JOINT PROGRAM IN SURVEY METHODOLOGY

May 11-13, 2026.

Title of the short course:

Small Area Estimation

Name and contact information of the instructor:
Dr. Santanu Pramanik, Lead Statistician, Economics and Statistics Unit (ESU), Centre for Effective Governance of Indian States (CEGIS), New Delhi, India

E-mail: santanu@cegis.org
Website: https://www.cegis.org/santanu-pramanik

Description of course:

The demand for various socio-economic and health statistics for small geographical areas is steadily increasing at a time when survey agencies are constantly looking for ways to reduce costs to meet fixed budgetary requirements. In the current survey environment, the application of standard sample survey methods for small areas, which require a large sample, is generally not feasible when considering the costs. One of the key factors that led to the success of small area estimation (SAE) methodology is the availability of strong auxiliary variables. The accessibility of Big Data from different sources (e.g., administrative/register records, social media data, mobile phone data, sensor data, satellite date, etc.) is now bringing new opportunities for statisticians to develop innovative SAE methods. We will begin the course by presenting a brief history of small area estimation, basic concepts and issues. Then we will discuss different existing methods for producing small area estimates with examples. We will illustrate available R packages for data analysis. Active participation from the attendees will be strongly encouraged.

Proposed course length:

Three-days
Monday – Tuesday: 9:15AM - 2:15PM EST
Wednesday: 9:15AM - 12:30PM EST

Course Text and Materials:

The course will be based on the presenter's lecture slides.

Target Audience and Prerequisites:

The course is intended for practitioners and should be accessible to graduate

students and early career researchers. An undergraduate level course in mathematical statistics and applied regression analysis are required.

Course content

1. Introduction
2. Direct Estimation
3. Synthetic Methods
4. Area Level Models
5. Unit Level Models
6. SAE R packages

Presenter

Dr. Santanu Pramanik works as the Lead Statistician with the Economics and Statistics Unit (ESU). Prior to joining CEGIS, he held various roles across esteemed organizations, including Research Director, LEAD at Krea University; Senior Fellow, NCAER & Deputy Director, NCAER National Data Innovation Centre; Research Scientist, Public Health Foundation of India; Survey Statistician, NORC at the University of Chicago.

He holds a PhD in Survey Methodology from University of Maryland, USA and a Masters in Statistics from the University of Calcutta.

With over 15 years of professional experience, Santanu specializes in evaluation studies, sampling techniques, survey weights, questionnaire design, and the assessment of both sampling and non-sampling errors. His expertise also extends to small area estimation, innovative modes of data collection, and remote monitoring of data collection activities methods. Santanu is passionate about combining multiple data sources to enhance data-based research and policy making.

Agenda:

Monday: May 11, 2026

9:15 - 10:15 Introduction
10:15-10:30 Discussion
10:30 - 10:45 Morning Break.
10:45 - 11:45 Direct Estimation
11:45 - 12:00 Discussion
12:00 - 1:00 Lunch Break
1:00 - 2:00 Synthetic Methods
2:00 – 2:15 Discussion

Tuesday: May 12, 2026

9:15 - 10:15 Area Level Models
10:15-10:30 Discussion
10:30 - 10:45 Morning Break.
10:45 - 11:45 Area Level Models
11:45 – 12:00 Discussion
12:00 - 1:00 Lunch Break
1:00 - 2:00 Unit Level Models
2:00 – 2:15 Discussion

Wednesday: May 13, 2026

9:15 - 10:15 Unit Level Models
10:15-10:30 Discussion
10:30 - 10:45 Morning Break
10:45 - 11:45 SAE R packages
11:45 – 12:30 Discussion