



East China Normal University
GEC International Summer School

STAT203: Introductory Statistics 1

Term: June 16th to July 18th, 2025

Class Hours: Monday through Friday, 110 minutes each day (2,750 minutes in total)

Instructor: TBD

Home Institution: TBD

Office Hours: TBD

Email: TBD

Course Description

This course aims to provide students with an introduction to statistics, focusing on practical applications. Students will explore descriptive and basic inferential techniques commonly used in statistical analyses. Emphasis will be placed on developing critical evaluation skills for statistical evidence across diverse fields such as science, medicine, finance, and the social sciences.

Through a variety of examples and applications, instructors will encourage students to analyze research encountered in their coursework and future endeavors. Much of the course will be devoted to discussions of how statistics is commonly used in the real world. Additionally, students will learn to pick the appropriate sampling technique for specified practical situations and select statements that follow from the Central Limit Theorem. They will construct and correctly interpret confidence intervals, calculate a t-test statistic, test hypotheses using the test statistic and/or p-value, and correctly choose the interpretation or application of the result of the hypothesis test.

Prerequisite: None.



Course Objectives

The primary goal of the course is to help students understand how the process of posing a question, collecting data relevant to that question, analyzing data, and interpreting data can help them find answers to real problems from their world.

Required Text

Statistics: The Art and Science of Learning from Data (4th Edition), by Agresti, Franklin, Klingenberg, 2017.

ISBN:9780321997838

Course Hours

The course has 25 class sessions in total. Each class session is 110 minutes in length, for a total of 2750 minutes of in-class time. The course meets from Monday to Friday. ECNU awards 3 credits for this course. Different universities may count course credits differently. Consult officials at your own home institution.

Attendance

Summer school is very intense and to be successful, students need to attend every class. Occasionally, due to illness or other unavoidable circumstance, a student may need to miss a class. ECNU policy requires a medical certificate to be excused. Any absence may impact on the student's grade. Moreover, ECNU policy is that a student who has more than 3 absences will fail the course. Arriving late or leaving early will count as a partial absence.

Grading Policy

ECNU awards grades of A, A-, B+, B, B-, C+, C, D, and F. Most colleges and universities do not award transfer credit for grades of D or F.

In this course, grading will be based on the following:



Quizzes*3	5%*3=15%
Midterm	35%
Final Exam	50%

General Expectations

Students are expected to:

- Attend all classes and be responsible for all material covered in class and otherwise assigned. Any unexcused absence may impact a student's grade.
- Arrive to class on-time: Late arrivals are disruptive to your fellow students and to the conduct of the class.
- Complete the day's required reading and assignments before class.
- Review the previous day's notes before class; make notes about questions you have about the previous class or the day's reading.
- Refrain from texting, phoning or engaging in computer activities unrelated to class during class (不要用手机). It is highly disrespectful to the professor and to the class.
- Participate in class discussions and complete required written work on time.

Course Schedule

The planned schedule sketched out below may be modified to suit the interests or abilities of the enrolled students or to take advantage of special opportunities or events that may arise during the term.

Week 1

– *Day 1*

- *Introduction*
- *Graphs for Quantitative Data*

– *Day 2*

- *Descriptive Statistic: Introduction to types of data and data collection methods*



- *Descriptive Statistic: Frequency distributions and graphical representation techniques*
- *Day 3*
 - *Descriptive Statistic: Measures of central tendency (mean, median, mode) and variability*
 - *Descriptive Statistic: Relative standing measures*
- *Day 4*
 - *Probability and Random Variables: Fundamentals of probability calculus*
- *Day 5*
 - *Tutorial/Discussion*
 - *Quiz 1*

Week 2

- *Day 1*
 - *Probability and Random Variables: Independence and conditional probability*
 - *Probability and Random Variables: Bayes' rule and its applications*
- *Day 2*
 - *Probability and Random Variables: Discrete and continuous random variables*
- *Day 3*
 - *Probability and Random Variables: Calculation of expectation and variance*



- *Day 4*
 - o *Probability and Random Variables: Standard probability models*
- *Day 5*
 - o *Tutorial/ Discussion*
 - o *Quiz 2*

Week 3

- *Day 1*
 - o *Sampling and Estimation: Random samples and parameter inference*
 - o *Sampling and Estimation: Exploration of sampling distribution of the mean*
- *Day 2*
 - o *Sampling and Estimation: Central Limit Theorem*
 - o *Construct and Correctly Interpret Confidence Intervals*
- *Day 3*
 - o *Sampling and Estimation: Confidence interval concepts*
 - o *Sampling and Estimation: Computation of confidence intervals for a population mean and proportion*
- *Day 4*
 - o *Midterm Review Session*
 - o *Discussion/Tutorial*
- *Day 5*
 - o *Midterm*



Week 4

- Day 1
 - *Tests of Hypotheses: Fundamentals of hypothesis testing principles*
 - *Tests of Hypotheses: Understanding errors of type I and type II*
- Day 2
 - *Tests of Hypotheses: Calculation of p-values for hypothesis tests*
 - *Tests of Hypotheses: One-sample and two-sample tests for mean and proportion*
- Day 3
 - *Tests of Hypotheses: Conducting tests of significance*
 - *Practical Applications and Case Studies*
- Day 4
 - *Descriptive Statistics*
 - *Measures of Central Tendency and Variability*
- Day 5
 - *Tutorial/Discussion*
 - *Quiz 3*

Week 5

- Day 1
 - *Errors of Type I and Type II*
 - *T-test Statistic: Calculation and Interpretation*
 - *Calculation of p-values*



- *Day 2*
 - o *Case studies exploring various statistical techniques*
 - o *Graphical tools for data representation*
- *Day 3*
 - o *Review of key concepts covered throughout the course*
- *Day 4*
 - o *Final Exam Review Session*
 - o *Tutorial/Discussion*
- *Day 5*
 - o *Final Exam*

Academic Honesty

Students are expected to maintain high standards of academic honesty. Specifically, unless otherwise directed by the professor, students may not consult other students, books, notes, electronic devices or any other source, on examinations. Failure to abide by this may result in a zero on the examination, or even failure in the course.