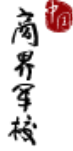# Course Code

Module 3 2024-2025

Course Information

Instructor: Cindy Wang
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Office Hours: Monday and Thursday 15:30 to 16:30

Teaching Assistant: Wen Sheng Li
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Classes:
Lectures: Monday and Thursday: 10:30 to 12:20.
Venue: Room 312.313

Course Website:
If any.

1. Course Description

1.1 Context

Course overview:

This is an econometrics class at the graduate level to understand the theoretical support of commonly empirical applications.
Econometrics analysis is a useful tool to explain the real world, such as the fields of management, marketing, economics, finance, etc. The goal of this course is to help students understand how to examine the correlation among several variables through tests and estimations and further catch the forecasting and factor model schemes, of course, and some machine learning issues and long memory data issues.

Prerequisites:

Students are assumed to have already taken "Introduction to Statistics" and should know basic linear algebra and calculus.

1.2 Textbooks and Reading Materials

(1) Hurn, S., Martin, V., Phillips, P. and J. Yu "Financial Econometric Modelling", OUP USA, 1st edition, 2020. ISBN-10: 0190857064, ISBN-13: 978-0190857066. (FEM henceforth).

(2) Asteriou, D. and S.G. Hall, "Applied Econometrics", Palgrave MacMillan, 2nd edition, 2011, Dimitrios Asteriou and Stephen G.Hall (2007) ISBN-10: 0230271820, ISBN-13: 978-0230271821 (AE henceforth)

(3) My lecture notes 1-10.

(4) Several Papers to read

2. Learning Outcomes

2.1 Intended Learning Outcomes

Learning Goals	Objectives	Assessment (YES with details or NO)
1. Our graduates will be effective communicators.	1.1. Our students will produce quality business and research-oriented documents.	Yes – classroom
	1.2. Students are able to professionally present their ideas and also logically explain and defend their argument.	Yes – presentation
2. Our graduates will be skilled in team work and leadership.	2.1. Students will be able to lead and participate in group for projects, discussion, and presentation.	Yes - presentation
	2.2. Students will be able to apply leadership theories and related skills.	No
3. Our graduates will be trained in ethics.	3.1. In a case setting, students will use appropriate techniques to analyze business problems and identify the ethical aspects, provide a solution and defend it.	Yes – final project and presentation
	3.2. Our students will practice ethics in the duration of the program.	No
4. Our graduates will have a global perspective.	4.1. Students will have an international exposure.	No
5. Our graduates will be skilled in problem-solving and critical thinking.	5.1. Our students will have a good understanding of fundamental theories in their fields.	Yes - classroom
	5.2. Our students will be prepared to face problems in various business settings and find solutions.	Yes
	5.3. Our students will demonstrate competency in critical thinking.	Yes – final project and presentation

2.2 Course specific objectives

The objective of this course is to help students understand the theoretical framework and underlying estimation results in the classical linear regressions and its main departures and

then apply them to real applications.

2.3 Assessment/Grading Details:

Assessment Task	Weighting
In-class Participation	10%
Presentation and Oral Exam	15%
Midterm Exam	40%
Final Project	35%
Total	100%

In-class Participation:

Attendance is required, and all students are expected to actively participate in the class discussions.
Attendance is required, and everyone is expected to actively participate in the class discussions. Creativity is necessary to be asked for the final project.

Problem Sets:
Plagiarism is strictly punished. Late submission is unacceptable and will not be graded. Problem sets contain computational exercises. Instructions and deadlines about the problem sets will be provided later by the instructor and available on the course management system.

Midterm Exam:

The midterm will be opened book. Calculators are permitted, except those with word-processing capabilities. Cell phones are not allowed as calculators. No formulas will be provided, and no cheat sheet is allowed in the midterm exam. The midterm exam will be held on May 31, 2024 (Friday).

Presentation and Oral Exam

TBA

Final Exam:

The final exam will include a final project. Instructions and deadlines for the final project will be announced by the instructor.

2.4 Academic Honesty and Plagiarism

It is important for a student's effort and credit to be recognized through class assessment. Credits earned for a student work due to efforts done by others are clearly unfair. Deliberate dishonesty is considered academic misconducts, which include plagiarism; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement;

or altering, forging, or misusing a University academic record; or fabricating or falsifying of data, research procedures, or data analysis.

All assessments are subject to academic misconduct check. Misconduct check may include reproducing the assessment, providing a copy to another member of faculty, and/or communicate a copy of this assignment to the PHBS Discipline Committee. A suspected plagiarized document/assignment submitted to a plagiarism checking service may be kept in its database for future reference purpose.

Where violation is suspected, penalties will be implemented. The penalties for academic misconduct may include: deduction of honour points, a mark of zero on the assessment, a fail grade for the whole course, and reference of the matter to the Peking University Registrar.

For more information of plagiarism, please refer to *PHBS Student Handbook*.

3. Topics, Teaching and Assessment Schedule

(1) Week 1 (17/2/2025 and 20/2/2025) Basic Statistics and Probability, I.I.D, correlation and systemic risk indicators (notes 1, 3 and 4, chapter 2 of textbook FEM, related papers).

(2) Week 2 (24/2/2025 and 27/2/2024) (i) Basic Statistic and Probability: mean squared error, sampling, and population, the concept of consistency and inequalities; central limit theorem (ii) Regression model, AR approximation and the long run variance (notes 4-6 and Chapter 5 of textbook AE and Chapter 3 of Textbook FEM, related papers).

(3) Week 3 (3/3/2025 and 6/3/2025) Forecasting issues, including forecast combination and weights, model average model, long memory (notes 7-8, Chapter 7 of textbook FEM, relevant papers)

(4) Week 4 (10/3/2025 and 13/3/2025), Imbalanced Regression, Cointegration and Fractional cointegration, long memory (notes 9, chapter 6 of textbook FEM, related papers)

(5) Week 5 (17/3/2025 and 20/3/2025) Factor models and panel data (notes 9-10 and chapters 13 and 14 of textbook FEM, related papers),

(6) Week 6 (24/3/2025 and 27/03/2025) Factor models and panel data (notes 9-10 and chapters 14 and 14 of textbook FEM) and Midterm

(7) Week 7 (31/03/2025 and 03/04/2025) Multivariate Models and volatility issues (Chapter 12 of textbook FEM, related papers)

(8) Week 8 (07/04/2025 and 10/04/2025) presentations (comments on the proposal of final projects) and course review, related papers.

(9) Week 8 (14/04/2025 and 17/04/2025) presentations (comments on the proposal of final projects) and course review, related papers.