



SEVEN DAY FACULTY UPGRADATION WORKSHOP

EXPLORING SPACE:

AN INTRODUCTION TO SPATIAL STATISTICS & ECONOMETRICS

ECONOMICS DEPARTMENT, PRESIDENCY UNIVERSITY

22 - 29 AUGUST 2022

Motivation: Conventional statistical or econometric methods assume that space is uniform and does not affect the relationship between socio-economic variables. Spatial dependence and heterogeneity, however, may cause standard econometric techniques to become inappropriate. Spatial models enable us to examine issues like spatial variations in socio-economic phenomenon, underlying causes of spatial patterns, neighborhood or spill-over effects, etc.

Objective: The objective of this course is to cover the statistical and econometric techniques required for spatial analysis. Exploratory spatial statistics will help participants to plot socio-economic phenomenon over space, identify spatial patterns, measure diffusion over space and estimate spatial correlation. Spatial econometrics, on the other hand, will allow participants to incorporate these effects in a regression model through an extension of the Multiple Linear Regression Model.

The program will introduce the participants to the principles of spatial analysis based on a **hands on approach** and employing **menu driven open source software** (GeoDa and DIVA GIS).

Approach: The program will be divided into four components: special lectures, theory, lab sessions and 'do it yourself' assignments. There will be 14 sessions of 2 ½ hours each. The focus will be on learning by doing. Lab sessions will include demonstration of the software capabilities, followed by simple exercises.

Resource persons: Special lectures will be given by Prof. Kiranmoy Das, Applied Statistics Division, ISI Kolkata, Prof. Bhaswati Ganguli, Statistics Department, Calcutta University and Prof. Manisha Chakrabarty, IIM Calcutta. The course will be covered by Prof. Zakir Husain and Prof. Mousumi Dutta of the Economics Department, Presidency University.

Target group: The program is intended for young faculty, research scholars and second year postgraduate students of Economics, Statistics, and Geography. After completing the program, participants will be able to apply spatial techniques in their research. Faculty will also be able to guide their students in using such methods in UG and PG level dissertations.

Application: Interested participants should email presiecon2019@gmail.com by **12th August 2022** stating their names, email, telephone number, designation and institutional affiliation. Seats are limited to 30 participants. A **Certificate of Participation** will be given to all registered participants on completion of the Workshop.

Course fee: The course fee will be Rs. 1,700 + GST @ 18% (Rs.306) = **Rs. 2,006/=**. It will have to be paid vide bank transfer to Presidency University. Details will be notified after application. The course fee will cover brown bag lunch, tea/coffee and nibbles, and course material. We regret that we are unable to provide accommodation, or cover TA/DA expenses of participants.

Date: The Faculty Upgradation Workshop will be held between 23 - 29 August 2022. The tentative program is given below.

TENTATIVE PROGRAMME

Date	Pre-lunch session: 10.30 – 1.15	Post lunch session: 2.00 – 4.45
23 August	Inauguration: Head, Economics Introduction to Spatial Statistics: Prof. Bhswati Ganguli, Calcutta Univesrity	Spatial analysis: What? Why? Spatial data wrangling: Spatial data files, merging files, selecting spatial units, adding layers
24 August	Basic mapping: Types of maps, exploring spatial patterns using maps; Introduction to spatial weights	Spatial autocorrelation: Global Moran's I, Correlogram, Local Indicators Spatial Analysis (LISA) maps, Gettis-Ord $G_i^*(d)$, Geary multivariate analysis; space time exploration
25 August	Cluster analysis: Heat maps, DBSCAN and HDBSCANS	Spatial regression: Part 1
26 August	Spatial regression: Part 2	Applications of Spatial Analysis: Prof. Manisha Chakrabarty, IIMC (TBC)
27 August	Spatial regression: Lab session	Analyzing your own way
28 August	Recapitulation	
Introduction to Bayesian		
29 August	Econometrics: Prof. Kiranmoy Das, ISI Kolkata	Wrapping up and valedictory session

Important dates

Last date for application: 12 August 2022 (Friday)

Last date for paying registration fees: 18 August 2022 (Thursday: 11.59 PM)

RESOURCE PERSONS

Prof. Kiranmoy Das

Applied Statistics Department, Indian Statistical Institute Kolkata

Prof. Das had undertaken his Ph.D. from Penn State University. After working as an Assistant Professor in the Department of Statistics of Temple University, Philadelphia, USA (2011-1013) and Presidency University, Kolkata, India (2013-2014), he joined ISI Kolkata. His research interests are Statistical Genetics; Longitudinal Data Analysis; Bayesian Semiparametric methods; Wireless Sensor Networks.



Prof. Bhaswati Ganguli,

Statistics Department, Calcutta University

Prof. Ganguli is a Ph.D. from School of Public Health, Harvard University. She is also Adjunct Professor in Public Health Foundation of India. Her research interests are Statistical literacy via R and e-learning; Biostatistics; Smoothing and spatial models; Semiparametric and Mixed models; Environmental modelling. Functional Data Analysis with applications to gait.

Prof. Manisha Chakrabarty,

Economics Group, Indian Institute of Management Calcutta

Prof. Chakrabarty is a Ph.D. from Indian Statistical Institute Kolkata. Her research interests are Microeconometrics, Applied Macroeconomics, Demand Analysis, Inequality, Gender Bias & Income distribution, Economics of Education and Human Labour, Empirical Finance





Prof. Zakir Husain,

Economics Department, Presidency University

Prof. Husain has undertaken his Ph.D. from Calcutta University. At present he is working on intimate partner violence, family and marriage, and mental health.

Prof. Mousumi Dutta,

Economics Department, Presidency University

Prof. Dutta is a Ph.D. from Calcutta University. She specializes in Econometrics. Currently, she is working in the areas of Reproductive Health, Gender and Mental Health.

