ECO2400 Econometrics, Part I

Course Goal: This is the first half of ECO2400 for Fall 2020. This half covers some basic statistical concepts and discusses some main estimation methods and their theoretical properties. Due to the special circumstances of COVID-19, we will be delivering this course in the format of online-asynchronize. Videos of the lectures (roughly 4 hours each week) will be uploaded to Quercus.

Instructor: Jiaying Gu (`jiaying.gu@utoronto.ca`), Room 270

Virtual Office Hours: By appointment

TA: Chris Dobronyi (`christopher.dobronyi@mail.utoronto.ca`).

TA virtual office hours: To be announced.

Reference: 1. Statistics and Econometric Models (Gourieroux and Monfort [GM], 1995).
2. Econometric Theory and Methods (Davidson and MacKinnon [DM], 2004)

Course work : This part of the course consists 2 problem sets and 1 midterm exam [held online, details to be announced].

Privacy and Use of course materials The videos posted on the course portal are not supposed to be made public.

Course Contents :

1. Introduction ([GM] Ch. 1-2)
   a) Statistical model, estimator, comparison of estimators
   b) Statistical Decision Theory (e.g. treatment assignment)
2. Sufficient statistics and its application in Econometrics ([GM] Ch 3.1 and some other added material)
3. Statistical information ([GM] Ch. 3)
4. Unbiased Estimation ([GM] Ch. 5-6, [DM] Ch. 2)
5. Estimation for regular models
   a) Best Unbiased estimator
   b) Best Linear Unbiased estimator
   c) Extreme estimator
6. Estimation for irregular models

7. Simultaneous equation system
    a) Instrumental Variable methods
    b) Weak IV robust inference
    c) Two Sample IV method.
8. Optional [if time permits]
    a) Quantile regression, Mixture Models
    b) Optimization: Linear Programming, Convex Programming, Constrained optimization
    c) Shrinkage estimator: Ridge, Stein's estimator, LASSO, Pre-testing, Empirical Bayes