

ECON141 - INTRODUCTORY ECONOMETRICS
Second Semester 2009

UNIT OUTLINE

1. Overview of ECON141

The aim of ECON141 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 computer program Microsoft EXCEL. The use of this computer program is an integral component of tutorial 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 mid-semester test or end-of-semester examination.

2. Prerequisites

ECON141 has two prerequisites. Students must have obtained at least a Pass in

- (i) STAT170 or STAT171; and
- (ii) ECON110 or ECON111.

3. Text

The prescribed text for the unit is:

D. Gujarati
Essentials of Econometrics
Third edition, McGraw Hill, 2005

The text and lecture notes, together with the lectures and additional references, will provide students with a clear indication of the basic content of the unit.

4. Lecture Slides

Copies of the Lecture Slides used in ECON141 (**ECON141 Lecture Notes for the Second Semester 2009 – no change from the 2008 version**) can be purchased in the Union Bookshop. These notes also include additional applied topics. Because the lectures will use those slides, it is recommended that students bring the Lecture Notes to the lectures. It should be emphasised that additional transparencies will also be used in the lectures and thus it is imperative that students attend the lectures. Please note that the lecture notes used in the second semester are different from those for the first semester.

5. Class Arrangements

Students are required to attend 24 hours of lectures/tests (i.e. two hours each week minus two hours on the Labour Day holiday), seven one-hour tutorials and two one-hour computing practicals. Non-attendance at lectures, tutorials and practicals is the surest way to guarantee failure.

Lectures:	Day Stream	Monday 1 pm - 3 pm	W5B, Macquarie Theatre
	Evening Stream	Monday 6 pm - 8 pm	C5C-T2

Tutorials/Computing Practical:

Tutorial Classes:	Weeks 3, 4, 7, 9, 11, 12 and 13.
Computing Practical:	Week 5 (supervised), Week 6 (unsupervised)

All computing practicals will be held in **E4B 208**.

The tutorial arrangements and topics covered in these tutorials are indicated on the Course Calendar at the end of this study guide.

Tutorial/Computing Practical groups and tutorial locations will be posted on the unit homepage.

6. Tutorial/Practical Exercises

The Tutorial/Practical Exercises program commences in Week 2. Students are required to attempt tutorial and/or computing exercises in weeks 2, 3, 4, 5, 6, 7, 8, 9, 11, 12 and 13. No tutorial or computing exercises have been set for Weeks 1 and 10.

Formal Tutorial classes and Computing practicals commence in week 3, and except for weeks 6, 8, and 10 continue till week 13. **There are no tutorial classes or supervised computing practicals in weeks 1, 2, 6, 8, and 10.**

Students are expected to be able to complete the tutorial and computing exercises set for weeks 2, 6, and 8 without assistance from tutors. The solutions for these exercises will be made available from the web page. Students may discuss any issues or difficulties that they have arising from these exercises with staff during office consultation hours.

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

Students are strongly advised to attend tutorials. The best advice that can be given to an ECON141 student is to attend lectures and tutorials, and to attempt the tutorial exercises before attending tutorials and before looking at the solutions.

7. Supplementary Exercises

Additional Exercises have been set for weeks one through eleven. Answers will be made available from the unit homepage at the end of the same week. These exercises vary from being just drill exercises to more challenging exercises. They should help all students with additional practice.

8. Assessment

- (a) One-hour multiple-choice test will be held on
Day Stream Monday, September 14, 2009 (week 7) from 1 to 2 pm.
Evening Stream Monday, September 14, 2009 (week 7) from 6 to 7 pm.
- (b) One assignment due on Thursday, October 22, 2009 (week 10) by 5pm
- (c) A three hour end-of-semester examination.

The Mid-Semester test is worth 25% and the Assignment is worth 15% of the total course mark. The final examination is worth 60% of the total mark.

- (a) The **MULTIPLE-CHOICE TEST** will be conducted in the normal lecture time in Week 7. The test will be of approximately 45 minutes duration and attendance is compulsory. There will be no catch-up or supplementary test. Students who experience serious misadventure and are unable to attend the test should submit a letter with appropriate documentary evidence to the Tutor in Charge, as soon as possible.
- (b) The assignment will be marked and is worth 15%.
- (c) The **FINAL EXAMINATION** (3 hours) will consist of two components:
 - (i) Multiple-choice questions (approximately 40%);
 - (ii) “Long” answers (approximately 60%).

Students must bring their own non-programmable calculator and student ID card to the mid-semester test and the final examination.

To pass ECON141, students must attain a satisfactory overall aggregate mark and also pass the final examination. **Even if a student’s overall mark out of 100% is satisfactory, the student will NOT pass the course if he/she does not pass the final exam.**

Under the current grading system, a standard numerical grade (SNG) will be awarded together with a band grade HD, D, Cr, P, PC or F.

It is important for students to note that the SNGs are NOT the weighted average of the raw marks for the above three assessment components. They are rather a **detailed grade** based on the marks obtained from all facets of the unit assessment. As such, a grade just

below the threshold for the next band grade up does not necessarily mean that the aggregate mark is just below the threshold but it means that the overall performance is better than most of the other students in the same band grade but not quite good enough to warrant the next grade up.

9. Lecture Program

Topics	Reference in Gujarati
The Role of Econometrics in Economic Analysis	Chapter 1
Basic Statistical Concepts: A Review	
1. Random variables	2.3
2. Probability and probability distributions	2.4,2.5
3. The summation operator	2.1
4. The expectation operator	3.1
5. Mean of a random variable	3.1
6. Variance and standard deviation of a random variable	3.2
7. Covariance and correlation coefficient	3.3,3.4
8. Population and sample	2.2, 3.7
9. Normal distribution	4.1
10. t-distribution (using the t tables)	4.2
Statistical Inference	
1. Statistical Inference	5.1,5.2
2. Estimation of Parameters: Point vs. Interval	5.3
3. Properties of Point Estimators	5.4
4. Hypothesis Testing	5.5
The Two-Variable (or Simple) Regression Model	
1. The meaning of regression	6.1
2. Model and assumptions; simple and multiple regression	6.2,6.6,6.7,7.1
3. The error term	6.3,6.4
4. Population and sample regression	6.5
5. Ordinary Least squares (OLS) estimation	6.8
6. Interpretation of the coefficients	6.9,6.10
7. Elasticities	9.1
8. Prediction	7.11
Properties of Least Squares Estimators	
1. Mean, variance and standard error of OLS estimators	7.2,7.3
2. Gauss Markov Theorem	7.3
3. Probability (or Sampling) distribution of the OLS estimators	7.4
Inference in the Simple Linear Regression Model	
1. Confidence intervals for the coefficients of the regression model	7.5
2. Hypothesis testing	7.5
3. Prediction intervals	7.11
Analysis of Variance and Coefficient of Determination in the Two-Variable Model	
1. Analysis of variance (ANOVA)	7.6
2. Coefficient of determination, R^2 (goodness of fit measure)	7.6
3. Sample correlation coefficient and R^2	7.6
4. Comparing correlation and regression analysis	7.6
5. Reporting regression results.	7.7,7.10

Functional Forms of Regression Models	
1. Introduction to functional forms.	
2. Log-linear (log-log or double log) models: measuring elasticity	9.1
3. Linear vs. log-linear Models	9.2
The Multiple Regression Model	
1. Assumptions	8.1, 8.2
2. Interpretation of the coefficients	8.2
3. OLS estimation	8.3
4. Probability distribution of the OLS estimators	8.3
5. Interval estimation	8.7
Hypothesis Testing in the Multiple Regression Model	
1. Student-t test	8.6, 8.7
2. ANOVA table	8.8
3. F test	8.8
4. R^2 and adjusted R^2	8.8
5. Non linear functional forms: log-log and polynomials models	9.1, 9.2, 9.3, 9.7
6. Prediction	
Multicollinearity	
1. The nature of multicollinearity	12.1, 12.2
2. Effects of multicollinearity	12.3, 12.4
3. Detection of multicollinearity	12.5
4. Mitigating multicollinearity	12.8
Heteroscedasticity	
1. The nature of heteroscedasticity	13.1
2. The consequences of heteroscedasticity	13.2
3. Detecting heteroscedasticity	13.3
Autocorrelation	
1. The nature of autocorrelation	14.1
2. The consequences of autocorrelation	14.2
3. Detecting autocorrelation: Durbin Watson test	14.3
Model Specification	
1. Formulating a Model	11.1
2. Attributes of a Good Model	11.1
3. Types of Specification Errors	11.2
4. Detecting Specification Errors	11.3
5. Summary	11.8

2009/S2 COURSE CALENDAR - ECON141

Week No. Date	Lecture Topic	Tutorials and Coursework
1 August 3	The Role of Econometrics in Economic Analysis Revision of Basic Statistical Concepts	
2 August 10	Revision of Basic Statistical Concepts	Tutorial Week 2 (No Class)
3 August 17	Statistical Inference	Tutorial Week 3 (Formal Class)
4 August 24	Two-variable Regression Analysis	Tutorial Week 4 (Formal Class)
5 August 31	Properties of Ordinary Least Squares Estimators Inference in the Simple Linear Regression Model Computing in ECON141	Tutorial Week 5 Computing Practical
6 September 7	Inference in the Simple Linear Regression Model Analysis of Variance and Coefficient of Determination in the Two-variable Model Review for Mid-semester Test	Tutorial Week 6 (Unsupervised Practical)
7 September 14	MULTIPLE CHOICE TEST Functional Forms of Regression Models	Tutorial Week 7 (Formal Class)
MID-SEMESTER BREAK: SATURDAY SEPTEMBER 19 TO MONDAY OCTOBER 5		
8 October 5	Labour Day Public Holiday	Tutorial Week 8 (No Class)
9 October 12	The Multiple Regression Model Hypothesis Testing in the Multiple Regression Model	Tutorial Week 9 (Formal Class)
10 October 19	Hypothesis Testing in the Multiple Regression Model Multicollinearity	ASSIGNMENT DUE ON Thursday October 22
11 October 26	Heteroscedasticity Autocorrelation	Tutorial Week 11 (Formal Class)
12 November 2	Autocorrelation Model Specification	Tutorial Week 12 (Formal Class)
13 November 9	Working through an old final Overview and Revision	Tutorial Week 13 (Formal Class)