SAMPLE course outline only
Course contents will vary if taught by different teachers.
Please refer to the course teacher for the actual course content offered in each term.

SOCI 2004: Social Statistics

2nd term, 2024-25
Friday 9:30 – 11:15 am
YIA 505

Instructor: Jin Lei
Email: ljin@cuhk.edu.hk

Tutors: Li Yujie (yjli@link.cuhk.edu.hk)
Jia Xinge (xinge.jia@link.cuhk.edu.hk)
Zhang Chuchu (chuchuzh@link.cuhk.edu.hk)

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 35%, in-class quizzes 15%, final exam 50%

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)

Reference for R

Wickham, Hadley, Mine Çetinkaya-Rundel, and Garrett Grolemund. 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

Month	Date	Topics	Tutorial
January	10	1. Introduction	
	17	2. Descriptive statistics	
	24	3. Inferential statistics	1st tutorial
	31	Holiday	
February	7	3. Inferential statistics	2nd tutorial
	14	3. Inferential statistics	
	21	3. Inferential statistics	
	28	4. Causal analysis	3rd tutorial
March	7	Reading week	
	14	5. Analysis of a continuous variable	
	21	5. Analysis of a continuous variable	4th tutorial
	28	5. Analysis of a continuous variable	
April	4	Holiday	5th tutorial
	11	6. Analysis of a discrete variable	
	18	Holiday	6th tutorial