

Logistics

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August 30, 2021

- ▷ Instructor: Dr.Yu Hao
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- ▷ Office: KK927
- ▷ Consultation times: Monday 10:00am – 11:00am
- ▷ Tutor: Ms. Karen Mai
- ▷ Email: maixt@hku.hk
- ▷ Consultation times: Thursday, TBA

- ▷ This course studies how practical problems can be solved by applying econometric methods.
- ▷ The emphasis is on the application of econometric methods to the analysis of real world economic data using R.
- ▷ Topics include multilinear regressions, limited dependent variable, panel data, experiments and quasi-experiments, instrumental variables, time series and forecasting, and basics of machine learning.
- ▷ Pre-requisites:
 - ◇ Solid knowledge of statistics
 - ◇ Introductory level econometric methods
 - ◇ Linear algebra

- ▷ Students are encouraged to check out student resources the publisher provides on Moodle.
- ▷ Lecture slides will be posted on the course website.
- ▷ Additional handouts will be distributed when needed to supplement the textbook.

Main textbook:

- ▷ Stock, James and Mark Watson (2018), *Introduction to Econometrics*, Global Edition, 4th ed., Pearson. (It is perfectly fine if you use the 3rd edition of this textbook.)
- ▷ Hanck, Christoph, Martin Arnold, Alexander Gerber, and Martin Schmelzer. "Introduction to Econometrics with R." University of Duisburg-Essen (2019).

Supplementary textbook:

- ▷ Jeffrey Wooldridge , *Introductory Econometrics: A Modern Approach*, Ohio : South-Western Cengage Learning.
- ▷ Bruce E. Hansen(2021) , *Introduction to Econometrics*.
- ▷ Cunningham, Scott. "Causal Inference." *The Mixtape* 1 (2020).
- ▷ Sheppard, Kevin. "Introduction to Python for econometrics, statistics and data analysis." *Self-published, University of Oxford, version 2* (2012).

- ▷ 6 Assignments in total, distributed every Saturday
 - ◇ Group work with group of maximum 3 students
 - ◇ Graded based on the best 5 assignments
 - ◇ Need to submit coding exercises, R notebook is recommended.
(Karen will help with setting up)
- ▷ Midterm (probably) on September 16th.
- ▷ Final (time and venue TBA)

▷ Week 1

- ◇ Introduction: Evidence and Policy
- ◇ Causality and Validity Probability and Statistical Theory Review (SW Ch. 2 -3)
- ◇ Introduction to Programming Language

▷ Week 2

- ◇ Bivariate Regression (SW Ch. 4 – 5)
- ◇ Multivariate Regression I & II (SW Ch. 6 - 7)

▷ Week 3

- ◇ Nonlinear Regression models: Quadratic and Logarithms (SW, Ch. 8)
- ◇ Threats to (Internal / External) Validity (SW, Ch. 9)
- ◇ Midterm

- ▷ Week 4
 - ◇ Regressions with binary dependent variables (SW, Ch. 11)
 - ◇ Regressions with panel data (SW Ch. 10; Wooldridge Ch.13-14)
- ▷ Week 5
 - ◇ Instrumental variables methods (SW, Ch. 12; Wooldridge, Ch. 15)
 - ◇ Experiments and Quasi-Experiments (Chapter 13)
- ▷ Week 6
 - ◇ Times series regressions and forecasting (SW, Ch. 14)
 - ◇ Machine Learning (material will be distributed by instructors.)