ECON500
Business Math: Statistics
Module 1, 2024

Course Information

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Office Hour: Wed: 2:00-3:30/Tue 11:30-12:30

Teaching Assistant: Zhang, Wenrui
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Classes:
Lectures: Session E/F: THU 8:30-10:20; Session M: THU 1:30-3:20
Venue: PHBS Building, Room

1. Course Description

1.1 Context

Course overview: The course is intended to be a refresher of math knowledge that students have learned during undergraduate studies or elsewhere. The concepts of statistics will be reviewed using simple regression model. This will also provide a good preparation to your next econometric course.

Prerequisites: None

1.2 Textbooks and Reading Materials
Stock, James and Mark Watson (2013): Introduction to Econometrics.
Chapter 2-5, Apdx 17.1, 17.2, 18.1, 18.2.
Basic Statistics, PPT written by Prof Zhao, LX.

2. Learning Outcomes

2.1 Intended Learning Outcomes

Learning Goals	Objectives	Assessment
1. Our graduates will be effective communicators.	1.1. Our students will produce quality business and research-oriented documents.	YES
	1.2. Students are able to professionally present their ideas and also logically explain and defend their argument.	YES
2. Our graduates will be	2.1. Students will be able to lead and	NA

skilled in team work and leadership.	participate in group for projects, discussion, and presentation.	
	2.2. Students will be able to apply leadership theories and related skills.	NA
3. Our graduates will be trained in ethics.	3.1. In a case setting, students will use appropriate techniques to analysis business problems and identify the ethical aspects, provide a solution and defend it.	NA
	3.2. Our students will practice ethics in the duration of the program.	YES
4. Our graduates will have a global perspective.	4.1. Students will have an international exposure.	NA
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
	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

2.2 Course specific objectives

Learn basic statistics for further study in Econ and Finance.

2.3 Assessment/Grading Details

Attendance (10%), Midterm (40%) and a final exam (50%).

Ten percent of total grade will be deducted for absence without permission.

No laptop computer is allowed in the classroom.

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

Introduction to Statistical Theory:

Probability Theory (Probability space/random variable/CDF/Special DF) and Statistical Inference (Part A-Part E below).

Part A Model Specification: The Linear Regression with a Single Regressor.

Assumption 1: Conditional distribution; Assumption 2 iid; Assumption 3 finite fourth moments.

Part B: Parameter Estimation:

Intercept and slope parameters; Parametric probability models (continuous vs discrete rv); normal distribution; bivariate normal distribution; Poisson distribution, exponential distribution; logistic distribution. Ordinary least squares; Maximum Likelihood. Consistency and LLN; Efficiency.

Part C: Sampling distribution:

Sampling distribution of OLSE under finite N; Central Limit theorem; Asymptotic distribution of OLSE.

Part D. Hypothesis Testing and Confidence Interval:

Simple null vs simple alternative hypothesis; Type I and type II error. Two-sided test; one-sided test; Critical region and the p-value; interval estimation.

Part E. Prediction

4. Miscellaneous

There are three kinds of lies: lies, damn lies and statistics.