BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE-PILANI, HYDERABAD
SECOND SEMESTER: 2018-19

Course Handout (Part II)

Date: 07/01/2019

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 F342
Course Title	: Applied Econometrics
Instructor-in-charge	: Rishi Kumar
Instructor	: Rishi Kumar

1. Course Description:

This course provides an introduction to advanced estimation and empirical testing process of different econometric methods. The importance of this course is the application of Econometrics to given set of data, estimation and to ensure the model is correctly specified. Emphasis will be on different techniques for assessing model fitness.

The course will cover different aspects of forecasting; time series analysis; Univariate and Bivariate time series analysis; GARCH, VAR, Co-integration and Error Correction Methodology-ECM, Granger causality, and limited dependent variable models; auto regressive distributed lagged variable models, multivariate time series analysis; dynamic models; analysis of panel data, balanced and unbalanced panel data, mixed, fixed and random effect models.

2. Scope and Objective of the Course:

This is an applied course, emphasizing on the implementation of econometric techniques to analyze concrete economic problems, using different data and econometric software. Though it is not a theoretical course, we will introduce some advanced econometric theory and concepts to implement an appropriate use of econometric methods. The basic objective of the course is to learn the process of econometric models implementation and testing in analysis and problem solving. Students will learn how to choose the adequate method, its assumptions, and correctly interpret its results and to translate them into meaningful answers.

3. Text Book:
T1. Introductory Econometrics- A Modern Approach by J Wooldridge, 4th Edition (ISBNNo. 9788131516737), South Western Cengage Learning, 2012

4. **Reference Books**:

R1. Jeff Wooldridge, Econometric Analysis of cross section and panel data, MIT press, 2002

R2. Colin Cameron, Pravin Trivedi, Microeconometrics using STATA, STATA press, 2009

R3. James H. Stock and Mark W. Watson, Introduction to Econometrics, Second Edition, Pearson Addison-Wesley, 2007

R4. Greene, W., Econometric Analysis, 7th Edition, Prentice Hall, 2011

R5. G.S. Maddala, *Introduction to Econometrics*, Second Edition, MacMillan, 1992

R6. Damodar. N. Gujarati and Sangeetha, Basic Econometrics, Fourth Edition, Tata McGraw-Hill Publishing Company Limited, 2007

R7. "Econometric Applications in India", Edited by K L Krishna, Oxford, New Delhi, 1997.

R8. Brooks, C. (2014). Introductory Econometrics for Finance. Cambridge university press.

5. **Course Plan:**

S. No.	Lec. No.	Learning Objectives	Topics to be covered	References (TB)
1	1	Introduction to Applied Econometrics	Introduction: Scope and Coverage	T1: CH-1 and Class Notes
2	2-9	Simple Regression Model & Multiple Regression Model	Estimation and Inference Simple Regression Model, The General Linear Model Violating the Assumptions of the Classical regression model, Alternate Functional Forms, Multiple Regression: Motivation, Mechanics and Interpretation, Omitted Variable Bias, Dummy Variables.	T1: CH-2, 3 & 4 and Class Notes
4	10-16	Panel Data	Fixed effects, first differencing and random effects models	T1: CH-13 & 14 and Class Notes
5	17-18	Maximum Likelihood Methods	Estimation and hypothesis testing using MLE methods	Class Notes
8	19-30	Time Series Data	Univariate time series; Multivariate Time Series; Stationary vs. Non-stationary Series; ARIMA, GARCH, VAR, Co-integration,; Modelling volatility and correlation	T1: CH-18 and Class Notes
6	31-34	Instrumental variables estimation	IV and 2SLS techniques	T1: CH-15

7	35-40	Discrete Response models	Binary dependent and Linear Probability Model; Probit and Logit Models; Count and Censor Data	T1: CH-17 and Class Notes

5. Learning Outcome:

Topic 1: Introduction to Applied Econometrics
In this introductory topic students will be introduced to the subject. The motivation for learning applied and wide practical application across various fields will be discussed. The main objective will be to stir the interest among pupils for the subject.

Topic 2: Simple Regression Model & Multiple Regression Model
To strengthen the foundation for upcoming concepts, the students will be taken through the techniques of simple and multiple regression. The topic will help students refresh their understanding the theory and techniques of regressions

Topic 3: Panel Data
Given the wide applicability of methods of panel data in academic as well as practical world, the students will understand the theory behind the panel data regression including fixed effects, first differencing and random effects models and learn to apply the methods to the real world data.

Topic 4: Maximum Likelihood Methods
These couples of lectures will help students appreciate maximum likelihood methods approach to regression analysis. This will help them understand the time series analysis and discrete response models better.

Topic 5: Time Series Data
In this part of the course, the students will start with learning the basics of univariate time series include concepts of stationarity and non-stationarity, and multivariate time series. The models including ARIMA, GARCH, VAR, Co-Integration will be explained to understanding modelling of volatility and correlation in time-series set-up.

Topic 6: Instrumental variables estimation
Here the students will learn the technique of Instrumental Variables and 2SLS which comes very handy in case of endogeneity of the data especially when dealing with the real life data.

Topic 7: Discrete Response models
In the concluding part of this course, the students will be introduced to the concepts of discrete response models. Specifically, the concepts of binary dependent and linear probability model, probit, logic models will be discussed in detail and students at the end of this part will be able to work on practical

problems involving count and censor data.

6. Evaluation Schedule:

S.No.	Components	Duration	Weight age (%)	Date, Time & Venue	Nature of Component
1	Quiz-I	-	5	To be announced	CB
2	Assignment-I	-	10	To be announced	OB
3	Mid-Semester Exam	90 min.	20	16/3 3.30 - 5.00 PM	CB
4	Assignment-II	-	10	To be announced	OB
5	Quiz-II	-	5	To be announced	CB
6	Assignment-III	-	10	To be announced	OB
7	Comprehensive Exam.	3 hrs.	40	14/05 AN	CB

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

8. Notices: All notices regarding the course will be put on CMS or the **Economics and Finance OR LTC Notice Boards.**

9. Make-up Policy: Make-up will be granted only on genuine grounds and if prior permission is taken. No application will be accepted in the Exam Hall. Make up will be given only on Doctor's/Warden's recommendation and with prior (at least 01 day before the test/exam) permission of the Instructor-in-Charge/Instructor. Make-up application via sms/messages is not acceptable.

10. Academic Honesty and Integrity Policy: Academic honesty and integrity are to be maintained by all the students throughout the semester and no type of academic dishonesty is acceptable.