Tennessee Tech University

Mathematics Department

MATH 3470-Section 002

3 Credit Hours, Fall 2026

Instructor Information

Name: Motoya Machida

Office: Bruner Hall 338

Office Hours: Monday, Wednesday and Friday, 8:00-8:50am, and Tuesday and Thursday, 8:00-9:50am. An appointment at different time can be arranged in person, or via Zoom.

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Course Information

Course Name

Introductory Probability and Statistics

Meeting Days, Times and Location

MWF 10:00-10:50 a.m. at LSC 1201

Pre-requisites

C or better in MATH 1920.

Course Description

This course provides fundamental ideas of probability, random variables, discrete and continuous distributions and their simulation, parameter estimates and hypothesis tests with an overall emphasis on simulation.

Course Objectives

At their successful completion of this course students will be able to understand fundamental ideas of probability and statistics, and develop basic skills to apply formulas and computer simulation in problems requiring probabilistic models or data analysis.

Textbooks and Resources

Instructional Platform

- Course website at e-math/prob (https://vps63.heliohost.us/e-math/prob)

Required Lecture Notes

All the lecture notes are available at the course website e-math/prob.

References

Besides lecture notes, supplementary readings relevant to the lecture notes are suggested from either of the books below.

- Probability and Statistics 4th ed, by Murray R. Spiegel, John Schiller, and R. Alu Srinivasan, McGraw-Hill.
- A Brief Course in Mathematical Statistics, by Elliot A. Tanis and Robert V. Hogg, Prentice Hall.
- Probability & Statistics for Engineers & Scientists 9th ed, by Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, and Keying Ye, Prentice Hall, NJ.

Topics to be covered

This course introduces a variety of probabilistic and statistical methods for students in scientific disciplines, and develops the skills needed in the simulation involving random models. Thus, the emphasis of the class lies on the underlying concepts in probability: discrete and continuous distributions, density and distribution functions of various kinds, calculation and interpretation of moments, and distributions related to the normal distribution. This permits us to unify various methodologies in statistics: normal assumption and sample distributions, point estimates and confidence intervals, and the Neyman-Pearson framework of hypothesis testing.

Course Structure

Student Learning Outcomes

At their successful completion of the course students will be able to

(a) understand fundamental ideas of probability and statistics;
(b) develop basic skills to apply formulas;
(c) use computer for simulation of probabilistic models or data analysis;
(d) summarize their investigation in a form of statistical report.

Major Teaching Methods

Lectures and assignments will be substantial course portfolios. Each assignment must be completed individually and organized well for your own future reference. Online quiz will be

given to follow up your work, and cover the class material and homework problems in the corresponding lecture note. Thus, it is very important to complete all the homework problems before online quiz.

Quizzes

Quizzes are given online and open until the last day of class and attempted as many times as you wish, but they should be completed in a timely manner.

Computer Project Assignment

Completed report assignment must be submitted to an appropriate dropbox at the iLearn before the deadline announced in class. The report submission must be a single file of either word document (.doc, or .docx) or pdf document (.pdf), which includes the summary of computer output, the graphs (if any), and your findings to the simulation result or data analysis.

Midterm and Final Exam

Midterm date will be announced in class and at the Canvas. Final exam is scheduled on Thursday, December 10, 10:30-12:30.

Grading Criteria and Evaluation Procedures

The final grade is determined as follows:

Quiz	20%
Assignment	20%
Midterm	30%
Final exam	30%

The table below shows the grading scheme for the course:

Scaled Score	**Letter Equivalent**
90% - 100%	A
80% - 89%	B
70% -79%	C
60% - 69%	D
Below 59%	F

Course Policies

Attendance Policy

Students must send the instructor a brief e-mail and explain their absence in advance. The instructor will occasionally know your attendance when you submit an assignment or the instructor returns tests or reports. Students who repeatedly fail to come to the lecture may find their overall evaluation of assignment lowered.

Generative AI Policy

Generative AI resources are permitted for assignments by students with the purpose of supporting their assigned task. To ensure academic integrity, students must openly disclose any AI-generated material they utilize and provide proper attribution. When your assigned task is assisted by Generative AI tools, you must acknowledge them in your report, publish the code, and take full responsibility. To indicate the use of Generative AI resources, a student should include the following statement in their assignments: "I acknowledges the utilization of [Generative AI Tool Name], a language model developed by [Generative AI Tool Provider], in the preparation of this assignment, and I am fully responsible for the integrity of the content generated by it." Generative AI can produce programming code or create a report using it. However, these tools are concerned with fundamental accuracy as well as legal issues surrounding their Generative AI, and may have chosen to obscure their results on purpose. Consequently, it may alter the output of programming code and the report remains fictitious. A possible remediation is to run the code generated by the Generative AI tools in your machine, and revise a report accordingly.

For quizzes, midterm and final exam Generative AI resources are not permitted. Students are expected to do all work themselves. The use of a Generative AI Tool to complete exam constitutes academic misconduct for this course.

Student Academic Integrity Policy

Maintaining high standards of academic integrity in every class is critical to the reputation of Tennessee Tech, its students, faculty, alumni, and the employers of Tennessee Tech graduates. Academic integrity is at the foundation of the educational process and the key to student success. Students with academic integrity are committed to honesty, ethical behavior, and avoiding violations of academic integrity. All students are required to read and understand Policy 216: Student Academic Integrity. Please see the Academic Integrity website (https://www.tntech.edu/provost/academicintegrity/) for more information.

Disability Accommodation

Students with a disability requiring accommodations should contact the Accessible Education Center (AEC). An Accommodation Request (AR) should be completed as soon as possible, preferably by the end of the first week of the course. The AEC is located in the Roaden University Center, Room 112; phone 931-372-6119. For details, view the Tennessee Tech's Policy 340 – Services for Students with Disabilities at Policy Central.