Econ 5280: Applied Econometrics

Department of Economics, HKUST

Instructor: Prof. Songnian Chen

Office: Room 6007

Office Hours: Friday 10:00-11:30

TA: Jun Yu, Office hours: Tuesday 9:00am-11:00am (Zoom); Email: jyuap@connect.ust.hk.

References:

A Guide to Modern Econometrics, 5th Edition, by Marno Verbeek.

J.H. Stock and M.W. Watson, Introduction to Econometrics

Wooldridge, J.: Introductory Econometrics: A Modern Approach

Hansen, B, Econometrics: http://www.ssc.wisc.edu/~bhansen/econometrics/

Fumio Hayashi: Econometrics

Econometrics with R: https://www.econometrics-with-r.org/

Course Description: This course provides an introduction to basic econometrics tools essential to empirical research. Topics covered will be given reasonably rigorous treatment. The course will largely focus on the estimation and statistical inference related to linear regression models. A brief review on matrix algebra and statistical inference will be conducted, but a basic knowledge of these materials is needed.

Course Credits: 4

Prerequisite(s): ISOM 2500, or MATH 2411 or MATH 3423

Exclusion: ECON 5300

Intended Learning Outcomes: Upon completion of this course, the student is expected to possess a reasonably solid theoretical foundation and practical knowledge in econometrics, and will be able to carry out empirical research and interpret empirical results in economics.

Teaching Approach: This course is primarily delivered through lectures, which focus on key concepts. The lectures are complemented by theoretical and applied homework assignments.

Assessment: The course requirements include homework assignments (15%), an individual project (25%), and a final exam (60%). The midterm will on Thursday, November 5, 7:30pm-9:30pm.

Course Outline:

1. Introduction (W1)

2. Matrix Algebra, Probability and Statistics Review (W1-2)

3. The Linear Regression Model (W3-W7)

   - Properties of the Least Squares Estimator

   - Hypothesis Testing with the Multiple Regression Model

   - Asymptotic Properties of the OLS Estimator

   - Model Specification

   - Heteroskedasticity and Autocorrelation

4. Endogeneity and Instrumental Variables Estimation (W8-10)

5. Panel Data Model and Difference-in-Differences (W11-12)

6. Additional Topics (W13)