

ECON 2121A

Methods of Economic Statistics

1st Term/ Autumn, 2023-2024

Lecture Hours and Location:

Tuesdays 2:30 PM - 5:15 PM at Li Koon Chun Hall LT1 Dates: 5/9, 12/9, 19/9, 26/9, 3/10, 10/10, 17/10, 24/10, 31/10, 7/11, 14/11, 21/11, 28/11 Instructor:

GHOSH, SAMBUDDHA ELB, Economics <u>sghosh03d@yahoo.com</u>

Teaching Assistants:

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Course Description and Objective:

This course studies statistical concepts and their applications. Major topics include: descriptive statistics; probability distributions; sampling; estimation; hypothesis testing; correlation and regression analysis. Students should have knowledge of elementary differential and integral calculus, and are advised to take ECON1111 before taking this course. Upon successful completion of this course, students should demonstrate their mastery of the fundamentals of statistics, develop their statistical thinking and reasoning skills, and feel comfortable applying statistical techniques to data using R.

Recommended Books: Devore, *Probability and Statistics for Engineering and the Sciences*, 9^{th} edition, Cengage Learning (The 8th edition of this textbook is okay too). Dalpiaz, *Applied Statistics with R* (manuscript freely available with Google, R reference) Dasgupta, *Graduate-level Statistics* (selected advanced material to be distributed on BB) Other materials such as slides and notes will be made available as the class progresses.

Course Assessment Scheme:

In-class and homework exercises 30% Mid-term 30% Final 40%

Course Activities:

Tutorials and Problem Sets

Problem sets/ Homework will be posted on Blackboard as we go along. It is an essential adjunct to the lecture material, and will assist you in preparing for the exams. Therefore, it is very important that you work on your own before the tutorial class. Tutorials will start in the third week. It will go through some of the assignments and discuss R hands-on. Homework is to be submitted in **groups of 2 to 3**.

In-class and computer exercises

There will be a few in-class exercises, involving computers or simply pen and papers. The computer language/ application of choice is R. In the lectures the theory of R will be taught; all students should bring **pen and paper to class**; they may be required to submit the in-class paper exercises. Students should bring their **laptops to the tutorial sessions** for hands-on experience with R. **No makeup** for in-class and computer exercises.

Exams:

Please note carefully the date, time and venue of exams. There will be either a long mid-term in week 7 or 8, or two smaller midterms spanning a half class each – **exact arrangement TBA**. There will be **no makeup exam** for the mid-term. This is **not negotiable**. If you miss the mid-term, due to a documented illness or emergency or have received my approval prior to the mid-term exam, your final exam score will receive the weight of the mid-term in addition to its own weight. (In case of two midterms, the weight of one will be transferred to the other one.) The **final will be arranged by the University** later, please observe the date and venue. The University has very strict regulations on how the final exam works. So please make sure you can make it.

Course Content and Tentative Schedule: (tentative, 1 week earmarked for exam)

- 1. Data and Descriptive Statistics: Link to Week 1
- 2. Introduction to Probability
- 3. Random Variables
- 4. Moments
- 5. Discrete Probability Distributions
- 6. Continuous Probability Distributions
- 7. Transformations
- 8. Sampling and Sampling Distribution
- 9. Point and Interval Estimation
- 10. Hypothesis Tests
- 11. More on Inference
- 12. Simple Linear Regression

Grade Descriptions

A / A- Outstanding/Generally outstanding performance on all learning outcomes.

- **B+** / **B** / **B-** Substantial performance on all learning outcomes, OR high performance on some learning outcomes which compensates for less satisfactory performance on others, resulting in overall substantial performance.
- C+ / C / C- Satisfactory performance on the majority of learning outcomes, possibly with a few
- **D**+ / **D** Barely satisfactory performance on a number of learning outcomes
- **F** Unsatisfactory performance on a number of learning outcomes, OR failure to meet specified assessment requirements.

Notes:

Course notes and announcements will be posted on the class Blackboard. Please check frequently. (https://blackboard.cuhk.edu.hk)

- Attention is drawn to University policy and regulations on honesty in academic work, and to the disciplinary guidelines and procedures applicable to breaches of such policy and regulations. Details may be found at http://www.cuhk.edu.hk/policy/academichonesty/.
- With each assignment, students will be required to submit a signed declaration that they are aware of these policies, regulations, guidelines and procedures. For group projects, all students must sign. For assignments in the form of a computer-generated document that is principally text-based and submitted via **VeriGuide**, the statement, in the form of a receipt, will be issued by the system upon students' uploading of the soft copy of the assignment. Assignments without the receipt will not be marked by teachers. Only the final version of the assignment should be submitted via **VeriGuide**.