

**SOCI 2004: Social Statistics**  
2<sup>nd</sup> term, 2025-26  
Thursdays 9:30 – 11:15 am  
Chung Chi College Lib CK TSE

Instructor: Jin Lei

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**Course overview**

This course introduces the basic principles of statistical reasoning and its applications in social research. The objectives are to understand the basic assumptions of statistical methods and to interpret statistical findings in real-life data. Emphasis will be given to those descriptive and inferential methods that are frequently used for analysing relationships among social variables and for testing social theories and hypotheses.

**Course objectives**

Throughout this course, you will learn to:

- Calculate and interpret commonly used statistics.
- Use statistics to evaluate sociological questions and problems.
- Access sociologically relevant information from real-life data.
- Become proficient in performing calculations by hand and through the use of a commonly used statistical software package (R).

When you have successfully completed this course, you will be able to:

- Critically think about, discuss, and provide well-informed opinions on topics presented in this course.
- Use statistics in ways that are relevant to studying social phenomena.

**Course assessment**

Tutorials and homework assignments 30%, in-class quizzes 5%, mid-term 25%, final exam 40%

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**Grade descriptors**

- A A thorough understanding of the course materials and an outstanding performance on all learning outcomes.
- A- A solid understanding of the course materials and an outstanding performance on almost all learning outcomes.
- B An adequate understanding of the course materials and a substantial performance, on average, on all learning outcomes.
- C A basic understanding of the course materials and a satisfactory performance on the majority of learning outcomes, possibly with a few weaknesses.
- D A partial understanding of the course materials and an inadequate performance on a number of learning outcomes
- F A poor understanding of the course materials and an unsatisfactory performance on a number of learning outcomes.

## Course Outline

### 1. Introduction

- 1.1 The what and why of statistics
  - 1.2 The research process
  - 1.3 Two categories of statistics
- Chapter 1: Introduction

### 2. Descriptive statistics

- 2.1 Frequency distribution
- 2.2 Graphic representation
- 2.3 Measure of central tendency
- 2.4 Measure of dispersion

Chapter 2: Basic Descriptive Statistics

Chapter 3: Measures of Central Tendency

Chapter 4: Measure of Dispersion

### 3. Inferential statistics

- 3.1 Normal distribution
- 3.2 Sampling distribution
- 3.3 Central limit theorem
- 3.4 Interval estimation
- 3.5 Hypothesis testing
- 3.6 Compare 2 samples
- 3.7 Type I & type II error

Chapter 5: The Normal Curve

Chapter 6: Introduction to Inferential Statistics

Chapter 7: Estimation Procedures

Chapter 8: Hypothesis Testing I: The One-Sample Case

Chapter 9: Hypothesis Testing II: The Two-Sample Case

### 4. Association and Causation

- 4.1 Conditions of causation
- 4.2 Specification of a causal process
- 4.3 Controlling confounding factors

### 5. Analysis of a continuous variable

- 5.1 Analysis of variance (ANOVA)
- 5.2 Covariance and Correlation
- 5.3 Linear regression analysis

Chapter 10. Hypothesis Testing III: The Analysis of Variance

Chapter 13. Association between Variables Measured at the Interval-Ratio Level

### 6. Analysis of a discrete variable

- 6.1 Contingency tables
- 6.2 Measure of association for nominal and ordinal variables

Chapter 11. Hypothesis Testing IV: Chi Square

## Course readings

### **Textbook**

Healey, Joseph F. *Statistics: A Tool for Social Research and Data Analysis*. Eleventh edition. Boston, MA: Cengage, 2021. (Available online through the UL: [https://julac-cuhk.primo.exlibrisgroup.com/permalink/852JULAC\\_CUHK/17kiu0g/alma991040010091203407](https://julac-cuhk.primo.exlibrisgroup.com/permalink/852JULAC_CUHK/17kiu0g/alma991040010091203407))

### **Reference for R**

Wickham, Hadley, Mine Çetinkaya-Rundel, and Garrett Golemund. 2023. *R for Data Science: Import, Tidy, Transform, Visualize, and Model Data*. O'Reilly Media, Inc. (Available online at: <https://learning-oreilly-com.easyaccess2.lib.cuhk.edu.hk/library/view/r-for-data/9781492097396/>)

### **Class schedule**

<b>Month</b>	<b>Date</b>	<b>Topics</b>	<b>Tutorial</b>
January	8	1. Introduction	
	15	2. Descriptive statistics	
	22	3. Inferential statistics	1 <sup>st</sup> tutorial
	29	3. Inferential statistics	
February	5	3. Inferential statistics	
	12	3. Inferential statistics	2 <sup>nd</sup> tutorial
	19	Holiday	
	26	Mid-term	3 <sup>rd</sup> tutorial
March	5	Reading week	
	12	4. Causal analysis	4 <sup>th</sup> tutorial
	19	5. Analysis of a continuous variable	
	25	5. Analysis of a continuous variable	
April	2	5. Analysis of a continuous variable	5 <sup>th</sup> tutorial
	9	6. Analysis of a discrete variable	
	16	6. Analysis of a discrete variable	
	23		6 <sup>th</sup> tutorial