INDIAN INSTITUTE OF TECHNOLOGY MANDI

Course Name: Advanced Econometrics

Course Number: HS651

Credits: 3-0-0-3

Prerequisites: Basic Econometrics

Intended for: Ph. D.

Semester: Even / Odd

Course Preamble:

The aim of this course is to provide students an account of the main aspects of econometric procedures, generally necessary to do applied econometric research. This course will enlighten the students to understand the utility and disutility of various results based on econometric computations.

Course Outline:

Module –I (8 hours)

Regression analysis: Historic origin and modern interpretation of regression, simple, two variable regression models, the method of ordinary least square, the Gauss-Markov theorem, the coefficient of determination.

Module –II (12 hours)

Multiple regression analysis: three variable model, OLS and ML estimation of the partial regression coefficients, the Cobb-Douglas production function, polynomial regression models, dummy variable regression models; ANOVA and ANCOVA models, the linear probability model, the logit and probit models, the Poisson and negative binomial regression models, maximum likelihood estimation, the generalized method of moments.

Module –III (10 hours)

Panel data regression model: pooled OLS regression, the fixed effects least squares dummy variable (LSDV) model, the fixed effect within group (WG) estimator, the random effects model (REM), different-in-different approach, regression discontinuity, propensity score matching.

Module – IV (12 hours)

Time series econometrics: stochastic processes, spurious regression, test of stationarity, unit root test, transforming non stationary time series, economic forecasting; AR, MR and ARIMA modeling of

time series data, Box- Jenkins methodology, vector auto regression (VAR), testing causality using VAR: the Granger causality test, impulse response function, measuring volatility in financial time series; the ARCH and GARCH models.

Course Readings:

1. Jeffrey M. Wooldridge (2012), Introductory Econometrics: A Modern Approach, 4/e (Paperback), Cengage Learning India.
2. William H. Greene (2003), Econometric Analysis 5/e (Paperback), Pearson Education.
3. Jeffrey M. Wooldridge (2010), Econometric Analysis of Cross Section and Panel Data, 2/e Cambridge MA: MIT Press.
4. Dougherty, Christopher (2011), Introduction to Econometrics. Fourth Edition.
5. James D. Hamilton (1994), Time Series Analysis, Princeton University Press.
6. Maddala, G. S. (1997), Econometrics, Mc Graw Hill, New York.

Further Readings:

1. Gujarati, D. N. (2012), Basic Econometrics (5th Edition), Mc Graw Hill, New Dehi.
2. Intrilligator M. D. (1997), Econometric Methods, Techniques and Applications, Prentice Hall, Englewood Cliffs, New Jersey.
3. Johnston, J. (1991), Econometric methods, Mcgraw Hill book Co. London.
4. Franses P. H. (1998), Time Series Models for Business and Economic forecasting, Cambridge Press, New York.
5. Krishna, K. L. (1997), Econometric Applications in India, Oxford University Press, New Delhi.
6. Kennedy, P. (1998), A Guide to Econometrics 4th edition, MIT press, New York.
7. Goldberger, A. S. (1998), Introductory Econometrics, Harvard University press.

Approvals:

Other Faculty interested in teaching this course:

Proposed by: Dr. Ramna School: HSS

Signature_____Date_____

Recommended/Not Recommended, with Comments:

_____ Date:_____

Chairman, CPC

Approved / Not Approved

_____ Date:_____

Chairman, Senate

Instructions:

1- In prerequisites please give course numbers and names.

2- In distribution, please specify if the course is compulsory for students or elective. It may be compulsory for some students and elective for others. For example Compulsory for CSE; CS elective for EE and ME.

3- In preamble, please mention how it fits in with other related courses. Is it part of a sequence, one of a basket?

4- In Course outline, please mention what students will learn in the course.

5- In Module, detailed break-up of the course contents into half a dozen modules/units or so should be given. The lecture hours or lab hours required for each module/unit must be clearly mentioned, considering if it is x credit course there will be 14x hours only in the semester.

6- Please provide one or two most relevant text books, you can include references if you feel some of the topics are explained in details there and students can follow.