

Econometrics I
Course Syllabus - Fall 2025

Instructor: Lai, Jing-Yi (賴靖宜)	Lecture time: 9:10 AM - 12:00 PM, Wed. (3, 4, 5)
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Course Information

Aims and objectives

The aim of this course is to provide the necessary econometrics foundation that would allow students to further their understanding in modern quantitative research in finance and develop appropriate research strategy to investigate the relevant research problems.

Although students are not expected to derive major theoretical results in this course, they are expected to be able to understand the underlying assumptions associated with each technique. More importantly, students should be able to demonstrate the appropriate use of these techniques under a wide range of empirical and practical circumstances.

Prerequisites

The prerequisite subject for this course is Mathematical Statistics. In addition, I will assume students have a working knowledge of one or more econometrics software, such as EViews, STATA, GAUSS, R, Python, MATLAB, RATS, SAS, SPSS, LIMDEP..., etc.

Required text

Gujarati, D. (2014), *Econometrics by Example*, 2nd ed., Palgrave Macmillan, ISBN 978-1-137-37502-5.

Wooldridge, J. M. (2020), *Introductory Econometrics: A Modern Approach*, 7th edition, Thomson South-Western, ISBN 978-981-48-6608-8.

Brooks, C. (2019), *Introductory Econometric for Finance*, 4th edition, Cambridge University Press, ISBN 978-1-108-43682-3.

Other useful references

Enders, W. (2014), *Applied Econometric Time Series*, 3rd edition, Wiley, ISBN 978-0-470-50539-7.

Miller, I., and M. Miller (2018), *John E. Freund's Mathematical Statistics with Applications*, 25th edition, Prentice Hall of India, ISBN 978-0-134-99537-3.

Homework

The purpose of the assignments is to provide the student with an opportunity to practice the art of problem solving - both manual and computer-assisted. The answers are supposed to be written up neatly and turned in when due. Every missed assignment receives a grade of zero unless explicitly exempted by the instructor.

Examinations

The purpose of the in-class examinations is to explore the extent to which each student has worked to master the basic concepts of the econometrics models presented to date. Each exam will be announced in advance.

Grading

The grading components will be as follows:

Homework	60%
Examinations	30%
Class attendance	10%

Course outline and (tentative) schedule

The course will include a selection of the following topics:

<u>DATE</u>	<u>TOPICS</u>	<u>TEXT</u>
	■ PART 1 Regression Analysis with Cross-Sectional Data	
9/10, 17	The linear regression model: An overview	CH 1
9/24	Functional forms of regression models	CH 2
10/1, 8	Qualitative explanatory variables regression models	CH 3
	The logit and probit models	CH 8*
10/15	Regression diagnostic I, II: Multicollinearity, heteroskedasticity	CH 4, 5
10/22, 29	Regression diagnostic IV: Model specification errors	CH 7
	Stochastic regressors and the method of instrumental variables	CH 19
	< Problem Set 1 >	
	■ PART 2 Regression Analysis with Time-Series Data	
11/5	Stationary and nonstationary time series	CH 6, 13
11/12, 19	Univariate time Series modeling and forecasting	CH 16
11/26	Asset price volatility: the ARCH and GARCH models	CH 15
12/3	Multivariate time series analysis: VAR	
	< Problem Set 2 >	
	■ PART 3 Advanced Topics	
12/10, 17	Panel data regression models: fixed effects, random effect, the Hausman tests	CH 17
	< Problem Set 3 >	
12/24	Final Examination	

* Optional

Miscellaneous issues

Outlines for each lecture (power point version) will be downloadable from the e-course website and are available, presumably, a week before the class. It is worthy of noticing, however, that students are strongly recommended to read through the relevant chapters in the textbooks.

Please note that the class syllabus is a dynamic document. That is, except for the respective grade distribution across items, the class syllabus is subject to small augmentation and adaptation as the semester progresses.