REPORT ON SPECIAL LECTURE

Date: 30/06/2022 (Thursday)

Lecture Name: "Statistical Techniques, Sampling and Spatial Applications"

Venue: Diamond Harbour Women's University

Platform: Online mode (Google Meet): https://meet.google.com/trb-xnsj-xyy?hs=224

Delivered by: Prof. Saibal Kar

On 30th of July, 2022 (Thursday), a special Lecture programme has been organized by the Department of Geography from 10.30 a.m. through online mode amidst the disastrous COVID-19 pandemic situation. It's been an honored moment that the department got Prof. Saibal Kar, Professor, Department of Economics and Director (Hony.), ICSSR (ERC), as the Speaker of the day. Prof. Kar delivered his valuables lecture on **"Statistical Techniques, Sampling and Spatial Applications".** Total 72 participants including research scholars and the students of 2nd and 4th semester have attended this special lecture.

Professor Kar has elaborately explained the science of Spatial statistics. Spatial statistics span many disciplines, with methods varying in relation to the specific research questions being addressed, whether predicting ore quality in mining, examining suspiciously high frequencies of disease events, or handling the vast data volumes being generated by GPS (global positioning system) and satellite remote sensing. A unique featureof spatial data is that geographical location provides a key shared either exactly or approximately between data sets of different origins. Census data can be overlayed over patient or customer data; environmental data can be integrated with disease frequencies; problems which hitherto did not admit ready empirical testing are becoming approachable Itis an area of spatial analysis that has grown significantly in the last twenty years. It encompasses an impressive array of sophisticated methods and techniques for visualization, exploration and modeling of spatial data. He has also explained the spatial regression in lucid language. Regression is often used in analysis of spatial data to obtain predictive relationships between variables. The assumption that the errors from the regression model are statistically independent will often not be plausible, due to spatial dependence in the sources of error. This is a problem for the

regression analysis resulting in estimation of the standard deviation of the errors from the model is biased (downwards) which invalidates confidence limits on predictions made with the model, and which could lead to a false conclusion that the regression is statistically significant. While the estimates of the regression coefficient(s) are not necessarily biased they are not minimum-variance estimates when the errors are correlated. Regression is used to estimate an equation for predicting a dependent variable from values of one or more independent variables.. The most useful applications of regression analysis are where the independent variable(s) can be rapidly collected at low unit cost by comparison to the dependent variable. A limited number of costly observations of the dependent variable may then be used to compute the regression equation, which is then applied to predict the dependent variable for all locations where the independent variables are measured. There are many examples of this application of regression analysis. Variables computed from digital elevation models have served as independent variables to predict soil properties, crop yields and air temperatures. Remote sensor data have been used as the independent variables to predict vegetation variables, water quality and forest resources. Regression has been used to predict soil salinity (measured directly by auger sampling and laboratory analysis) from measurements of electromagnetic induction.

An exhaustive interactive session has been continued for one hour and Prof. Kar has clarified all queries of students and scholars regarding sampling and statistical techniques. It must be mentioned that the students and scholars are definitely enriched from such a valuable, informative and commendable lecture of Prof. Saibal Kar.