Econometrics

Department: **FISS**   **Date:**   **2022/04/01**

Course Code	ECON170034
Course Title	Econometrics
Credit	3
Credit Hours	48
Course Objectives	This course aims to provide students with a basic understanding of econometrics and its applications to both cross-sectional and panel data. After the course, students should be able to carry out simple regression analyses, including estimation and inference.
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Course Requirements: （e.g. pre-requisites）

Calculus, Linear Algebra, Probability Theory, Statistics

Teaching Methods:
Lectures (online live)

Instructor's Academic Background:
Shi Qiu is an assistant professor at the School of Economics, Fudan University. He received his Ph.D. degree in economics from Indiana University Bloomington in 2019. His research interests include econometrics, macro-econometrics, quantitative macroeconomics and computation

Course Schedule (Please supply the details about each lesson)**:**

1. Introduction
2. Probability Theory and Statistics
   a) Random variables;
   b) Population and sample;
   c) Distributions; Moments.
3. Simple Regression Model
   a) Simple linear models;
   b) Ordinary Least Square (OLS) estimator;
   c) Assumptions of OLS;
   d) Measure of fit.
4. Inference
   a) One-sided and Two-sided Hypotheses;
   b) Confidence interval;
   c) Binary explanatory variables;
   d) (Modern) Gauss-Markov theorem;
   e) t-test.
5. Regression Model with Many Regressors
   a) Omitted variable bias;
   b) Multiple regressors;
   c) OLS for multiple regression models;
   d) Multicollinearity;
   e) Joint hypothesis testing.
6. Specifications
   a) Nonlinear model;
   b) Polynomial and logarithm;
   c) Interaction between regressors;
7. Endogeneity
   a) Causes of endogeneity;
   b) Endogeneity bias;
   c) Instrumental variables (IV);
   d) Two stage least square (2SLS) method.
8. Panel Data
   a) Panel structure;
   b) Time series dimension;
   c) Fixed effect model;
   d) Estimation.
9. Binary Choice Models
   a) Binary dependent variables;
   b) Linear probability model;
   c) Logit and Probit models;
   d) Maximum Likelihood Estimation (MLE).

The design of class discussion or exercise, practice, experience and so on:

Grading & Evaluation (Provide a final grade that reflects the formative evaluation process)**:**

The course grade will be based on the performance on the problem sets and tests to be given throughout the semester (80%), and class participation (20%).

Late submission is NOT accepted. Academic integrity is expected.

Failure to comply will result to immediate failure of the course and may be subject to further investigations/penalties by the university regulations.

Usage of Textbook：□Yes(complete textbook information form below)　　√No

Textbook Information (No more than two textbooks) **:**

Title	Author	ISBN	Publishing time	Publisher	Type Ⅰ	Type Ⅱ
					□Self-compiled Textbook (Published) □Non-mainland Textbook □Other Textbook (Published)	□National Planning Textbook □Provincial and Ministerial Planning Textbook □School Level Planning Textbook □Others
					□Self-compiled Textbook (Published) □Non-mainland Textbook □Other Textbook (Published)	□National Planning Textbook □Provincial and Ministerial Planning Textbook □School Level Planning Textbook □Others

Teaching References (Including author, title, publisher, publishing time,ISBN)**:**

1. J. Stock, M. Watson, Introduction to Econometrics, Pearson, 2019

2. J. Wooldridge, Introductory Econometrics: A Modern Approach, Cengage Learning, 2019

3. J. Wooldridge, Econometric Analysis of Cross Section and Panel Data, Massachusetts Institute of Technology, 2010

Table column size can be adjusted according to the content.