON241 is to assess each student's understanding of the concepts and procedures discussed in lectures and tutorials.

A major aim of the within-semester assessment in ECON241 is to encourage and develop in students the capacity for self-motivated and self-directed learning.



## 11. Class Arrangements

It is strongly recommend that students enrolled in ECON241 attend lectures and tutorials. There are twenty-four hours of lectures (i.e. two hours each week, except in Week 8), 10 one-hour tutorial classes, and a one-hour computing practical (mainly for students who have not previously used EcStat. or who need to revise the use of EcStat ).

**Lectures** Evening Streams : Monday 6 – 8 pm, E7B, Mason Theatre  
Thursday 6 – 8 pm, W5A, Price Theatre

Day Stream: Tuesday 2 – 4 pm, W5A, Price Theatre

**Tutorial Classes** Weeks 2 – 13, except weeks 4 and 8

**Computing Practical** Week 4

The class timetable is on the University web site at: <http://www.timetables.mq.edu.au>

Lectures, tutorials and computing practicals commence at 5 minutes past the hour and end at 5 minutes to the hour.

The twenty-six hours of formal lectures will be available from **i-Lecture**. In addition, students will also be able to access detailed discussions of aspects of the lecture topics via ‘talking’ Power Point slides which will be posted on Blackboard.

Week	Date	Tutorial Exercise	Tutorial Class	Computing Exercise	Computing Practical
1	February 21 – 25	*			
2	Feb 28 - March 4	*	*		
3	March 7 – 11	*	*		
4	March 14 – 18	*		*	*
5	March 21 – 25	*	*	*	
6	March 28 – April 1	*	*	*	
7	April 4-8	*	*	*	
April 11 – 21 Mid-Semester Recess					
8	April 27 – 29	*		*	
9	May 2 – 6	*	*	*	
10	May 9 – 13	*	*	*	
11	May 16 – 20	*	*	*	
12	May 23 – 27	*	*	*	
13	May 30 – June 3	*	*	*	

April 22: Easter Friday public holiday (Mid-Semester Recess)

April 25: Easter Monday public holiday (Week 8)

April 26: Anzac Day public holiday (Week 8)

June 13: Queen's Birthday public holiday (Examination Period)

## 12. Prerequisite Revision Topics

Measures of Central Location in Populations and Samples  
Measures of Variability in Populations and Samples  
Summation Notation  
Mathematical Expectation  
The Relative Frequency definition of Probability  
The Normal Distribution  
The t-distribution  
Sampling Distributions  
Basic procedures in Statistical Inference  
Type I and Type II errors  
The Power of a Test  
Properties of Estimators: Unbiasedness and Efficiency

## 13. Lecture Program

A full list of the lecture topics for ECON241 is provided on the next page.

Week 1	Introduction, Topics 1, 2 & 3
Week 2	Topics 5 & 6
Week 3	Topics 6 (Cont.) & 9
Week 4	Topics 11 & 12
Week 5	Topics 13 & 14
Week 6	Topics 15 & 17 (Examples 1 & 3)
Week 7	Topics 18 & 19
Week 8	-----
Week 9	Topics 20, 21 & 22
Week 10	Topics 23 & 24
Week 11	Topics 25, 16 & 17 (Example 2)
Week 12	Revision Examples
Week 13	Exam Briefing

Topic 4 will not be discussed in lectures and is not examinable in Semester One, 2011.  
Topic 7 will not be discussed in lectures and is not examinable in Semester One, 2011  
Topic 8 will be dealt with in the Computing Practical in Week 4.  
Aspects of Topic 10 will be discussed in the relevant lectures in Weeks 5 to 11.

**There will be no lectures in Week 8 because of the Easter Monday Public Holiday on Monday 25<sup>th</sup> April, and the Anzac Day Public Holiday on Tuesday 26<sup>th</sup> April.**

## 14. Lecture Topics

TOPIC 1	Basic Statistical Concepts Standard Normal (Z) and Students t Tables
TOPIC 1B	Basic Mathematical Concepts and Procedures
TOPIC 2	Confidence Interval Estimation
TOPIC 3	Hypothesis Testing
TOPIC 4	Mathematical Expectation
TOPIC 5	Desirable Properties of Estimators
TOPIC 6	Two-Variable Regression Analysis The Model and Assumptions Estimation of the Two Variable Regression Model
TOPIC 7	Statistical Inference and Prediction in Regression Analysis
TOPIC 8	Computing in ECON241 – Getting Started with ECSTAT
TOPIC 9	An example of Regression Analysis using ECSTAT Appendix: Interpolation using the t tables
TOPIC 10	Additional Computing Procedures using ECSTAT
TOPIC 11	Non-Linearities in Regression Models
TOPIC 12	An example of Non-Linearity using ECSTAT
TOPIC 13	Correlation and Regression
TOPIC 14	ANOVA in the Two-Variable Regression Model
TOPIC 15	Multiple Regression Analysis The Model and Assumptions Estimation and Statistical Inference
TOPIC 16	Structural Change in Regression Models Dummy Variables in Regression Models
TOPIC 17	Polynomial Regression Models Examples of Multiple Regression using ECSTAT
TOPIC 18	ANOVA in Multiple Regression Models Appendix: Interpolation using the F tables
TOPIC 19	Heteroscedasticity
TOPIC19B	The Breusch-Pagan Test and White/s Test for Heteroscedasticity
TOPIC 20	Autocorrelation
TOPIC 21	The Durbin-Watson Test for First-Order Autocorrelation
TOPIC 21B	The Breusch-Godfrey Test for First-Order Autocorrelation
TOPIC 22	Examples of Autocorrelation using ECSTAT Appendix: Interpolation using the DW tables
TOPIC 23	Multicollinearity
TOPIC 24	Specification Error
TOPIC 25	Examples of Specification Error using ECSTAT
TOPIC 26	Seasonality in Regression Analysis

Text-book references for these topics, as well as references from previous text-books, are provided in Appendix (2).

**NOTE:** Topic 1B: Basic Mathematical Concepts and Procedures, will not be discussed in the Lecture Program in the first semester, 2010, and is not examinable. It is provided to assist students revise, if necessary, material from HSC 2 Unit Mathematics that is assumed knowledge for the unit.

**NOTE:** Topic 26, Seasonality in Regression Analysis, will not be discussed in the Lecture Program in the First Semester, 2010, and is not examinable.

## 15. Tutorial Exercises, Computing Exercises, Classes & Labs

**Tutorial exercises commence in Week 1.** Students are required to attempt tutorial and/or computing exercises each week from Week 1 to Week 13, inclusive, except for Week 8. (There are no tutorials in Week 8 because of the Easter Monday and Anzac Day Public holidays.) From Week 6 the tutorial exercises are based on computing exercises which must be completed before the tutorial exercise can be attempted.

**Tutorial classes commence in Week 2.** Tutorial classes continue in Week 3, followed in Week 4 by a Computing Practical.

**Computing Practicals replace tutorial classes in Week 4 only.** Computing Practical groups are exactly the same as Tutorial Groups. Locations for the Computing Practicals will be advised on the ECON241 Blackboard web site.

After Week 4, tutorial classes continue in Weeks 5 – 13 (inclusive), except for Week 8.

**NOTE:** There are no **tutorial classes** or computing practicals in Week 1.

Although there are no tutorial classes in Week 1, **students should note that tutorial exercises have been set for Week 1.** These exercises revise essential aspects of the (STAT170) statistical prerequisite material for the unit. They are an important part of the tutorial program and should not be neglected simply because there are no tutorial classes in that week. Students are expected to be able to complete the tutorial exercises set for Week 1 without assistance from staff. The solutions for these exercises will be placed on e-Reserve in the library, and on the ECON241 Blackboard web site. Students may discuss any issues or difficulties arising from these exercises with staff during staff consultation hours. A list of times and locations for staff consultation hours will be posted on the ECON241 web-site on Blackboard.

Students should attempt as many exercises as possible before attending their tutorial classes so that they can more effectively benefit from the discussion. It is important that students be in a position when they attend tutorial classes to indicate which aspects of the exercises should be given priority.

Details of the **Tutorial and Computing Practical Exercises** are provided in a separate document.. They can also be accessed on the ECON241 Blackboard web site. Detailed tutorial solutions will be available on the ECON241 Blackboard web site, and on e-Reserve, on the Friday following the relevant tutorial.

**Students are strongly advised to attend tutorials.** The best advice that can be given to an ECON241 student is to attend lectures and tutorials, and to attempt the tutorial exercises **before** attending tutorials and **before** looking at the solutions on e-Reserve or on the ECON241 Blackboard web site.

## 16. Assessment

### NOTE

To obtain a Pass Grade and a Standardised Numerical Grade (SNG) of 50 in ECON241, students need to demonstrate: (i) a satisfactory level of understanding of the concepts and procedures discussed in lectures and tutorials, (ii) a satisfactory level of competence in implementing those procedures, and (iii) a satisfactory level of competence in analysing and interpreting the results obtained when using those procedures. See also the discussion of SNGs in Appendix (3) on page 33 of the Unit Outline.

Grades in ECON241 (S1, 2011) will be based on a combination, chosen by the student, of the End-of-Semester (Final) Examination, and two formal, supervised, optional, assessable Within-Semester Examinations.

Students can elect to be assessed for ECON241 using any one of the following four sets of weights:

A:	First Assessable Within-Semester Examination	20%
	Second Assessable Within-Semester Examination	20%
	End-of-Semester (Final) Examination	60%
B:	First Assessable Within-Semester Examination	0%
	Second Assessable Within-Semester Examination	20%
	End-of-Semester (Final) Examination	80%
C:	First Assessable Within-Semester Examination	20%
	Second Assessable Within-Semester Examination	0%
	End-of-Semester (Final) Examination	80%
D:	First Assessable Within-Semester Examination	0%
	Second Assessable Within-Semester Examination	0%
	End-of-Semester (Final) Examination	100%

### NOTE:

Each student must include the End-of-Semester (Final) Examination in the set of alternatives A, B, C or D that they choose to determine their final grade in ECON241.

Each student can elect to have a weight for the End-of-Semester (Final) Examination in their final grade for ECON241 of 60%, 80% or 100% .

Each of the two Optional Assessable Within-Semester Examinations will have a weight of 20% or 0% in each student's final grade.

If a student attends the First Optional Assessable Within-Semester Examination, that examination will count with a weight of 20% toward the student's grade. If the student does not attend that examination, the examination will have weight of 0%, and the 20% weight will be transferred to the End-of-Semester (Final) Examination. Students do not need to make a decision about their choice of a weight of 20% or 0% until the day of the examination. However, as soon as a student enters the examination room, the weight of the examination for that student will be set equal to 20%. **As soon as a student enters the examination room that student will NOT be able to choose to vary the weight from 20%.**

If a student attends the Second Optional Assessable Within-Semester Examination, that examination will count with a weight of 20% toward the student's grade. If the student does not attend that examination, the examination will have weight of 0%, and the 20% weight will be transferred to the End-of-Semester (Final) Examination. Students do not need to make a decision about their choice of a weight of 20% or 0% until the day of the examination. However, as soon as a student enters the examination room, the weight of the examination for that student will be set equal to 20%. **As soon as a student enters the examination room that student will NOT be able to choose to vary the weight from 20%.**

**Both of the two Optional Assessable Within-Semester Examinations will examine the computing aspects of the unit, and will require students to use EcStat and Excel to generate the necessary computer output and to carry out calculations required for their answers. Hand calculators will not be permitted.**

### **Format of the First Optional Assessable Within-Semester Examination**

This examination will consist of twenty (20) multiple choice questions, each worth one (1) mark. Students will be required to use EcStat and Excel to generate computer output and to carry out calculations required for their answers. Except where indicated in Mail messages and Announcements on Blackboard, the examinable content for the examination will consist of Lecture Topics 1-3, 5-6 & 8-14, and Tutorial Exercises 1-7. A Formulae Sheet will NOT be provided. Students will not be permitted to take hand calculators or notes into the examination.

### **Format of the Second Optional Assessable Within-Semester Examination**

This examination will consist of twenty (20) multiple choice questions, each worth one (1) mark. Students will be required to use EcStat and Excel to generate computer output and to carry out calculations required for their answers. Except where indicated in Mail messages and Announcements on Blackboard, the examinable content for the examination will consist of Lecture Topics 1-3, 5-6, & 7-24, and Tutorial Exercises 1-11. A Formulae Sheet will NOT be provided. Students will not be permitted to take hand calculators or notes into the examination.

## **ASSESSABLE WITHIN-SEMESTER EXAMINATION DATES**

The First Assessable Within-Semester Examination will be held in Computer Labs at the end of Week 8 on Friday 29<sup>th</sup> April or Saturday 30<sup>th</sup> April. Further details to be advised.

The Second Assessable Within-Semester Examination will be held in Computer Labs at the end of Week 12 on Friday 27<sup>th</sup> May or Saturday 28<sup>th</sup> May. Further details to be advised.

Students who wish to include one or both of the two assessable Within-Semester Examinations in the combination on which their grade for ECON241 will be determined, must ensure that they are able to attend an examination at any time between 9 AM and 6 PM on these dates.

## 17. Optional Practice Assessment

**NOTE: All of the components of Optional Practice Assessment discussed on the next two pages, i.e. on pages 15 and 16, have a weight of zero% in the final grade for ECON241.**

That is, the Optional Online Test of Revision Material, the Optional Take-Home Assignment, and the two Optional Online Within-Semester Practice Examinations all have a weight of zero% in the final grade for ECON241.

There are two types of optional practice assessment in ECON241: an **optional** self-assessment component, and an **optional** objective component

## 18. Optional Within-Semester Self Assessment

The optional within-semester self-assessment component consists of a series of Supplementary and Revision Exercises which students may work through in their own time, and which students mark themselves. Details of the Supplementary and Revision Exercises will be posted on the ECON241 Blackboard web site.

Detailed solutions for the Supplementary and Revision Exercises will be available on e-Reserve in the Library, and on the ECON241 Blackboard web site.

The purpose of the Supplementary and Revision Exercises is to enable students to judge for themselves how well they understand the lecture and tutorial material.

The Supplementary and Revision Exercises are an extensive and exhaustive set of exercises. Many of the exercises are repetitive. **It is not intended that students work through all of the Supplementary & Revision exercises.** Students should use these exercise only if they believe they need additional practice, repetition and reinforcement in using the techniques and procedures discussed in the ECON241 lectures and tutorials, and in interpreting the results.



## **19. Optional Within-Semester Objective Practice Assessment**

The optional within-semester objective component consists of:

- (a) an optional Online Test of Revision Material
- (b) an optional Take-Home Mid-Semester Assignment
- (c) two optional Online Within-Semester Practice Examinations

These three aspects of the assessment are entirely optional in the sense that students must decide for themselves whether they submit the Test of Revision Material, submit the Assignment, submit the two Within-Semester Practice Examinations, or do none of those things. If students elect to submit the Test, submit the Assignment or submit the two Within-Semester Practice Examinations, their work will be marked objectively. The Test and the two Within-Semester Practice Examinations will be submitted and marked electronically on Blackboard. The Assignment will be marked by staff..

The purpose of these three optional aspects of the within semester assessment is to enable students to obtain an objective measure of how well they have understood the material covered in the relevant sections of the lecture and tutorial program.

## **20. Optional Online Test of Revision Material**

Distribution to students: Blackboard, Week 4, Tuesday 15<sup>rd</sup> March, 8 pm.  
Blackboard online submission deadline: Sunday 20<sup>st</sup> March, 11:55 pm.

## **21. Optional Take-Home Mid-Semester Assignment**

Distribution to students: Blackboard, Week 6, Friday 1<sup>st</sup> April.  
Submission deadline: BESS, Week 8, Friday 29<sup>th</sup> April, 4:30 pm.

The Assignment must be placed in the ECON241 box at the FBE student services centre (BESS), E4B-106. After-hours submissions may be placed in the BESS after-hours box. Do **not** submit assignments directly to the lecturer or to tutors. Do **not** submit assignments under the lecturer's door or under a tutor's door. Even if your assignment is late it must be submitted via BESS, in BESS's after-hours box, or directly to the counter staff in BESS.

## **22. Two Optional Online Within-Semester Practice Examinations**

### **First Optional Online Within-Semester Practice Examination**

Distribution to students: Blackboard, Week 8, Wednesday 27<sup>th</sup> April, 8 pm.  
Blackboard online submission deadline: Sunday 1<sup>st</sup> May, 11:55 pm

### **Second Optional Online Within-Semester Practice Examination**

Distribution to students: Blackboard, Week 12, Tuesday 24<sup>th</sup> May, 8 pm.  
Blackboard online submission deadline: Sunday 29<sup>th</sup> May, 11:55 pm

## 23. Compulsory End-of-Semester (Final) Examination

The final component of assessment is compulsory. It is the End-of-Semester (Final) Examination. All students enrolled in ECON241 are required to attend the End-of-Semester (Final) Examination. The purpose of the End-of-Semester Examination is to objectively assess each student's overall understanding of the procedures discussed in ECON241, their overall level of competence in implementing those procedure and their overall level of competence in interpreting results obtained using those procedures.

**Sample Examination Papers encourage very poor learning habits.** Students will be provided with extensive sets of revision and practice exercises during the semester. For these reasons, despite University Policy, a sample End-of-Semester Examination Paper, or copies of past examination papers, will NOT be provided to ECON241 students.

## 24. Format of the Compulsory End-of-Semester (Final) Examination

The End-of- Semester Examination will have two sections: a multiple choice section, worth forty (40) marks, and a written-answer section, worth sixty (60) marks. In the first section there will be forty (40) questions, each worth one (1) mark. In the second section there will be ten (10) questions, each worth six (6) marks, requiring short written answers.

Except where indicated in Mail messages and Announcements on Blackboard, the examinable content for the End-of-Semester examination will consist of all the material discussed in lectures and tutorials from Weeks 1 – 13 (inclusive) except those tasks directly related to obtaining ECSTAT computing output. ECSTAT computing procedures are not examinable in the End-of-Semester (Final) Examination. However, students are required to be able to identify, summarise and discuss ECSTAT computer output.

## 25. Formulae Sheets

A Formulae Sheet will be provided to students in the End-of-Semester (Final) Examination. A copy of the formulae sheet will available on the ECON241 Blackboard web site for inspection by students at least two weeks prior to the examination.

Formulae Sheets will NOT be provided to students in the two Optional Assessable Within-Semester Examinations.

## 26. Calculators

Some numerical calculations will be required in the End-of-Semester (Final) Examination. A basic calculator is all that will be required to carry out these calculations. Students will be permitted to take **non-programmable calculators only** into the ECON241 End-of-Semester (Final) Examination. A calculator is non-programmable if it does not have memory, or if it is capable of storing only numerical data in memory. Calculators that are capable of storing alphabetic characters in memory will NOT be permitted in the ECON241 End-of-Semester (Final) Examination.

## 27. Supplementary Assessment

In cases of documented illness or unavoidable disruption, students may submit a request for Special Consideration to be allowed to sit for a Supplementary End-of-Semester (Final) Examination. (See Section 28 on Special Consideration.)

Students will also be able to request special consideration for the Assessable Within-Semester Examinations. Students whose performance in an Optional Assessable Within-Semester Examination is affected adversely by circumstances beyond their control may request that the Assessable Within-Semester Examination have a weight of zero%, and that the 20% weight for that examination be transferred to the End-of-Semester (Final) Examination.

Students will not be able to request permission to submit a Supplementary or Deferred Test of Revision Material, a Supplementary or Deferred Take-Home Assignment, or to sit for a Supplementary or Deferred Within-Semester Practice Examination.

## 28. Special Consideration

Students who are prevented by circumstances beyond their control from attending the End-of-Semester (Final) Examination, or whose performance in the examination is affected by circumstances beyond their control, may submit a request for special consideration to be allowed to sit for a Supplementary End-of-Semester (Final) Examination, or to have those circumstances taken into account in determining the student's grade.

The University's policy on special consideration is available at [http://www.mq.edu.au/policy/docs/special\\_consideration/policy.html](http://www.mq.edu.au/policy/docs/special_consideration/policy.html)

Information on the Special Consideration process is also available on the FBE website, and at: <http://www.reg.mq.edu.au/Forms/APScons.pdf>

It is the responsibility of all students enrolled in ECON241 to ensure that they read and understand the rules and procedures governing Special Consideration.

**Note:** The University Senate has determined that minor illnesses are **NOT** sufficient grounds for being granted special consideration.

**Note:** The University Senate has determined that students in a unit will not be granted special consideration if their coursework for that unit is unsatisfactory, or if their participation in the unit is unsatisfactory.

In ECON241, results in the Optional Online Test of Revision Material, the Optional Take-Home Mid-Semester Assignment, the Optional Online Within-Semester Practice Examinations and/or the two Optional Assessable Within-Semester Examinations will be used as an indicator of the extent to which a student's coursework and participation in the unit can be deemed to be satisfactory.

## 29. Attendance at Lectures and Tutorials

Attendance at Lectures and Tutorials is **not** compulsory, **but is strongly recommended**. Absence from Lectures and Tutorials, and in particular, neglect of the tutorial program and repeated failure to attempt tutorial exercises each week, is a fail-safe formula for obtaining a Fail grade in ECON241

## 30. University Policy on Examination Attendance

Students are expected to attend the End-of-Semester examination at the time and place designated in the University Examination Timetable. The timetable will be available in draft form approximately eight weeks before the commencement of the examinations and in final form approximately four weeks before the commencement of the examinations. The Draft and Final Examination Timetables will be available at:

<http://www.timetables.mq.edu.au/exam>

It is Macquarie University policy not to set special early examinations for particular individuals or groups of students. **All students are expected to ensure that they are available for examinations until the end of the teaching semester; that is, until the final day of the official examination period.**

Supplementary examinations for first semester units are normally scheduled during the period between the release of grades and the start of the second semester.

If a student is granted a Supplementary Examination but does not attend the examination on the scheduled date, the student will be given a grade of FA for the unit.

## 31. Grades

Macquarie University uses the following grades in coursework units of study:

**HD** – High Distinction, **D** – Distinction, **CR** – Credit, **P** – Pass, **F** – Fail

Grade descriptors and other information concerning grades are contained in the Macquarie University Grading Policy which is available at:

<http://www.mq.edu.au/policy/docs/grading/policy.html>

### 31a. Grade Appeals, and Final Examination Script Viewing

Students are entitled to view their End-of-semester (Final) Examination script. If valid grounds exist, students are also entitled to request a Grade Review, and to lodge an appeal against their grade. Information about these processes is available at:

[http://www.businessandconomics.mq.edu.au/new\\_and\\_current\\_students/undergraduate\\_current\\_students/how\\_do\\_i/grade\\_appeals](http://www.businessandconomics.mq.edu.au/new_and_current_students/undergraduate_current_students/how_do_i/grade_appeals)

### **32. Unit Convenor, and Lecturer**

Roger Tonkin

E4A-408

Ph: 9850-8494

For all email messages to the Unit Convenor concerning ECON241, please use the Mail facility on the ECON241 web-site on Blackboard. Use the following Macquarie University Gmail address only if the ECON241 web-site on Blackboard is not available.

MU email (Gmail): [roger.tonkin@mq.edu.au](mailto:roger.tonkin@mq.edu.au)

### **33. Teaching Assistant, and Web-Master**

Ariadne Katsouras

E4A-420

Ph: 9850-8489

MU email (Gmail): [ariadne.katsouras@mq.edu.au](mailto:ariadne.katsouras@mq.edu.au)

### **34. Other ECON241 Staff**

A list of room numbers, University phone numbers and email addresses for all full-time staff teaching in ECON241 will be provided to students on the ECON241 Blackboard web site as soon as the teaching arrangements have been finalised.

### **35. Staff Consultation Hours**

Students are encouraged to consult the full-time teaching staff of ECON241 on all matters relating to the unit, particularly issues or difficulties arising from the lecture and tutorial content, during staff consultation hours. Part-Time tutors are not contracted to provide consultation hours each week. Details of the ECON241 staff consultation hours will be posted on the ECON241 Blackboard web site. (Note: Staff Consultation hours may be subject to change at short notice.)

### **36. After-Hours Consultation**

Part-time and evening students may contact the Lecturer-in-Charge, Roger Tonkin, to arrange a suitable time for an appointment outside the scheduled staff consultation hours, particularly after 5 pm if consultation before 5 pm is not possible because of employment, etc.

Roger Tonkin

ECON241 Unit Convenor

4<sup>th</sup> March, 2011

# APPENDICES

- (1) Greek Alphabet
- (2) References
- (3) Standardised Numerical Grades (SNGs)
- (4) Plagiarism, and Academic Honesty
- (5) Student Support Services
- (6) Ten Key Points in a Strategy for Surviving and Passing ECON241

## APPENDIX (1): GREEK ALPHABET

Listed below are the upper and lower case letters of the Greek alphabet and their names. Greek symbols are used extensively in the discussion of econometric methods.

<i>Large character</i>	<i>Small Character</i>	<i>Name</i>	<i>Large character</i>	<i>Small Character</i>	<i>Name</i>
A	$\alpha$	Alpha	N	$\nu$	Nu
B	$\beta$	Beta	$\Xi$	$\xi$	Xi
$\Gamma$	$\gamma$	Gamma	O	$\omicron$	Omicron
$\Delta$	$\delta$	Delta	$\Pi$	$\pi$	Pi
E	$\epsilon$	Epsilon	P	$\rho$	Rho
Z	$\zeta$	Zeta	$\Sigma$	$\sigma$	Sigma
H	$\eta$	Eta	T	$\tau$	Tau
$\Theta$	$\theta$	Theta	Y	$\upsilon$	Upsilon
I	$\iota$	Iota	$\Phi$	$\phi$	Phi
K	$\kappa$	Kappa	X	$\chi$	Chi
$\Lambda$	$\lambda$	Lambda	$\Psi$	$\psi$	Psi
M	$\mu$	Mu	$\Omega$	$\omega$	Omega

## **APPENDIX (2): TEXT-BOOK REFERENCES**

A detailed list of references for ECON241 from the current text-book, and two previous editions of the text-book, is provided below, supplemented, where necessary, with references from two much earlier text-books written by Harrison & Tamaschke. The sources for these references are:

Gujarati, D.  
ESSENTIALS OF ECONOMETRICS  
**Fourth Edition**  
Irwin/McGraw-Hill, 2010

Gujarati, D.  
ESSENTIALS OF ECONOMETRICS  
**Third Edition**  
Irwin/McGraw-Hill, 2006

Gujarati, D.  
ESSENTIALS OF ECONOMETRICS  
**Second Edition**  
Irwin/McGraw-Hill, 1999

Harrison S.R. and H.U. Tamaschke  
APPLIED STATISTICAL ANALYSIS  
Prentice-Hall, 1984

Harrison, S.R. and Tamaschke R. H. V.  
STATISTICS FOR BUSINESS, ECONOMICS AND MANAGEMENT  
Prentice-Hall, 1993

Unless stated otherwise, the references below are from Gujarati, **Fourth Edition**, 2010.

### **INTRODUCTION**

Chapter 1, pages 1-5

### **TOPIC 1 - BASIC STATISTICAL CONCEPTS**

Appendix A, Sections A.1 - A.5, pages 405-422

(Omit Bayes' Theorem, page 416)

Appendix B, Section B.7, page 452

Appendix C, Sections C.1 - C.2, pages 461-477

### **TOPIC 2 - ESTIMATION**

Appendix B, Sections B.1 - B.3, pages 434-444

### **TOPIC 3 - HYPOTHESIS TESTING**

Appendix D, Section D.5, pages 498-510



#### **TOPIC 4 - MATHEMATICAL EXPECTATION**

Appendix B, Sections B.1 - B.4, pages 434-447  
(Omit Chebyshev's Inequality, page 441)  
(Omit Coefficient of Variation, page 442)

#### **TOPIC 5 - PROPERTIES OF ESTIMATORS**

Appendix D, Section D.4, pages 493-498  
(Omit Consistency, pages 497-498)

#### **TOPIC 6 - TWO-VARIABLE LINEAR REGRESSION ANALYSIS**

Chapter 1, Sections 1 – 3, pages 1-12  
Chapter 2, Sections 1 - 5, and 8 - 11, pages 21-31 and 33-43  
Chapter 3, Sections 3.1 and 3.3, pages 53-62

#### **TOPIC 7 - STATISTICAL INFERENCE IN TWO-VARIABLE LINEAR REGRESSION**

Chapter 3, Sections 3.2, 3.4, 3.5, 3.7 - 3.8, & 3.10 - 3.12, pages 37-77 & 79-85

#### **TOPIC 9 - See TOPICS 6 & 7**

#### **TOPICS 11 & 12 - NONLINEAR RELATIONSHIPS**

Chapter 2, Section 6, pages 31-32  
Chapter 5, Sections 1 - 2 and 4 – 5, pages 132-140, and 144-150  
Chapter 5, Appendix 5A , pages 175-177

#### **TOPICS 13 & 14 - THE ANALYSIS OF VARIANCE IN THE TWO-VARIABLE LINEAR REGRESSION MODEL**

Appendix B, Sections 3, 4, and 7, pages 443-447 and 452-456  
(Omit Sample Skewness and Kurtosis, page 456)  
Appendix C, Section 4, pages 480-483  
Chapter 3, Section 6, pages 71-75

#### **NOTE:**

A basic understanding of the concept of Covariance is essential for a full understanding of Correlation (in both Populations and Samples).

Similarly, a basic familiarity with the relationship between Chi-Square distributions and the F distribution is essential for a full appreciation of the theoretical features and construction of F distributions.

Covariance, and the Chi-Square distribution, are not examinable in ECON241.

Specific text-book references for the Analysis of Variance in Linear Regression models are provided with the references for TOPIC 15 and TOPIC 18.

## **ADDITIONAL REFERENCES FOR TOPICS 13 & 14 - THE ANALYSIS OF VARIANCE IN THE TWO VARIABLE REGRESSION MODEL**

Harrison S.R. and H.U. Tamaschke, APPLIED STATISTICAL ANALYSIS, Prentice-Hall, 1984  
Chapter 12, Section 5.4, and Sections 7-9

### **TOPIC 15 - MULTIPLE REGRESSION ANALYSIS**

Chapter 1, Section 3  
Chapter 2, Section 7  
Chapter 4, Sections 1 - 8, and Section 13  
(Omit equations 8.17 - 8.25, 8.27 - 8.28, and 8.31)

ANOVA IN MULTIPLE REGRESSION – See TOPIC 18

### **TOPIC 16 - QUALITATIVE VARIABLES IN MULTIPLE REGRESSION ANALYSIS**

Chapter 2, Sections 1 - 5

### **TOPIC 17 - POLYNOMIAL REGRESSION MODELS**

Chapter 5, Section 7

### **TOPIC 18 - ANOVA IN MULTIPLE REGRESSION MODELS**

Chapter 4, Section 4 and Section 8

## **ADDITIONAL REFERENCES FOR TOPICS 15 & 18 - ANOVA IN MULTIPLE REGRESSION ANALYSIS**

Harrison S.R. and H.U. Tamaschke, APPLIED STATISTICAL ANALYSIS, Prentice-Hall, 1984  
Chapter 13, Section 6

Harrison S.R. and R.H.U. Tamaschke, STATISTICS FOR BUSINESS, ECONOMICS AND MANAGEMENT, Prentice-Hall, 1993  
Chapter 10, Sections 1, 2, 3 and 4

### **TOPIC 19 - HETEROSCEDASTICITY**

Chapter 9, Section 1, Section 2 and pages 399-402 of Section 3  
(Omit the Park Test)

### **TOPIC 20 - AUTOCORRELATION**

Chapter 10, Section 1 and Section 2

**TOPIC 21 - THE DURBIN-WATSON TEST FOR FIRST-ORDER AUTOCORRELATION**

Chapter 10, Sections 3, 4 and 6  
(Omit The First Difference Method, pages 327)

**TOPIC 22 - See TOPICS 20 & 21**

**TOPIC 23 - MULTICOLLINEARITY**

Chapter 8, Sections 1 - 9  
(Omit Subsidiary, or Auxiliary, Regressions, page 255)  
(Omit the Variance Inflation Factor, VIF, page 256)

**TOPICS 24 & 25 - SPECIFICATION ERROR IN REGRESSION ANALYSIS**

Chapter 4, Section 9  
Chapter 7, Sections 2 - 5, Section 7 and Section 8  
(Omit the MWD Test, pages 235)  
Chapter 10, Section 1, page 315 (Model Specification Errors)

**TOPIC 26 - MODELLING SEASONAL EFFECTS USING DUMMY VARIABLES**

Chapter 6, Section 6

**DUMMY VARIABLE TRAP**

Chapter 6, Section 6.1, page 183

A detailed list of references for ECON241 from the third edition of the text-book is provided below, supplemented, where necessary, with references from two previous text-books written by Harrison & Tamaschke. The sources for these references are:

Gujarati, D.  
ESSENTIALS OF ECONOMETRICS  
**Third Edition**  
Irwin/McGraw-Hill, 2006

Harrison S.R. and H.U. Tamaschke  
APPLIED STATISTICAL ANALYSIS  
Prentice-Hall, 1984

Harrison, S.R. and Tamaschke R. H. V.  
STATISTICS FOR BUSINESS, ECONOMICS AND MANAGEMENT  
Prentice-Hall, 1993

Unless stated otherwise, the references below are from Gujarati, **Third Edition**, 2006.

## **INTRODUCTION**

Chapter 1, pages 1-5

## **TOPIC 1 - BASIC STATISTICAL CONCEPTS**

Chapter 2, Sections 2.1 - 2.5

(Omit Bayes' Theorem, page 32)

Chapter 3, Section 3.7

Chapter 4, Sections 4.1 - 4.2

## **TOPIC 2 - ESTIMATION**

Chapter 5, Sections 5.1 - 5.3

## **TOPIC 3 - HYPOTHESIS TESTING**

Chapter 5, Section 5.5

## **TOPIC 4 - MATHEMATICAL EXPECTATION**

Chapter 3, Sections 3.1 - 3.4

(Omit Chebyshev's Inequality, page 57)

(Omit Coefficient of Variation, page 58)

## **TOPIC 5 - PROPERTIES OF ESTIMATORS**

Chapter 5, Section 5.4

(Omit Consistency, pages 113-114)

## **TOPIC 6 - TWO-VARIABLE LINEAR REGRESSION ANALYSIS**

Chapter 1, Sections 1 - 3

Chapter 6, Sections 1 - 5, and 8 - 11

Chapter 7, Sections 7.1 and 7.3

## **TOPIC 7 - STATISTICAL INFERENCE IN TWO-VARIABLE LINEAR REGRESSION**

Chapter 7, Sections 7.2, 7.4, 7.5, 7.7 - 7.8, and 7.10 - 7.12

## **TOPIC 9 - See TOPICS 6 & 7**

## **TOPICS 11 & 12 - NONLINEAR RELATIONSHIPS**

Chapter 6, Section 6

Chapter 9, Sections 1 - 2 and 4 - 5

Chapter 9, Appendix 9A

## **TOPICS 13 & 14 - THE ANALYSIS OF VARIANCE IN THE TWO-VARIABLE LINEAR REGRESSION MODEL**

Chapter 3, Sections 3, 4, and 7

(Omit Sample Skewness and Kurtosis, page 72)

Chapter 4, Section 4

Chapter 7, Section 6

### **NOTE:**

A basic understanding of the concept of Covariance is essential for a full understanding of Correlation (in both Populations and Samples).

Similarly, a basic familiarity with the relationship between Chi-Square distributions and the F distribution is essential for a full appreciation of the theoretical features and construction of F distributions.

Covariance, and the Chi-Square distribution, are not examinable in ECON241.

Specific text-book references for the Analysis of Variance in Linear Regression models are provided with the references for TOPIC 15 and TOPIC 18.

## **ADDITIONAL REFERENCES FOR TOPICS 13 & 14 - THE ANALYSIS OF VARIANCE IN THE TWO VARIABLE REGRESSION MODEL**

Harrison S.R. and H.U. Tamaschke, APPLIED STATISTICAL ANALYSIS, Prentice-Hall, 1984

Chapter 12, Section 5.4, and Sections 7-9

**TOPIC 15 - MULTIPLE REGRESSION ANALYSIS**

Chapter 1, Section 3

Chapter 6, Section 7

Chapter 8, Sections 1 - 8, and Section 13

(Omit equations 8.17 - 8.25, 8.27 - 8.28, and 8.31)

ANOVA IN MULTIPLE REGRESSION – See TOPIC 18

**TOPIC 16 - QUALITATIVE VARIABLES IN MULTIPLE REGRESSION ANALYSIS**

Chapter 10, Sections 1 - 5

**TOPIC 17 - POLYNOMIAL REGRESSION MODELS**

Chapter 9, Section 7

**TOPIC 18 - ANOVA IN MULTIPLE REGRESSION MODELS**

Chapter 8, Section 4 and Section 8

**ADDITIONAL REFERENCES FOR TOPICS 15 & 18 - ANOVA IN MULTIPLE REGRESSION ANALYSIS**

Harrison S.R. and H.U. Tamaschke, APPLIED STATISTICAL ANALYSIS, Prentice-Hall, 1984

Chapter 13, Section 6

Harrison S.R. and R.H.U. Tamaschke, STATISTICS FOR BUSINESS, ECONOMICS AND MANAGEMENT, Prentice-Hall, 1993

Chapter 10, Sections 1, 2, 3 and 4

**TOPIC 19 - HETEROSCEDASTICITY**

Chapter 13, Section 1, Section 2 and pages 399-402 of Section 3

(Omit the Park Test)

**TOPIC 20 - AUTOCORRELATION**

Chapter 14, Section 1 and Section 2

**TOPICS 21 - THE DURBIN-WATSON TEST FOR FIRST-ORDER AUTOCORRELATION**

Chapter 14, Sections 3, 4 and 6

(Omit The First Difference Method, pages 442-443)

**TOPIC 22 - See TOPICS 20 & 21**

## **TOPIC 23 - MULTICOLLINEARITY**

Chapter 12, Sections 1 - 9

(Omit Subsidiary, or Auxiliary, Regressions, page 373)

(Omit the Variance Inflation Factor, VIF, page 374)

## **TOPICS 24 & 25 - SPECIFICATION ERROR IN REGRESSION ANALYSIS**

Chapter 8, Section 9

Chapter 11, Sections 2 - 5, Section 7 and Section 8

(Omit the MWD Test, pages 353-353)

Chapter 14, Section 1, page 430 (Model Specification Errors)

## **TOPIC 26 - MODELLING SEASONAL EFFECTS USING DUMMY VARIABLES**

Chapter 10, Section 6

**DUMMY VARIABLE TRAP**

Chapter 10, Section 10.1, page 295

## **APPENDIX (2) CONTINUED: OTHER REFERENCES**

A detailed list of references for ECON241 is given in the tables on the next two pages. The two sources for these references are the **second edition** of the current text-book written by Gujarati, and a previous text-book, written by Harrison and Tamaschke:

Gujarati, D.

ESSENTIALS OF ECONOMETRICS

**Second Edition**

Irwin/McGraw-Hill, 1999

Harrison, S.R. and Tamaschke R. H. V.

STATISTICS FOR BUSINESS, ECONOMICS AND MANAGEMENT

Prentice-Hall, 1993

Topics	Reference in Gujarati 2 <sup>nd</sup> Edition	Reference in Harrison & Tamaschke
<b>The role of Econometrics in Economic Analysis</b>	<b>Chapter 1</b>	
<b>Basic Statistical Concepts: A Review</b>		
1. Random variables	2.3	2.1, 2.2, 2.4
2. Probability density function	2.5	
3. Rules of summation	2.1	3.1, 3.2
4. Mean of a random variable	2.7	
5. Variance of a random variable	2.7	4.1, 4.2, 4.3
6. Standard deviation of a random variable	2.7	
7. Populations and samples	2.8	5.2, 5.3, 5.4.4
8. Normal distribution	3.1	
9. t-distribution (using t tables)	3.4	6.1, 6.2, 6.3
<b>Statistical Inference</b>		
1. Statistical Inference	4.5	7.3.1, 7.3.3
2. Estimation of Parameters: Point vs. Interval	4.5	7.4.1-7.4.3
3. Hypothesis Testing	4.5	
4. Properties of Point Estimators	4.4	8.1-8.5
<b>The Two –Variable Regression Model</b>		
1. Purpose	5.1	9.2, 9.3, 9.4
2. Assumptions		9.5, 9.7.1
3. The error term	5.4	
4. Population and sample regression	5.5	
5. Least squares estimates	5.8	
6. Interpretation of the coefficients	5.8	
7. Elasticities	8.1	
8. Prediction	6.11	
<b>Properties of Least Squares Estimators</b>		
1. Mean and variance of the LS estimators	6.3	9.6.1
2. Gauss Markov Theorem	6.3	9.6.2
3. Probability distribution of the LS estimators	6.4	
<b>Inference in the Simple Linear Regression Model</b>		
1. Confidence intervals for the coefficients of the regression model	6.5	9.6.3
2. Hypothesis testing	6.5	9.7.3
3. Prediction intervals	6.11	
<b>Analysis of Variance and Coefficient of Determination in the Two -Variable Model</b>		
1. Analysis of Variance	6.6	9.6.4
2. Coefficient of determination	6.6	9.8
3. Sample correlation coefficient	6.6	9.9
4. Comparing correlation and regression analysis	6.6	
5. Reporting regression results	6.7	



<b>Topics</b>	<b>Reference in Gujarati 2<sup>nd</sup> Edition</b>	<b>Reference in Harrison &amp; Tamaschke</b>
<b>Functional Forms of Regression Models</b>		<b>10.5</b>
1. Introduction to Functional Forms	<b>8</b>	
2. Log-Linear (log-log or double log) Models Measuring Elasticity	<b>8.1</b>	
3. Linear vs. Log-Linear Models	<b>8.2</b>	
<b>The Multiple Regression Model</b>		<b>10.1, 10.2</b>
1. Assumptions	<b>7.1, 7.2</b>	
2. Interpretation of the coefficients	<b>7.2</b>	
3. LS estimation	<b>7.3</b>	
4. Probability distribution of the LS estimators	<b>7.3</b>	
5. Interval estimation	<b>7.7</b>	
<b>Hypothesis Testing in the Multiple Regression Model</b>		
1. Student t-tests	<b>7.6, 7.7</b>	<b>10.3</b>
2. Goodness-of-Fit	<b>7.5</b>	<b>10.5</b>
3. F-Tests	<b>7.8</b>	
4. ANOVA Table	<b>7.8</b>	
5. Non linear functional forms: log-log and polynomial Models	<b>8.1, 8.2, 8.3, 8.7</b>	
6. Prediction		
<b>Multicollinearity</b>		
1. The nature of multicollinearity		
2. Effects of multicollinearity	<b>10.1, 10.2</b>	<b>10.6</b>
3. Identifying multicollinearity	<b>10.3, 10.4</b>	
4. Mitigating multicollinearity	<b>10.5</b>	
<b>Dummy Variables</b>	<b>10.8</b>	
1. Intercept Dummy Variables		
2. Slope Dummy Variables	<b>9.1, 9.2</b>	<b>10.4</b>
3. Different Intercepts & Slopes	<b>9.2</b>	
4. Testing for the existence of a qualitative effect.	<b>9.2</b>	
5. Testing for a structural break	<b>9.2</b>	
6. Seasonal Dummy variables	<b>9.6, 9.7</b>	
<b>Heteroscedasticity</b>		
1. The nature of heteroscedasticity	<b>11.1</b>	<b>10.7.2</b>
2. The consequences of heteroscedasticity	<b>11.2</b>	
3. Detecting heteroscedasticity	<b>11.3</b>	
<b>Autocorrelation</b>		
1. The nature of autocorrelation	<b>12.1</b>	<b>10.7.1</b>
2. The consequences of autocorrelation	<b>12.2</b>	
3. Detecting autocorrelation: Durbin Watson test	<b>12.3</b>	
<b>Model Specification</b>		
1. Formulating a Model	<b>13.1</b>	
2. Attributes of a Good Model	<b>13.1</b>	
3. Types of Specification Errors	<b>13.2</b>	
4. Detecting Specification Errors	<b>13.3</b>	

## **APPENDIX (3): STANDARDISED NUMERICAL GRADES (SNGs)**

Other than in exceptional circumstances, the SNG for a student in ECON241 will be equal to the weighted sum of the student's raw marks in the two Optional Assessable Within-Semester Examinations and the End-of-Semester (Final) Examination.

Your overall raw mark for a unit (i.e. the weighted sum of your marks for each assessment item) may not be the same as the SNG which you receive. Results **may** be scaled to ensure that students who demonstrate the same level of academic competence as students in the first semester offering of ECON241 (or ECON141) in previous years receive similar results.

If it is deemed necessary to scale the raw marks to determine SNGs and Grades for ECON241 students, the process of scaling will not change the order of raw marks. A student who receives a higher raw mark than another will also receive a higher final scaled mark, and a higher SNG.

The University's Assessment policy does not require that a minimum of students be failed in any unit. In fact it does the opposite in requiring examiners to provide an explanation if more than 20% of students fail in a unit.

Grade descriptors and other information concerning grades and SNGs are contained in the Macquarie University Grading Policy which is available at:

<http://www.mq.edu.au/policy/docs/grading/policy.html>

## **APPENDIX (4): PLAGIARISM and ACADEMIC HONESTY**

### **Plagiarism**

Plagiarism involves using the work of another person and presenting it as one's own. Plagiarism is a serious breach of the University's rules and carries significant penalties. For a definition of Plagiarism, see page 17 of the *2011 Handbook of Undergraduate Studies*. Students are required to ensure they read and understand the detailed definition and discussion of plagiarism which can be found in the University's policy on Academic Honesty. (See below.)

Penalties for plagiarism may include a deduction of marks, failure in the unit, and/or referral to the University Discipline Committee.

### **Academic Honesty**

The nature of education, both teaching and learning as well as research, dependent as it is on the work of others, binds all staff and students of the University to abide by the principles of academic honesty. All staff and students are required to act with integrity in the creation, development, application and use of ideas and information. This means that:

- all academic work claimed as original is the work of the author making the claim
- all academic collaborations are acknowledged
- academic work is not falsified in any way
- when the ideas of others are used, these ideas are acknowledged appropriately.

Further information on the academic honesty can be found in the Macquarie University Academic Honesty Policy at:

[http://www.mq.edu.au/policy/docs/academic\\_honesty/policy.html](http://www.mq.edu.au/policy/docs/academic_honesty/policy.html)

## **APPENDIX (5): STUDENT SUPPORT SERVICES**

Macquarie University provides a range of Academic Student Support Services. Details of these services can be accessed at <http://www.student.mq.edu.au>.

## APPENDIX (6):

### TEN KEY POINTS IN A STRATEGY FOR SURVIVING ECON241 .... AND PASSING

1. **Attend as many lectures as possible.**
2. **Attempt as many tutorial exercises as possible.**
3. **Attend as many tutorials as possible.**
4. Attempt the tutorial exercises **before** attending the relevant tutorials and **before** you inspect the answers on e-Reserve or on Blackboard.
5. If you miss a tutorial, make sure you attempt the exercises as soon as possible, and that you attempt the exercises **before** you inspect the answers on e-Reserve or on Blackboard.
6. **Attempt the Optional Within-Semester Practice Assessment.**
7. After each tutorial, if you need additional practice exercises, attempt as many of the relevant Supplementary & Revision exercises as required until you feel you have mastered the techniques contained in those exercises.
8. Attempt the Supplementary & Revision exercises **before** you inspect the answers on e-Reserve or on Blackboard.
9. If you don't understand the material in the tutorials, the computing practical, or the material in the Supplementary & Revision exercises, consult the ECON241 staff as soon as possible. Don't wait till later in the semester.
10. **Keep up to date with the work. Don't fall into the trap of thinking you will be able to catch up with the work later.**