ECONOMICS STUDY GROUP SEMINAR

Dr. Sudipta Roy  
St Francis College of Business & Health Administration

shall present

“At the Intersection of Teaching and Scholarship: In-class Experiments to Illustrate Inferential Statistics and Statistical Process Control”

Abstract
An in-class experiment – akin to lab experiments in the physical sciences – was designed to illustrate hypothesis testing and confidence intervals in a statistics class. The product of choice was the ubiquitous (boxes of) toothpick(s). The experiment was conducted over several semesters. The distribution of the number of toothpicks per box was found to display significant variation from one semester to the other. More often than not, the null of a two-tailed hypothesis test based on the printed count label was rejected. Confidence intervals also varied considerably. Over time, the individual samples collected each semester resulted in a relatively large data set comprising repeated samples from the same population. This created an opportunity to use the data set to illustrate Statistical Process Control (SPC), a commonly used method of quality control applied to monitor and control a process. Control charts revealed a toothpick manufacturing process that was out of control, both at the “making” stage analyzed in terms of the number as well as proportion of defective toothpicks per box, and the “filling” stage analyzed in terms of the number of toothpicks filled per box.

The presentation will document the evolution of this project from lesson plan to scholarly initiative. Spanning a big segment of my teaching career, what started as a simple hands-on experiment to make inferential statistics fun has yielded multiple publications as new ideas have spawned out of existing ones. The narrative should appeal to a wide audience: students seeking teaching positions may find the pedagogical aspect interesting, while the intertwining of teaching and scholarship may appeal to those desiring a career in research. Aspiring business students may likewise enjoy the SPC piece. That a commonly used household product can tell us myriad fascinating stories should be intriguing for all.

Date: Monday, 17th June 2019
Time: 3 pm

Venue: CSSSC’s Seminar Room, Patuli Campus

All are welcome to attend.

Dr. Sattwik Santra  
(Convener, Seminar Sub-Committee)