STAT 1152: INTRODUCTION TO MATHEMATICAL STATISTICS

Spring 2026 Course Syllabus

Credits: 3

Lecture Hours

Section 1: Monday 1:50 – 4:25 pm, S105
Section 2: Tuesday 1:50 – 4:25 pm, S105

Instructor

Dr. Xiaomei Tan
Email: xiaomei.tan@scupi.cn
Office: N417
Office Hours: 4:30 – 6:30pm, Mon Tue Wed
Contact Instructor:

- Attend office hours or via email
- Extra office hours will be offered by appointment.

Teaching Assistants

Mingyang Wu (sec 01)
Email: 2023141520151@stu.scu.edu.cn

Yitian Luo (sec 02)
Email: 2022141520100@stu.scu.edu.cn

TA Responsibilities: TAs primarily support the instructor across a range of tasks, including grading homework, recording attendance, addressing student inquires, and contributing to the smooth functioning of educational environments.
Contact TAs: QQ Group or via email

Note:

- Modifications to this syllabus may occur. Please stay informed about any revisions announced during class or on the Blackboard website. Lecture materials, reading lists, grading details, and announcements will all be accessible through Blackboard.
- Important dates and information will be announced during class. Students should stay informed about announcements on Blackboard and via emails sent to their SCU email address.
- While emailing the instructor or TAs, please kindly include **"STAT 1152"** in the subject line for efficient communication. Please use your university email account (student_ID_number@stu.scu.edu.cn), as emails from other sources could be caught by the SCU spam filter.

Textbook

Walpole R. E., Myers R. H., Myers S. L., & Ye K. (2012). *Probability & Statistics for Engineers & Scientists* (9th ed.). Prentice Hall. (Available on Blackboard)

Prerequisites

STAT 1151 or IE 1070 (Probability) and Calculus (Differentiation and Integration)

Course Description

This course is the continuation of *STAT 1151 Introduction to Probability* and provides students with a deeper understanding of statistical methods used in data analysis. This course covers key topics such as sampling distributions, point and interval estimation, hypothesis testing, regression analysis, and analysis of variance (ANOVA). Students will learn the principles and techniques for making inferences from data, understanding variability, and drawing conclusions from statistical evidence. The course emphasizes the application of statistical theory to real-world problems and prepares students for more advanced courses in statistics and data analysis.

Course Objectives

This course aims to equip students with the fundamental statistical tools needed to analyze and interpret data. Students will learn how to estimate population parameters, test hypotheses, and evaluate the relationships between variables using regression and ANOVA techniques. The course also aims to provide students with the skills necessary to apply statistical methods to a variety of fields, from social sciences to engineering, while reinforcing the understanding of underlying theoretical principles.

Learning Outcomes

Upon successful completion of this course, students will be able to:

- Formulate real-world scenarios into statistical problems using mathematical terms.
- Identify and apply suitable statistical methods for problem resolution.
- Understand the implications and limitations of different statistical methods.
- Develop skills in analytical reasoning and solving issues within statistical data analysis.

Grading

- Midterm exams: 40%
- Final exam: 40%
- Homework: 10%
- In-class activities and attendance: 10%

Attendance

Attendance at lectures is mandatory and will be monitored periodically using in-class exercises or a sign-in sheet. In case of foreseeable absences, it is the students' responsibility to **inform the instructor prior to the class and provide written verification of the reason for the absence. Missing three or more sessions will result in a loss of all the attendance points. Absences of five or more will lead to failure (F grade) in the course.**

Homework

[Due] Homework assignments will be distributed periodically throughout the semester and will be due at the start of the subsequent class. **Late homework will NOT be accepted**, unless prior permission from the instructor. It is advised that assignments be submitted in advance of the

designated deadline to avoid any potential lateness. It is the students' responsibility to ensure **accurate and timely submission**.

[Submission] Each assignment must be submitted in **one PDF format file through the Blackboard**. Please answer the problems according to the order of problems assigned. (Notes: The homework can be typed or handwritten to take photos. The HW done on iPad can be directly generated by the software to generate PDF files, and the handwritten work can be merged to generate PDF as well.)

[Naming Format] Student ID Name. (Example: 2023141520151吴明阳)

[Grading Criteria] The full score of each assignment is 100 points. Five points will be lost if you fail to submit it in the correct format and order of the problems. Extra points will be lost if you miss answering problems. Directly copying and pasting solutions generated by Generative AI tools is prohibited and will result in a complete loss of points for that question.

Exams

[Format] Exams are scheduled following the course timetable. **Closed book. Three A4-sized cheat sheets are allowed** with content handwritten on both sides.

[Attendance] Attendance for exams is mandatory. In case of foreseeable absences, it is the students' responsibility to inform the instructor **one week prior to the exam** and provide **written verification** of the reason for missing the exam. For unforeseen emergencies, it is the students' responsibility to provide written verification **within one week after the exam**. Makeup exams will be arranged as needed. Failure to give prior notice for an absence will result in a "**ZERO**" score, except in exceptional cases.

Class Policy

1. Class participation

Regular class attendance as well as active participation in course activities is expected. It is the students' responsibility to complete all assigned in-class tasks. Any required student absences should be reported to the instructor in advance via email or if not possible in advance, shortly thereafter.

2. Academic integrity

Academic integrity is the pursuit of scholarly activity in an open, honest, and responsible manner. In this course, students are expected to uphold the dignity, rights, and property of their peers. All exam work and homework must be a product of individual effort.

Any violation of academic integrity will be taken very seriously. This includes, but is not limited to, plagiarism (such as uncredited copying, closely paraphrasing others' work without proper citation, or submitting work that is not your own) and any form of cheating during exams or assignments. Penalties for academic dishonesty may range from a one-letter grade reduction to failure of the course, depending on the severity of the offense. In more serious cases, incidents may also be reported to the university for further disciplinary action in accordance with institutional policies.

3. Accommodation

Students requiring accommodation should schedule a meeting within the first week of classes.

Tentative Course Schedule (March 9, 2026)

Lecture	Date	Topic
1	3/9, 3/10	Sampling Distributions (sampling, statistics)
2	3/16, 3/17	Sampling Distributions; Estimation of Mean (CLT, one-sample estimation of mean)
3	3/23, 3/24	Estimation of Mean (point estimate, interval estimate)
4	3/30, 3/31	Estimation of Variance; Difference between Two Means
5	*(No class on 4/6)* 4/7, 4/13	Paired Observations; Ratio of Two Variances; Maximum Likelihood Estimation
6	4/14, 4/20	Tests of Hypotheses; One-Sample Test of Hypotheses
7	4/21, 4/27	Two-Sample Test of Hypotheses; Goodness of Fit; Tests for Independence and Homogeneity
Midterm (TBD)		Review & Midterm Exam
8	4/28, 5/9 *(Makeup for 5/4)*	Simple Linear Regression (theoretical, actual, fitted models)
9	5/11, 5/12	Simple Linear Regression (inferences on regression coefficients, prediction of mean response & future response)
10	5/18, 5/19	Simple Linear Regression (ANOVA, lack-of-fit, correlation); Multiple Linear Regression
11	5/25, 5/26	Multiple Linear Regression (inferences on regression coefficients, ANOVA, prediction of mean response & future response)
12	6/1, 6/2	Multiple Linear Regression (choice of a fitted model through hypothesis testing, indicator variables, model selection)
13	6/8, 6/9	One-Factor Experiments (Completely randomized design, one-way ANOVA, multiple comparisons randomized complete block design)
14	6/15, 6/16	Nonparametric Statistics (sign test, signed-rank test)
15	6/22, 6/23	Nonparametric Statistics (Wilcoxon rank-sum, Kruskal-Wallis test, rank correlation coefficient); Review
Final (TBD)		Final Exam (No class)

Please Note: The schedule is subject to change based on the classroom driven and the interactive nature of this course. All topics will be covered, but order may vary. Changes to the schedule will be announced during the lecture period and updated in syllabus. Students are responsible for noting these changes.