East China Normal University

GEC International Summer School

STAT204: Introductory Statistics 2

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 covers fundamental statistical methods for data analysis. Topics include simple and multiple linear regression, categorical data analysis, non-parametric statistics, and analysis of variance. Through lectures and practical exercises, students will learn how to apply these techniques to real-world data and interpret results effectively. By the end of the course, students will have a solid foundation in statistical analysis and be able to use statistical methods confidently in various fields of study.

Prerequisite: STAT203.

Required Text

Introductory Statistics. 2nd Edition. Academic Press. Ross, Sheldon M. (2017). ISBN: 9780128043170.

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:

Assignments*4	5%*4=20%
Midterm	25%
Final Exam	55%

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
    - o Introduction
    - o Simple Linear Regression: Introduction to simple linear regression

- – Day 2
    - o Simple Linear Regression: Probability models and assumptions
    - o Simple Linear Regression: Least-squares fitting method

- – Day 3
    - o Parameter estimation and hypothesis testing
    - o Correlation coefficient and its interpretation

- – Day 4
    - o Simple Linear Regression: Practical exercises and examples

- – Day 5
    - o Tutorial/Discussion
    - o Assignment 1 due

Week 2

- – Day 1

- o *Multiple Linear Regression: Extending regression analysis to multiple predictors*
- o *Multiple Linear Regression: Model building strategies and stepwise model selection*
- *Day 2*
  - o *Multiple Linear Regression: Residual analysis for model checking*
  - o *Multiple Linear Regression: Common pitfalls in regression modeling*
- *Day 3*
  - o *Application of multiple linear regression in real-world scenarios*
- *Day 4*
  - o *Categorical Data Analysis: Introduction to the multinational distribution*
- *Day 5*
  - o *Tutorial/ Discussion*
  - o *Assignment 2 due*

Week 3

- *Day 1*
  - o *Chi-square test for categorical data*
- *Day 2*
  - o *Analysis of contingency tables*
  - o *Interpretation of results and practical applications*
- *Day 3*
  - o *Non-parametric Statistics: Overview of distribution-free tests*

- o *Non-parametric Statistics: Single population tests using non-parametric methods*

- – *Day 4*
  - o *Midterm Review Session*
  - o *Discussion/Tutorial*

- – *Day 5*
  - o *Midterm*

Week 4

- – *Day 1*
  - o *Non-parametric Statistics: Comparison of two populations: independent samples*
  - o *Non-parametric Statistics: Comparison of two populations: dependent samples*

- – *Day 2*
  - o *Analysis of Variance (ANOVA): Designed experiments and randomized designs*
  - o *Analysis of Variance (ANOVA): Multiple comparison of means using ANOVA*
  - o *Randomized block designs and factorial experiments*

- – *Day 3*
  - o *Interpretation of ANOVA results and practical examples*

- – *Day 4*
  - o *Advanced Regression Techniques*

- o *Polynomial regression and its applications*

    – *Day 5*

        o *Tutorial/Discussion*

        o *Assignment 3 due*

Week 5

- *Day 1*

    o *Practical Applications and Case Studies*

- *Day 2*

    o *Application of regression analysis, categorical data analysis, and ANOVA in real-world scenarios*

- *Day 3*

    o *Practical exercises and real-world examples*

- *Day 4*

    o *Final Exam Review Session*

    o *Tutorial/Discussion*

- *Day 5*

    o *Final Exam*

    o *Assignment 4 due*

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.