

## **Paper 12: INTRODUCTORY ECONOMETRICS**

### **Course Description**

This course provides a comprehensive introduction to basic econometric concepts and techniques. It covers estimation and diagnostic testing of simple and multiple regression models. The course also covers the consequences of and tests for misspecification of regression models.

### **Course Outline**

#### **1. Nature and Scope of Econometrics**

#### **2. Statistical Concepts**

Normal distribution; chi-sq, t- and F-distributions; estimation of parameters; properties of estimators; testing of hypotheses.

#### **3. Simple Linear Regression Model: Two Variable Case**

Estimation of model by method of ordinary least squares; properties of estimators; goodness of fit; tests of hypotheses; scaling and units of measurement; confidence intervals; Gauss-Markov theorem; forecasting.

#### **4. Multiple Linear Regression Model**

Estimation of parameters; properties of OLS estimators; goodness of fit -  $R^2$  and adjusted  $R^2$ ; partial regression coefficients; testing hypotheses – individual and joint; functional forms of regression models; qualitative (dummy) independent variables.

#### **5. Violations of Classical Assumptions: Consequences, Detection and Remedies**

Multicollinearity; heteroscedasticity; serial correlation.

#### **6. Specification Analysis**

Omission of a relevant variable; inclusion of irrelevant variable; tests of specification errors.

### **Readings**

1. D. N. Gujarati and D.C. Porter, *Essentials of Econometrics*, McGraw Hill, 4th edition, International Edition, 2009.
2. Christopher Dougherty, *Introduction to Econometrics*, Oxford University Press, 3rd edition, Indian Edition, 2007.
3. Jan Kmenta, *Elements of Econometrics*, Indian Reprint, Khosla Publishing House, 2nd edition, 2008.

**DEPARTMENT OF ECONOMICS  
DELHI SCHOOL OF ECONOMICS  
UNIVERSITY OF DELHI**

**Minutes of Meeting**

**Subject :** B.A. (Hons.) Economics, Third Semester (2012)  
**Course :** 10 – Introductory Econometrics  
**Date of Meeting :** Monday 30<sup>th</sup> April, 2012, 2.00 P.M.  
**Venue :** Department of Economics, Delhi School of Economics  
University of Delhi, Delhi – 110 007  
**Chair :** Prof. Pami Dua

**Attended by:**

1. Lokendra Kumawat, Ramjas College
2. Ashish Tarn Deb, College of Vocational Studies
3. Anu Satyal, College of Vocational Studies
4. Pooja Sharma, Daulat Ram College
5. M. Padma Suresh, Sri Venkateswara College
6. Archana Jain, Delhi College of Arts & Commerce
7. Avni Gupta, Miranda House
8. Simin Akhter Naqvi, Zakir Husain College
9. Kamalika Majumdar, Shaheed Bhagat Singh College
10. Shweta, Atma Ram Sanatan Dharam College
11. Sanghita Mandal, Atma Ram Sanatan Dharam College
12. Sarvesh Bandhu, Shri Ram College of Commerce
13. Pragya Madan, S.G.T.B. Khalsa College
14. Shantu Singh, Hansraj College
15. Manjula Singh, St. Stephen's College
16. Nita Singh, Satyawati College (Evening)
17. Deepika Goel, Ram Lal Anand College (Evening)
18. Ajad Singh, Motilal Nehru College (Evening)
19. Abdul Rahim Ansari, Hindu College
20. Neelam Singh, Ladi Shri Ram College
21. Swarup Santra, Satyawati College
22. Niti Khandelwal Garg, Kirori Mal College

**A meeting of teachers of this course was held with a view to achieve the following aims:**

- To finalise the topic-wise reading list
- To discuss the pattern of internal assessment and semester-end exam.

**The issues discussed at the meeting were as follows:**

Marks allocation in the final exam question paper would be as follows:

Maximum Marks: 75

It was felt that no specific section-wise weightage should be given and it should be left open to the paper setter as a particular question may cut across two or more topics.

It was almost unanimously felt that in the final exam 7 questions should be asked out of which, a student should be asked to attempt 5 questions of 15 marks each.

Since the coverage of the topic 'Review of Statistics' has been extensively done in Course 02 and Course 05 in the first and second semester respectively, it was decided to de-emphasize this particular topic in this course in terms of the number of lectures spent in teaching as well as in terms of evaluating a student in the final exam. This should also be brought to the notice of the paper setter.

The internal assessment would be a total of 25 marks which would comprise of 10 marks Class test, 10 marks Class test/project and 05 marks attendance. The project work is kept optional and individual teachers can decide on undertaking it depending upon the computer facilities in the college, time, and interest of the students.

**A subcommittee was setup consisting of the following members to prepare the topic-wise reading list:**

Ms. Deepika Goel, RLA(E) College  
Dr. Lokendra Kumawat, Ramjas College  
Ms. Shailu Singh, Hans Raj College  
Dr. Roopali Goyanka, IP College  
Ms. Nidhi Chand, Maitreyi College  
Ms. Simin Akhter, Zakir Hussain College  
Mr. Sarvesh Bandhu, SRCC

The sub-committee met on 3<sup>rd</sup> and 7<sup>th</sup> May , 2012 at DSE and prepared the following topic-wise reading list for the course:

## TOPIC-WISE READING LIST

TOPIC NO.	TOPIC	READINGS FROM CORE TEXTS
1.	Nature and scope of Econometrics	<b>Gujarati:</b> Ch 1
2.	Review of Statistics Descriptive statistics: (a) the univariate case, (b) the bivariate case Random Variables and Probability distributions Estimation of parameters, Testing of hypotheses	<b>Kmenta:</b> Ch 5 (pp. 136-150) <b>Dougherty:</b> Review Chapter, sections R.1-R.13, Appendix R.1
3.	Classical Linear Regression Model: Two Variable Case Descriptive Aspects Properties of Least Squares estimates; tests of hypotheses and confidence intervals; Gauss - Markov Theorem Forecasting	<b>Gujarati:</b> Ch 2, Ch 3 <b>Dougherty:</b> Ch2 (excluding 2.4)
4.	Classical Multiple Linear Regression Model. Descriptive Aspects: Least Squares Estimation, $R^2$ and Adjusted $R^2$ , Partial Correlations The Classical Model: Gauss - Markov Theorem; Standard Error of Estimate Standard errors of regression coefficients Tests of Hypotheses: Single Parameters; Sets of Parameters iv) Forecasting; v) Functional Forms of Regression Models; vi) Dummy Variables	<b>Gujarati:</b> Ch 4 Ch 5, Ch 6 (excluding 6.7) <b>Dougherty:</b> Ch3 (excluding 3.4), Ch 5
5.	Violations of Classical Assumptions and Remedies Multicollinearity Heteroscedasticity Auto-correlation	<b>Gujarati:</b> Ch 8 Ch 9 (Excluding 9.5) Ch 10 (Excluding 10.6, Appendix 10A) <b>Dougherty:</b> Ch 3 (only sec 3.4) Ch 7: Goldfeld-Quandt test (p. 285-286), Ch12 (only pp 434-440).
6.	Specification Analysis Omission of a relevant variable Inclusion of irrelevant variable Tests of Specification Errors	<b>Gujarati:</b> Ch 7: Sections 7.1-7.4, 7.7 till p. 234 <b>Dougherty:</b> Ch 6 (only till pp 263)

## **Reading List**

**D. N. Gujarati** and **D.C. Porter**, *Essentials of Econometrics*, 4<sup>th</sup> Edition, McGraw Hill International Edition.

**Jan Kmenta** , *Elements of Econometrics*, Indian Reprint, Khosla Publishing House, 2008, few pages for 'Review of Statistics'.

**Christopher Dougherty**, *Introduction to Econometrics*, 4<sup>th</sup> edition, OUP, Indian edition.

## **Background Reading List for students and Teachers :**

All the readings for the two courses on Statistical Methods for Economics (Courses 02 and 05) in the first year of BA (Hons.) Economics

Appendices of Gujarati, *Essentials of Econometrics*.

Note that these readings are meant for teachers and students to review the basic concepts only. Although these are optional, teachers and students are encouraged to read these.

## **Background Reading List for teachers only**

**Christopher Dougherty**, *Introduction to Econometrics*, 4<sup>th</sup> edition, OUP, Indian edition. This book provides very good intuitive explanation for all the topics covered in the syllabus.

**Damodar Gujarati**, *Econometrics by Example*, Palgrave Macmillan, 2011.

**Maddala, G.S and Kajal Lahiri**, *Introduction to Econometrics*, 4<sup>th</sup> edition, Wiley publication, 2009. This book is particularly useful for the discussion on the LM and Durbin's h tests for testing for autocorrelation.

**Jan Kmenta** , *Elements of Econometrics*, Indian Reprint, Khosla Publishing House, 2008.

Note that the readings recommended for teachers should be used for better understanding of the intuition behind concepts but no specific question should be based upon them in the examination.