



STA 501 Introduction to Biostatistics

Winter 2024

Course Credits: 4

Contact Hours: 56 hours

Instructor: TBA

Email: TBA

COURSE OBJECTIVES

This course introduces students to the theoretical concepts and methods of learning biostatistics. Topics include how to establish datasets and basic data management procedures, summarize and visualize the data, select the correct statistical analysis, analyze using statistical software, and report statistical results. Specific analysis methods include: descriptive methods, hypothesis testing, correlation and linear regression, power and sample size estimates for simple studies. At the end of the course, students should have a strong understanding of basic biostatistical concepts, able to rely on reliable statistical theory and statistical software for descriptive statistics and reasoning analysis, able to apply statistical methods to real-world problems.

Upon Completion of this Course, students will be able to:

1. Gain a strong understanding of fundamental biostatistical concepts
2. Understand the statistical methods employed in biomedical and public health research
3. Provide practical skills in applying biostatistical methods to analyze and interpret data in various health-related contexts
4. Develop practical proficiency in using statistical software for data analysis and visualization
5. Apply biostatistical methods to real-world scenarios in epidemiology and public health

PREREQUISITES



N/A

GRADING

Grades will be determined by accumulating points, with 100 points being the maximum, as follows:

ITEM	POINTS
2 Quizzes	20 Points
2 Case Studies	20 Points
Midterm Exam	15 Points
2 Project Designs	20 Points
Final Exam	25 Points
Total	100 Points

Late submissions will be graded at the end of the course. Grades will be assigned according to the following rule:

$A \geq 90 > B \geq 80 > C \geq 70 > D \geq 60 > F$.

We reserve the right to make adjustments to the overall grading policy.

COURSE MATERIALS

Required Texts:

Johnny Wei-Bing Lin; Hannah Aizenman; Erin Manette Cartas Espinel; Kim Gunnerson; Joanne Liu, *An Introduction to Python Programming for Scientists and Engineers*, 7th Edition, McGraw-Hill, 2011.

Recommended (Optional) Texts or Other Materials:

None

COURSE TOPICS

MODULE	TASKS
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Module 1	Topics: Topic 1: General Concept and Techniques Topic 2: Organization of Data Topic 3: Data Quality Topic 4: Introduction to Statistical Inference Assessments: Quiz 1
Module 2	Topics: Topic 5: Analysis of Variance Topic 6: Exploratory and Descriptive Statistics Topic 7: Descriptive Statistics Topic 8: Basics of Hypothesis Testing Assessments: Quiz 2 Project Design 1
Module 3	Topics: Topic 9: Relationship Between Hypothesis Testing and Confidence Intervals Topic 10: Hypothesis Test Topic 11: Correlation and Regression Topic 12: Types of Studies Assessments: Case Study 1 Project Design 2
Module 4	Topics: Topic 13: Multiple Linear Regression Topic 14: The Multiple Linear Regression Model Topic 15: Power and Sample Size Topic 16: Types of Samples Assessments: Midterm Exam Case Study 2
Module 5	Topics: Topic 17: The General Idea Topic 18: Conditions for Inference Topic 19: The Null and Alternative Hypotheses Topic 20: Summary Statistics Assessments: Final Exam

ATTENDANCE



1) Class attendance is required. Missing classes without permission will lead to decrease in overall grade.

Missing less than two classes: no penalty.

Missing more than two classes: 7% will be taken off from the overall grade.

If the instructor reports a student's frequent missing of class to the Soochow University Academic Administration Office, the student might get a written warning and might be prohibited from attending final exam.

2) Participants in this course are expected to arrive in class promptly and adequately prepared. The primary objective of this course is to critically engage with the readings and the subject matter. Therefore, course participants are expected to have completed the reading prior to class and prepare thoughtful reflections/commentaries to share with fellow colleagues.

LEARNING REQUIREMENTS

- 1) Late assignments are not acceptable and are subjected to grade deductions.
- 2) Assignments submitted in the wrong format will be counted as not submitted.
- 3) Failure to submit or fulfill any required course component results in failure of the class.
- 4) Make-up for midterm and final exams only with valid excuses, as defined by the University.
- 5) In order to earn a Certificate of Completion, participants must thoughtfully complete all assignments by stated deadlines and earn an average quiz score of 50% or greater.

TECHNOLOGY POLICY

The use of electronic devices in class is distracting, both for the user and for the rest of the class. Only non-programmable calculators can be used in the tests and exam. Any attempts to use cell phones and other electronic communication devices will be seemed as cheating. Laptops are discouraged, unless you use them for activities DIRECTLY related to the course (eg., note taking, reading course documents).

ACADEMIC INTEGRITY POLICY



蘇州大學
Soochow University

Soochow University highly values the academic integrity and aims to promote the academic fairness, honesty and responsibility. Any academic dishonesty behaviors and any attempts to cheats and plagiarism will be reported to the university administration office. A written warning and the relevant penalties will be imposed. The record might be shown on the official university transcript.

DISABILITY ACCOMMODATION

Soochow University is committed to maintaining a barrier-free environment so that students with disabilities can fully access programs, courses, services, and activities at Soochow University. Students with disabilities who require accommodations for access to and/or participation in this course are welcome.

Note:

Please contact the University Administrative Office immediately if you have a learning disability, a medical issue, or any other type of problem that prevents professors from seeing you have learned the course material.