Birla Institute of Technology & Science, Pilani
Hyderabad Campus

# INSTRUCTION DIVISION
## First Semester: 2016-17
## Course Handout Part II

Dated: 29/06/16

In addition to part I (General Handout for all courses appended to the time table) this portion gives further specific details regarding the course.

**Course No.** : **ECON F241**
**Course Title** : **Econometric Methods**
**Instructor-in-charge** : **Dr. C. Hussain Yaganti**

1. **Course Description:**

Specification of models, estimation of single equation economic models and related problems; autocorrelation; heteroscedasticity; multicollinearity; interpretation; forecasting and verification; estimation methods and problems in simultaneous equation systems.

2. **Scope and Objective of the Course:**

The purpose of this course is to introduce students to the theory and application of econometric methods. It covers the basic tools of estimation and inference in the context of the single-equation regression models, and deals primarily with least squares methods of estimation. The course emphasizes the intuitive understanding and practical application of these basic tools of regression analysis, as distinct from their formal theoretical development. Course material is presented predominantly in scalar terms; the use of matrix algebra is confined to summarizing major results and to interpreting output listings of computer software programs. The course also emphasizes to enable the students to understand the econometric problems involved in estimating single equation systems and to appreciate the problems of estimating simultaneous equation systems.

3. **Text Book:**

T1) Damodar. N. Gujarati and Sangeetha, Basic Econometrics, Tata McGraw-Hill Publishing Company Limited, Fifth Edition, 2012.

4. **Reference Books**:

R1) John Campbell, Andrew Lo, Archie, MacKinlay (1997). The Econometrics of Financial Markets, Princeton University Press
R2) Ruey S. Tsay (2015) Analysis of Financial Time Series' 3rd Edition, Wiley Publisher
R3)Johnston J and John Dinardo, Econometric Methods, McGraw-Hill International, MGHISE, 4th Edition, 1997
R2) William H. Greene., Econometric Analysis, Pearson Education, Fifth Edition, 2007
R3) Jeffrey M. Wooldridge, Introductory Econometrics: A Modern Approach, 4th Edition, Thomson, South-Western, 2009
R4) R. S. Pindyck and D.L. Rubinfeld, Econometric Models and Economic Forecasts, Third Edition, McGraw-Hill: New York, 1991
R9) "Econometric Applications in India", Edited by K L Krishna, Oxford, New Delhi, 1997.

**a. Course Plan:**

| Lecture No. | Learning Objectives | Topics to be Covered | Reference to Text Book |
|---|---|---|---|
| 1 | The Nature and Scope of Econometrics | Introduction | Class Notes |
| 2 | Review of Statistics | Random variables, Sampling, and Estimation | Review |
| 3-6 | The Simple Linear Regression Model,<br>The Ordinary Least Squares Method | Two-Variable Model: Assumptions ; Least Square Estimators; Two decomposition of Dependent Variables ; Interpretation of Regression Equation; Prediction. | Ch 1,2 - TB1 |
| 7-10 | Properties of Regression Coefficients<br>Hypothesis Testing | Types of Data and Regression Model; Assumptions and Properties of Regression Coefficients; Gauss-Markov Theorem<br>Hypothesis Testing | Ch. 3-TB1 |
| 11-12 | Multiple Regression Analysis | Multiple Regression Estimation & Inference | Ch.8-TB1 |
| 14-15 | Multicollinearity | Multicollinearity; Consequences of Multicollinearity; Tests for Detecting the Multicollinearity and Solutions; Prediction | Ch.10-TB1 and Class Notes |
| 16-18 | Transformation of Variables | Basic Procedure; Logarithmic Transformation; Nonlinear Regression; Comparison Linear and Logarithmic Specification | Ch.4 -TB1 and Class Notes |
| 19-22 | Dummy variables | Use of Dummy Variable, Slope Dummy Variable; The Chow Test | Ch.9-TB1 |
| 23-28 | Heteroscedasticity | Heteroscedasticity and its Implications; Tests for Detection; Solutions; Prediction | Ch11-TB1 |
| 29-31 | Autocorrelation | Sources of Autocorrelation, The First-order Autoregressive Scheme; Tests; Solutions for the Case of Autocorrelation; Prediction | Ch 12-TB1 |
| 31-33 | Model specification and Measurement Errors | Model selection criteria, Consequences of Measurement Errors | Ch.8-TB1 |
| 34-35 | Models Using Time Series Data | Static and Dynamic Models, Prediction; Stability Tests | Ch21-TB1 |
| 36-37 | Introduction to Non-stationary Times Series | Introduction, Consequences and Detection of Non-Stationary Series; Co integration. Cae study | Ch 21-TB1.Class Notes |
| 38-40 | Time series Econometrics: Forecasting: | Approaches to Economic Forecasting, ARIMA,VAR, The ARCH& GARCH.Case study Models | Ch.22 TB1.Class Notes |
| 41-42 | Simultaneous Equation Estimation | Simultaneous Equation Models Simultaneous Dependence of variables and Consequences; Simultaneous Bias; The Problem of Identification; Indirect least | Class Notes. |

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| | | squares &Two Stage Least Squares; Three Stage Least Squares | |

**6. Evaluation Schedule:**

| S. No. | Evaluation Component | Duration | Weightage | Date & Time -- Venue | Nature of Evaluation |
|---|---|---|---|---|---|
| 1 | Test-I | 1 hour | 20 | 9/9, 1.00--2.00 PM | Closed Book |
| 2 | Test-II | 1 hour | 20 | 24/10, 1.00--2.00 PM | Closed Book |
| 3 | Assignments/projects/Surprise quizzes | | 20 | | |
| 6 | Comprehensive Examination | 3 hours | 40 | 05/12 AN | Partially OB(OB-50%,CB-50%) |

**7. Chamber consultation hour**: To be announced in class.

**8. Notices**: All notices regarding the course will be displayed on the CMS or ECOFIN Dept. Notice Board.

**9. Make-up Policy**: Make-up will be given only on Doctor's/Warden's recommendation and with prior permission of the Instructor-in-Charge/Instructor. Make-up application via sms/messages is not acceptable.

**Instructor-in-charge**
**ECON F241**