

**REPORT
ON
FRONTIER AREAS IN ECONOMETRICS
&
INTERNATIONAL TRADE AND FINANCE**

Despite the cold morning of tenth December, 2104, the event started with the warm enthusiasm to discuss the core and frontier areas of econometrics and international trade and finance. There were 30 participants, who were selected to this QIP(Quality Improvement Programme) based on their merit, interest and the CV, including two from Nepal and one from Iran. The QIP Programme had eleven speakers from outside IIT Kanpur and eight speakers from IIT Kanpur. The speakers were from IIFT Delhi, Center for Advanced studies in Economics - Mumbai University, RIS - New Delhi, NCAER - New Delhi, ISI Delhi, NOVARTIS - Hyderabad, IGIDR Mumbai, Jamia Millia Islamia University, NIT Rourkela, BITS-PILANI and IIT Kanpur.

The first five days were totally devoted to the econometrics, and the in next six days, the frontier areas of international trade and finance were discussed. The proceedings began with lamp lightening by the head of the prestigious institute:Prof. Indranil Manna (Director), Head of the department of Humanities and Social Sciences, Prof. Surajit Sinha and the course coordinator: Dr. Somesh Kumar Mathur. This was witnessed by the other faculty members from the economics discipline. The formal beginnings of the event were initiated with the welcome note given by the Director, IITK followed by Head of the HSS department and finally, by the Course Coordinator. Dr. Ram Upendra Das of the Research and Information Systems for developing economies(RIS) was the inaugural session speaker. Professor Manna in his welcome note, stressed the importance of promoting such technical programmes in the Kanpur-Lucknow region. Professor Sinha focused on the importance of macroeconomic linkages which are some times difficult to decipher in this interdependent world. There were other colleagues in the Economics discipline, HSS, IIT Kanpur, who chipped in to speak between some time left from the end of the welcome note and the initiation of the inaugural speech by Dr Ram Upendra Das of the RIS. Dr P M Prasad spoke of the importance of growth environment linkage while Professor K K Saxena spoke of the importance of input output analysis, which when extended, becomes the Social Accounting Matrix(SAM) carrying input output

data, and the same SAM is used as the data base for General Equilibrium work in GTAP.

Professor Ram Upendra Das of the RIS started with the brief introduction to international theories and further extended his lecture to the current and upcoming issues in the area of international trade. He focused on new new trade theories given by Melitz, Chaney, Helpman, Rubinstein, among others on why firms trade as opposed to all earlier theories which focused on why do countries trade. In the new new trade models, firm heterogeneity, market conditions, sunk cost, intensive and extensive margin are important tenets of such models. Professor Das also stressed on the important linkage of international trade with productivity. The latter, he stressed, could be estimated in a more refined way, by following the Olley and Pakes(1996) procedure of estimating TFP. The latter takes into account the endogeneity problem while estimating Total Factor Productivity(TFP). Professor Das then explained India's various negotiating positions in the WTO in areas related to GATS, TRIPS, Government Procurement and other GATT's provisions. In particular, Professor Das focused on the importance of the 'rules of origin' while giving preferential treatment to regional members. He also gave examples of how 'rules of origin' can be strengthened by using its own country's raw material to produce the commodity in the country. Professor Das also went into the question of the relative benefits of India aligning with various countries and regions of the East and the West. The second half of the same day was delivered by the Dr. S.K. Mathur of the IIT Kanpur, as Professor Hatekar could not join because of his flight being diverted to Delhi from Lucknow because of bad weather. Professor Hatekar's lectures on discrete choice models and limited dependent variables using language R were missed by the participants. Dr S.K.Mathur initiated his session by giving the basic assumptions of the Classical Linear Regression Model (CLRM), their violations and then discussed the curative methods to solve the issues related with violation of CLRM. He then further moved to the Panel data estimation techniques (fixed, random and pooled) and discussed these in an elaborative manner. Thereafter, diagnostic tests were explained, including Durbin Wu Hausman test to test Random(GLS) vs Fixed Effect models(within group or LDSV) and Breush Pagan LM test to test Pooled OLS vs Random Effect model. More importantly, he gave the sequential procedure of the Christopher Dougherty(Professor at LSE) to choose various models, fixed vs pooled vs random effect models. He further showed theoretically that how Least Squares Dummy Variable(LSDV) is equivalent to

within group OLS estimates and in turn is equivalent to First Difference GLS estimates. In his lecture, he gave various formulae for OLS, IV, MLE and GMM estimation procedures including dynamic panel data procedures of Anderson and Bond(Difference GMM,1991) and Bond and Bover(System GMM,1995) and old IV procedures of Anderson and Hsio(1981). GMM procedures showed that having more instruments than the number of parameters brings in more efficiency.

On the second day, the command of the first session were handed over to the Dr. Devlina Chatterjee of the IME, IIT Kanpur. She discussed the survival analysis and its applications, survival and hazard rates, parametric, non-parametric methods and semi-parametric methods(Cox Proportional Regression) to measure hazard probabilities. Earlier to it, she discussed the various assumptions of the CLRM model, including violation of homoscedasticity assumption of the CLRM model, leading to heteroscedastic models of peculiar forms. These are when conditional variance(conditioned on information set till time period $t-1$) changes for each observation due to autocorrelation of errors. Unconditional variance were proved to be homoscedastic. Conditional variance models are heteroscedastic and are called ARCH and GARCH models, capturing period of tranquility and volatility in financial markets(time series phenomena).Their were further expectations from participants from the speaker to discuss higher end models like EGARCH, GJR,GARCH in MEAN, MGARCH models, among others. However, the latter could not be covered fully. The second half of the second day was taken by Prof. A.K. Sharma of the HSS, IIT Kanpur, and he went into the insights of research methodology for social scientists(including sampling design), qualitative and quantitative data, ethics in research and application of the multivariate analysis, Factor analysis and Principal Component Analysis. In the both halves of the day, the participants had very good interaction with the speakers. Prof. Sharma distinguished between factor analysis and principal component analysis. Factor analysis helps us to study how much of the variability in one variable is due to common unobserved factors and how much is due to unobserved specific factors. He further explained the concept of communalities and rotation of factors for better interpretation of results. The basic data for factor analysis is the data on variables and the co variance and correlation matrix based on the data. Principal component is essentially data reduction exercise undertaken to take care of multicollinearity problem. The number of variables are equal to the number of components. The beauty of the exercise is

that two or three principal components are enough to explain entire variability in variables.

The third day was initiated with the lecture by Dr. S.S. Dhar, Maths and Statistics Department, IIT Kanpur, and he explained the concept of the non-parametric regression (weighted regressions, where in the weights are the kernel densities or pdfs), different kernel densities, concept of bandwidth and how the concept of joint and marginal densities are used to construct conditional density function by easily using the histogram estimation method for the estimation of non-parametric regression estimates. Then after, after having a cup of tea, Dr. S.K. Mathur discussed further the different methods to estimate the panel data models including dynamic panel data models, and GMM, SURE (GLS), 2SLS, IV estimation procedures. Dr. Mathur also explained when to use IV vs 2SLS and GMM procedures by working out variances of each of the estimates. The lecture then moved out of the panel data domain (when N is greater than T) to simultaneous equation models (where in T is greater than N) and where in the assumption of contemporaneous correlations among errors of different equations is non zero (Zellner's SURE Models or GLS procedures need to be used). While explaining, SURE Models, two conditions were discussed, when OLS is as efficient as GLS, one- when all right hand side variables of all equations are same and when contemporaneous correlations are zero among various equations.

Dr. Renuka Sane of the Indian Statistical Institute, Delhi led the fourth day with the introduction to Difference in Difference (DID) estimation approach and Regression Discontinuity Designs (RDD). Then she went into the insights of DID and RDD methods and also discussed a research paper to clarify the methods in detail. DID procedures help in evaluating some government programmes involving treatment and control groups and their differential performance over time. RDD procedures help us to gauge performance of different individuals over time whose performance was marginally better at the start of the period of study. The post lunch sessions were taken by Dr. Ajay Sharma of the IGIDR, Mumbai, who spoke on spatial econometrics. He elaborated the basic concepts of spatial data, the designing of weight matrix to spatial type models and how such weights are imposed on the dependent variable, independent variables and the error term of the regression model using spatial data. This was followed by the empirical spatial regression exercises with the help of GEODA (for GIS mapping) and Stata Softwares.

The last day of the econometrics discussion was initiated by Dr. Arshad Rehman of the HSS, IIT Kanpur. He discussed the Bayesian Linear Regression and how the beta parameter of the regression parameter can be modeled(follows a probability distribution like a random parameter model) based on prior and posterior probabilities. His lecture covered the Baye's Theorem to find the distribution of parameters and also the Bayesian Quantile regression. After the tea on the same day, lectures were delivered by Dr. Praveen Kulashreshtha of the HSS, IIT Kanpur. He discussed the Stochastic Frontier Analysis (SFA) models, the econometric way of measuring technical efficiencies of the decision making units.. In the second half, Dr. Deep Mukherjee of the HSS, IIT Kanpur discussed the Data Envelopment Analysis (DEA), non linear programming, deterministic and non parametric way of measuring technical efficiency(input oriented and output oriented) in greater detail with the help of the equations. Dr Deep also discussed frontier areas in the DEA, how to develop meta frontiers, stochastic DEAs and estimable distance functions.

The sixth day of the course and the first day of international economics were taken by Mr. Devender Pratap of the NCAER with the discussion on Applied General Equilibrium in trade and its applications with the help of GTAP Analysis using Run GTAP software. The whole day was devoted to discuss the insights, the theory and the application of the aforementioned analysis. In here, he discussed how to run GTAP software to get the welfare, employment, output and welfare impacts of opening trade, among others with other countries are how RunGtap is used for doing simulations in trade.

The next day lectures were initiate by Prof. Sahid Ahmed of the JMI, Delhi with the discussion on the both, partial equilibrium analysis using the SMART(Single Market Partial Equilibrium Analysis) analysis and general equilibrium analysis using Computable General Equilibrium Models- CGE(using GEMPACK language and GTAP software developed by Prof. Hertel of the Purdue) to analyze and simulate the tariff liberalization impacts of opening of one's country to international trade . He also discussed the effects (welfare effects) emerging from the analysis. Prof Sahid Ahmed also discussed the most basic CGE models(Orini) originating from Australia. Dr. S.K. Mathur then discussed the developments in gravity models with new trade models explaining intra-industry trade(Krugman,1979,1980,1981) and new new trade models of Melitz(2003) explaining firm level trade in the second half of the same day. All the developments in gravity analysis were discussed- from Tinbergen(1962), Anderson(1979).

Krugman(1980), Deardorff(1984), Helpman and Krugman(1985, 1987), Macallum(1996), Baier and Bergstrand(2001), Anderson and Wincoop(2003), Baier and Bergstrand(2009), Chaney(2008), to users guide by Professor Ben Shephard - UNESCAP(2014), among others were covered. Dr Mathur gave explanation on how Chaney(2008) analysis on firm level trade and information on firm level heterogeneity and market conditions can distort basic gravity models.

Dr. Archana Srivastava of the BITS , Pilani, Hyderabad Campus started the eighth day of the course by giving lectures on Translog Cost and Translog Production Functions, and explained derivation of of Stolper-Samelson and Rybczynski elasticities using Translog Production function. The estimation of the translog cost function with its share equations is done using Zellner's SURE procedure(GLS) and helps researchers to understand reasons for rising inequality between skilled and unskilled labour(or any set of factor returns). Translog Cost exercise can also throw light on whether inflation, trade, domestic and foreign technology, trade liberalization phase, among others are responsible for rise in wage inequality in India since the initiation of economic reforms in 1991. Translog Production function and its share equations (derived from shepherd's lemma) are used to derived Stolper Samuelson and Rybczynski elasticities. The speaker made the session interactive by running these models on the ASI with the help of Stata. Then Dr. S.L. Chakravarty of the Saint Xaviers College, Kolkata talked about the fluctuations, swings and instability in trade and measures capturing such phenomena. Dr S.L.Chakravarty started his lectures on time series econometrics. He very lucidly explained the concept of unit roots, cointegration analysis using Engle Granger and Johanasen procedures, and the concept of causality using Granger Causlity tests. Granger Representation theorem was discussed, namely the depiction of long term relationship by the Error Correction model. ECM models capturing short term dynamics among variables and cointegration models establish long term relations, are two sides of the same coin .The day came to an end with the talk by Dr. Bikash R. Mishra of the NIT, Rourkela speaking on the theory and empirics of Foreign Direct Investment in India. He used Aitken- Harrison methodology and input output data on India to work out backward and forward spillovers of the FDI.

The next day's talk were delivered by Prof. Badri Narayan of the Purdue University through Skype seminar held in FB620, IIT Kanpur Faculty building. He started with basic concepts of Computable General Equilibrium (CGE) and Applied CGE. The initial focus was on theory and its relation to other theoretical models like

Input-Output etc. Then he explained the estimation of CGE model and also, discussed his own paper. The highlights of his talk was his lucidity and very appropriately made presentation slides discussing right research question and answers related to general equilibrium work. Very importantly, he discussed all the equations related to production and consumption side of the CGE model with the understanding on equilibrium and closure relations of the CGE model. In the second half of the same day, participants' Feedback Survey were held. Thereafter, a small examination was conducted just to find out the level of understanding of the participants on all of the topics mentioned above. I am happy to share that all the participants performed well, which prove the worth of the QIP. We have acknowledged the performance, and prizes were given to the first and second position holders in the examination.

On the tenth day of the course Dr. P.M. Prasad of the HSS, IIT Kanpur talked about the relationship between the trade and environment. He explained that India's position related to the multilateral trade environment talks were of 'common but differentiated responsibilities'. This position was based on the assumption, that there is a trade off between growth, trade and environmental sustainability. Dr Prasad also talked about the Environmental Kuznets Curve(EKC) in context of India. In the two sessions after the first one(one before lunch and one after lunch), Mr. Venkateshwarlu Sonathi of the Novartis discussed the social media analytics, social media data, marketing budget capacity optimization using the Koyck lag model and applications of statistics in bio sciences including clinical trials and efficacy of medicines to cure patients. Then the baton was handed over to Dr. S.K. Mathur and he explained the Vector Autoregressive Models and Cointegration techniques(including ARDL and NARDL approaches to Cointegration) along with innovation accounting procedures(Impulse Response Function and Variance Decomposition) in detail. Dr Mathur explained the sequence of the developments in simultaneous equation modeling, structural VAR to reduce form VAR where in some 'incredible' restrictions(term coined by Professor Sims) needs to be imposed on the structural model(for identification) signifying contemporaneous relations among variables. The Vector Moving Representations of the VAR model can help to get expressions for Impulse Response Function and Variance Decomposition signifying the dynamic relationships among variables. Estimation of VAR models is not an issue as the VAR is a SURE model where in all right hand side variables are all same(pre determined variables). VAR models expresses all endogenous variables

as a function of its past values and past values of all other variables in the system of equations.

On the final day of the course, 20th December, 2014, Dr. Pralok Gupta talked about the issues related to WTO. He discussed India's stand in WTO with the focus on the agreement on services' trade.

The event came to the end with the certificate distribution followed by valedictory.

Somesh K. Mathur
Course Coordinator

QIP Short Term Course

On

Frontier Areas in Econometrics and International Trade and Finance

(December 10-20, 2014)

Course Coordinator

Dr. Somesh K. Mathur

Associate Professor of Economics

Department of Humanities & Social Sciences

IIT Kanpur- Kanpur – 208016 (U.P.)

Email. skmathur@iitk.ac.in

Ph. No. 9935754731

Organized By



Department of Humanities & Social Sciences

Indian Institute of Technology Kanpur

Co-Hosts

The Indian Econometric Society (TIES)

&

**Centre of Advanced Studies in Economics,
University of Mumbai**

Objectives of the Course

The objective of the course is to discuss the frontier areas in Econometrics and International Trade & Finance keeping theory, research methodology and policy in mind. Also, the QIP intends to expose the participants to statistical & econometric software like EViews, STATA and language R for data analysis and policy decisions.

Under Econometrics, the course will introduce frontier areas such as panel data analysis including dynamic panel data models, panel VAR and panel cointegration, GMM and IV models along with the diagnostics. Other areas in econometrics include multinomial, nested, ordered probit and logit models, Count data, Truncation, Duration, Censoring and Sample Selection models to account for limited dependent variable data. Programme evaluation methods like differences in differences methodology will be discussed. Participants will also be exposed to Bayesian analysis. Efficiency and Productivity analysis of Decision Making Units (DMUs) through DEA and SFA models will be discussed. Discussion on family of ARCH and GARCH will help participants to identify period of tranquility and volatility and

spillovers from other financial markets including those in stocks and exchange rate markets in their potential research work. Simultaneous equation modeling will be discussed keeping identification, endogeneity and estimation issues in mind. The course will sequentially discuss the developments in simultaneous equation modeling by introducing Prof. Sims contribution to VAR and SVAR models. Practical sessions on the use of statistical softwares and language R will also be held.

The international trade and finance part will discuss developments in trade theory & policy and in international monetary theory and policy keeping quantitative analysis of international trade in mind. WTO negotiations on TRIPS, GATS, Revised GATT, among others including India's trade negotiations and positions in the WTO will be discussed. The impact of international trade on growth, wage inequality among other variables is an important component of the course. The course will introduce participants to trade and new trade models keeping empirics in mind. Contribution of HO, new trade and new-new trade models to justify use of the various variants of the Gravity Model will also be discussed. India's policy to

align and be a part of regional groupings would be critically evaluated by discussing both partial and general equilibrium methodologies such as SMART and GTAP-CGE approaches respectively. Discussion on exchange rate movements of Indian rupee will help participants to understand the various factors affecting the exchange rate using different approaches to the BOP models including the methodologies to forecast the exchange rate.

Financial crisis has become a regular feature of the 19th, 20th and 21st century. The course will discuss the four generation models of financial crisis to understand the reasons for the so called currency, banking, BOP and financial crisis occurring in various part of World including those which happened recently in the US and Europe. Some important cures for dealing with financial crisis and identifying vulnerabilities will feature in the discussion keeping the new international financial architecture in mind. FDI issues including the spillover effects of FDI, transfer pricing, Proximity Concentration Hypothesis, factors affecting both horizontal and vertical FDI will be discussed. Practical sessions will be held to work with data pertaining to international trade.

Basic Reference Books. *Christopher Dougherty, Johnston and Freund and Walpole* for Econometrics & Statistics and *Krugman, Feenstra and Taylor and Salvatore* for International Trade.

Course Contents. See detailed programme schedule.

Resource Persons. Resource persons are from IIT Kanpur, CITD-JNU, IIFT Delhi, Center for Advanced studies in Economics - Mumbai University, RIS - New Delhi, NCAER - New Delhi, ISI Delhi, NOVARTIS - Hyderabad, IGIDR Mumbai, Jamia Millia Islamia University, NIT Rourkela and BITS-PILANI.

Application Requirement. Applicants should send duly filled application form, one page CV and letter of expression of interest not more than one page with required demand draft to the course coordinator not later than 14th November, 2014. Selection will be made on a merit basis. For details on eligibility and selection criteria, see application form.

Note. Background of basic statistics, econometrics and international trade is essential and required. Participants are encouraged to bring their own laptops.

Application Deadline. 14th November, 2014

Announcement of Selection. 20th November, 2014

About the Organizers

Humanities & Social Sciences, IIT Kanpur

Humanities and Social Sciences is one of the academic departments of IIT Kanpur. It is multi-disciplinary, and consists of six disciplines. Economics, English Literature and Linguistics, Fine Arts, Philosophy, Psychology, and Sociology. The Department offers undergraduate courses to engineering and science students. These were first introduced in the curriculum in July 1963. Between 1964 and 1974 the Department instituted its PhD programme in its various disciplines. Since then, nearly 170 PhD degrees have been awarded.

The Indian Econometric Society (TIES)

The Indian Econometric Society (TIES) is a registered society under Public Societies Registration Act, formed in 1960. It is one of the oldest and largest body of professional econometricians and quantitative economists with more than 2000 members from all over India and abroad. The main aim is to provide a forum for economists,

mathematicians and statisticians of India and abroad and to promote development of econometric methodology and techniques.

Center for Advanced Studies in Economics, Department of Economics, Mumbai University

The Department of Economics, University of Mumbai, one of the oldest and most prestigious institutions for advanced studies in economics in India, has in its more than ninety years of existence, earned an impeccable reputation for its sterling contribution in the field of economic theory and policies. The department's role has been acknowledged widely in the policy circles. It has been a Centre for Advanced Studies in Economics with direct funding by the University Grants Commission consistently from 1963. The department earned an Autonomous Status in 2006 as a reflection of its teaching and research standards.

11 Days Programme Schedule, Venue : PBCEC, VH, IIT Kanpur

Econometrics

Date	Time	Session	Topic	Instructor Name
Day 1 10.12.2014	09.30 AM -10.45AM	--	Registration and High Tea	--
	10.45 AM -11.00 AM	--	Coordinator's Address	Dr. S.K. Mathur (IIT K)
	11.00 AM-11.05 AM	--	Lightening of lamp	Director, IITK(with others)
	11.05 AM -11.20 AM	--	Welcome Note from IIT Kanpur	Director, IITK
	11.20 AM -11.45 AM	--	Welcome Note from CDTE and Co-hosts (TIES and CASE, University of Mumbai)	Head, CDTE/QIP, Co-hosts
	11.45 AM-12.00 PM	--	Welcome Note from the Department	Prof. Surajit Sinha, Head, HSS, IIT K
	12.00 PM - 01.30 PM	SESSION-1	Frontier Areas in Econometrics and International Trade (Inaugural Address)	Prof. Ram Upendra Das (RIS, Delhi)
	01.30PM - 02.00PM	--	LUNCH	--
	02.00 PM -03.00PM	SESSION-2	Logit and Probit Models (Ordered, Multinomial, Conditional and Nested) Using R	Professor. Hatekar (Mumbai University)
	03.00PM -03.30PM	--	TEA BREAK	--
	03.30 PM -05.00PM	SESSION-3	Truncation, Censoring and Sample Selection Models Using R	Professor Hatekar (Mumbai University)
07.30 PM - 09.30PM	--	Special Dinner @ VH Lounge, Outside PBCEC Hall	--	
Date	Time	Session	Topic	Instructor Name
Day 2 11.12.2014	09.30AM-11.00AM	SESSION-4	Econometric Theory &Methodology and ARCH and GARCH	Dr. Devlina Chatterjee (IME, IITK)
	11.00 AM-11.15AM	--	TEA BREAK	--
	11.15 AM -12.45PM	SESSION-5	Introduction to Survival Analysis and its applications	Dr. Devlina Chatterjee (IME, IITK)
	12.45 PM - 02.00 PM	--	LUNCH	--
	02.00 PM - 03.30PM	SESSION-6	Research Methodology for Social Sciences	Prof. A.K. Sharma (HSS, IIT K)
	03.30 PM - 03.45PM	--	TEA BREAK	--
03.45 PM - 05.15PM	SESSION-7	Multivariate Statistics and its Application	Prof. A.K. Sharma (HSS, IIT K)	
Date	Time	Session	Topic	Instructor Name
Day 3 12.12.2014	09.30 AM - 11.00 AM	SESSION-8	Non-Linear and Non-Parametric Regression	Dr. S. S. Dhar (Maths, IIT K)
	11.00 AM-11.15AM	--	TEA BREAK	--
	11.15 AM -12.45PM	SESSION-9	Non-Linear and Non-Parametric Regression	Dr. S. S. Dhar (Maths, IIT K)
	12.45 PM -02.00PM	--	LUNCH	--
	02.00 PM - 03.30PM	SESSION-10	VAR, Cointegration Analysis. Johansen and ARDL Approach	Dr. S.K. Mathur (HSS, IIT K)
	03.30 PM - 03.45PM	--	TEA BREAK	--
03.45 PM - 05.15PM	SESSION-11	Panel Data Procedures. Static and Dynamic, GMM, IV and SURE	Dr. S.K. Mathur (HSS, IIT K)	
Date	Time	Session	Topic	Instructor Name
Day 4 13.12.2014	09.30AM -11.00 AM	SESSION-12	Program Evaluation through Difference - in - Difference Methodology – I	Dr. Renuka Sane (ISI, Delhi)
	11.00AM-11.15AM	--	TEA BREAK	--
	11.15 AM -12.45PM	SESSION-13	Program Evaluation through Difference - in - Difference Methodology – II	Dr. Renuka Sane (ISI, Delhi)
	12.45 PM -02.00 PM	--	LUNCH	--
	02.00 PM - 03.30PM	SESSION-14	Spatial Econometrics - I	Dr. Ajay Sharma (IGIDR, Mumbai)
	03.30 PM - 03.45PM	--	TEA BREAK	--
03.45 PM - 05.15PM	SESSION-15	Spatial Econometrics - II	Dr. Ajay Sharma (IGIDR, Mumbai)	
Date	Time	Session	Topic	Instructor Name

Day 5 14.12.2014	09.30AM-11.00 AM	SESSION-16	Bayesian Analysis. An Introduction	Dr. Arshad Rahman (HSS,IIT K)
	11.00AM-11.15AM	--	TEA BREAK	--
	11.15 AM -12.45PM	SESSION-17	SFA and DEA Models to Estimate Efficiency and Productivity of DMUs. - I	Dr. Praveen Kulshreshtha (HSS, IIT K)
	12.45 PM -02.00 PM	--	LUNCH	--
	02.00 PM - 03.30PM	SESSION-18	SFA and DEA Models to Estimate Efficiency and Productivity of DMUs. - II	Dr. Deep Mukherjee (HSS, IIT K)
	03.30 PM - 03.45PM	--	TEA BREAK	--
	03.45 PM - 05.15PM	SESSION-19	SFA and DEA Models to Estimate Efficiency and Productivity of DMUs. - III	Dr. Deep Mukherjee (HSS, IIT K)
International Trade and Finance				
Date	Time	Session	Topic	Instructor Name
Day 6 15.12.2014 (Lab)	09.30AM-11.00 AM	SESSION-20	Policy Analysis and Computable General Equilibrium Modeling - I	Mr. Devender Pratap (NCAER, Delhi)
	11.00AM-11.15AM	--	TEA BREAK	--
	11.15 AM -12.45PM	SESSION-21	Policy Analysis and Computable General Equilibrium Modeling - II	Mr. Devender Pratap (NCAER, Delhi)
	12.45 PM -02.00 PM	--	LUNCH	--
	02.00 PM - 03.30PM	SESSION-22	Hands on Experience in GTAP Modeling - I	Mr. Devender Pratap (NCAER, Delhi)
	03.30 PM - 03.45PM	--	TEA BREAK	--
	03.45 PM - 05.15PM	SESSION-23	Hands on Experience in GTAP Modeling - II	Mr. Devender Pratap (NCAER, Delhi)
Date	Time	Session	Topic	Instructor Name
Day 7 16.12.2014	09.30 AM -11.00 AM	SESSION-24	Evaluation of Regional Trade Agreements. Partial Equilibrium Analysis,	Professor. Shahid Ahmed (JMI, Delhi)
	11.00 AM -11.15AM	--	TEA BREAK	--
	11.15 PM -12.45PM	SESSION-25	Evaluation of Regional Trade Agreements. General Equilibrium Analysis,	Professor. Shahid Ahmed (JMI, Delhi)
	12.45 PM -02.00 PM	--	LUNCH	--
	02.00 PM - 03.30PM	SESSION-26	Quantitative Analysis of International Trade	Dr. S.K. Mathur (HSS, IITK)
	03.30 PM - 03.45PM	--	TEA BREAK	--
	03.45 PM - 05.15PM	SESSION-27	Gravity Modeling and Theories of International Trade	Dr. S.K. Mathur (HSS, IITK)
Date	Time	Session	Topic	Instructor Name
Day 8 17.12.2014	09.30 AM -11.00AM	SESSION-28	Impact of Trade on Wage Inequality, Poverty, Employment and Growth	Dr. Archana Srivastava (BITS PILANI, Hyderabad)
	11.00 AM -11.15AM	--	TEA BREAK	--
	11.15 AM -12.45PM	SESSION-29	Detailed Analysis Of Indian Trade-Fluctuations And Swings	Dr. S.L.Chakravarty(St. Xaviers College, Kolkata)
	12.45 PM - 02.00 PM	--	LUNCH	--
	02.00PM - 03.30PM	SESSION-30	Detailed Analysis Of Indian Trade-Fluctuations And Swings	Dr. S.L.Chakravarty(St. Xaviers College, Kolkata)
	03.30 PM - 03.45PM	--	TEA BREAK	--
	03.45PM -05.15PM	SESSION-31	FDI Issues. Theory and Empirics	Dr. Bikash R. Mishra (NIT Rourkela)
Date	Time	Session	Topic	Instructor Name
Day 9 18.12.2014 (FB 620)	09.30Am - 12.00PM	SESSION-32, 33	CGE in Trade (Skype Lecture)	Dr. Badri Narayanan,Purdue University, USA
	12.00 PM - 02.00PM	--	LUNCH	--
	02.00PM - 03.30PM	SESSION-34	Trade in Climate Smart Goods	Dr. S.K. Mathur (HSS, IITK)
	03.30 PM - 03.45PM	--	TEA BREAK	--
	03.45PM -05.15PM	SESSION-35	Feedback session, Presentation by Participants and Discussion on topics related to Frontier Areas in Trade and Econometrics	-
Date	Time	Session	Topic	Instructor Name
Day 10 19.12.2014	09.30 AM -11.00AM	SESSION-36	Trade and Environment	Dr. P.M. Prasad (HSS, IITK)
	11.00 AM -11.15AM	--	TEA BREAK	--
	11.15 AM -1:30PM	SESSION-37	Social Media Analytics with a Focus on Text Analytics& Application of Statistical Models in Business	Mr. Venkateshwarlu Sonathi (NOVARTIS, Hyderabad)
	1:30 PM -02.00 PM	--	LUNCH	--
	02.00 PM - 03.30PM	SESSION-38	Four Generation of Models of Financial Crisis	Prof. Naushad Ali Azad (JMI, Delhi)
	03.30 PM- 03.45PM	--	TEA BREAK	--

	03.45 PM - 05.15PM	SESSION-39	Financial Crisis. Causes and Cures	Prof. Naushad Ali Azad (JMI, Delhi)
	05.15PM -05.30PM			
Date	Time	Session	Topic	Instructor Name
Day 11 20.12.2014	09.30AM -11.00AM	SESSION-40	WTO Issues like TRIPS, GATS, IPR and India's Position in Trade Negotiations	Dr. Pralok Gupta (CWS, IIFT Delhi)
	11.00 AM -11.15AM	--	TEA BREAK	--
	11.15AM -12.45PM	SESSION-41	WTO issues like TRIPS, GATS, IPR	Dr. Pralok Gupta (CWS, IIFT Delhi)
	12.45 PM -02.00 PM	SESSION-42	Valedictory Address	Prof. Amita Batra (JNU, Delhi)/Dr S.K.Mathur
	02.00 PM - 03.00PM	--	SpecialLunch @ VH Lounge, Outside PBCEC Hall	--
	03.00 PM -04.00 PM	Vote of Thanks	Certificate Distribution and Conclusion	HOD, HSS/Prof. K.K. Saxena/Dr. P.M. Prasad /Dr. S.K. Mathur/Director/Dean/Head,CDTE



UPENDRA DAS



INDRANIL MANNA



S.K.M.



