East China Normal University

GEC International Summer School

MAT22: 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 is an introductory course that assumes no prior knowledge of statistics but does assume some knowledge of high school algebra. Basic statistical concepts and methods are presented in a manner that emphasizes understanding the principles of data collection and analysis rather than theory. Much of the course will be devoted to discussions of how statistics is commonly used in the real world. There are two major parts to this course:
I Data – which includes graphical and numerical summaries to describe the distribution of a variable, or the relationship between two variables, and data production to learn how to design good surveys and experiments, collect data from samples that are representative of the whole population, and avoid common sources of biases.
II Probability and Inference – using the language of probability and the properties of numerical summaries computed from a random samples, we learn to draw conclusions about the population of interest, based on our random sample, and attach a measure of reliability to them.

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*2	10%*2=20%

Participation	10%
Midterm	30%
Final Exam	40%

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*
  - *Measuring Center and Spread*
  - *Quartiles and Boxplots*
- *Day 3*

- *Intro to Regression*
- *Regression Example*

- *Day 4*
  - *Cautions In Regression*
- *Day 5*
  - *Tutorial/Discussion*

Week 2

- *Day 1*
  - *Categorical Data*
  - *Sampling*
- *Day 2*
  - *Experiments*
  - *Other Considerations*
- *Day 3*
  - *Basic Probability*
  - *Advanced Probability*
- *Day 4*
  - *Continuous Probability Distributions*
- *Day 5*
  - *Tutorial/ Discussion*
  - *Quiz 1*

Week 3

- *Day 1*
  - *Discrete Probability Distributions*
- *Day 2*
  - *More Normal and Binomial Examples*
- *Day 3*
  - *Sampling Distribution of p-hat*
- *Day 4*
  - *Midterm Review Session*
  - *Discussion/Tutorial*
- *Day 5*
  - *Midterm*

Week 4

- *Day 1*
  - *Sampling Distribution of x-bar*
- *Day 2*
  - *More Sampling Distribution Problems*
- *Day 3*
  - *Confidence Intervals for p*
- *Day 4*
  - *Confidence Intervals for μ*
  - *More on Confidence Intervals*
- *Day 5*
  - *Tutorial/Discussion*

- *Quiz 2*

Week 5

- *Day 1*
  - *Sample Size, Small Sample CI for p and Bootstrap*
  - *Basics of Significance Tests*
- *Day 2*
  - *More about P-values and Significance Tests for Proportions*
  - *Significance Tests for Means*
- *Day 3*
  - *Relationship between CI and Sig Tests*
  - *Other Considerations about Sig Tests*
- *Day 4*
  - *Final Exam Review Session*
  - *Tutorial/Discussion*
- *Day 5*
  - *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.