MTH 210, Applied Statistics
2026 Fall term (Oct/2026-Jan/2027)

CLASS Friday (8:30-11:15), D8-208

WORTH 3 credits

PREREQUISITE A grade of C or better in MTH 112.

Google Classroom

INSTRUCTOR Dr. Tran Ngoc Khue
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COURSE DESCRIPTION

A beginning course in applied statistics that introduces students to randomness, uncertainty, and the application of statistical techniques in contemporary research. Topics include descriptive statistics, experimental design, hypothesis testing, and parametric and non-parametric statistical methods. Students develop an understanding of how statistical techniques can be applied to analyze and interpret data in practical research settings, with opportunities to use statistical software for data analysis.

COURSE OBJECTIVES

This course will cover:

1. Basic concepts such as random experiments, probability rules and counting methods.
2. Single and multiple random variables (discrete, continuous, and mixed), their distributions as well as moment-generating functions.
3. Limit theorems and convergence.
4. Introduction to mathematical statistics.
5. Parameter estimation, Hypothesis testing and Linear regression.
6. Random processes including processing of random signals, Poisson processes.
7. Simulation using EXCEL/MegaStat and R.
8. Learn methods of building statistical models.

TEXT BOOK

H. Pishro-Nik, *Introduction to Probability, Statistics, and Random Processes*, Kappa Research, 2014. Available online at: https://www.probabilitycourse.com/

REFERENCES

R.E. Walpole, R.H. Myers, S.L. Myers, K. Ye, *Probability & Statistics for Engineers and Scientists,* Prentice-Hall (ninth edition), 2011.

B. E. Hansen*, Probability and Statistics for Economists*, Princeton University Press, 2022.

STUDENT EVALUATION

Home works + Attendance: 10%, Quizzes: 15%, Project: 15%, Midterm: 20%, Final exam: 40%

1. **Home works:** *These are weekly assignments*. *If you don't show your work, you get a zero. You will be asked (randomly) to present your solutions.*
2. **Quizzes***: There will be 4 quizzes given during the semester. There is no such thing as a make up quiz. If you miss a quiz, you get a zero.*

EXAMINATION FORMAT

Quizzes: 30 minutes; Midterm Exam: 90 minutes; Final Exam: 120 minutes.
GRADING SCALE A (90-100), B (80-89), C (70-79), D (60-69), F (<60)

Tentative class schedule

No	Date	Sections	Topics	Remarks
1	09-Oct	Ch 1	Basic Concepts	
2	16-Oct	Ch 2	Combinatorics: Counting Methods	
3	23-Oct	Ch 3	Discrete Random Variables, I	
4	30-Oct		Discrete Random Variables, II	Quiz 1 (Ch 1 & 2)
5	06-Nov	Ch 4	Continuous Random Variables, I	
6	13-Nov		Continuous Random Variables, II	Quiz 2 (Ch 3)
7	20-Nov	Ch 5	Joint probability distributions Review for Midterm	
8	27-Nov		**Question & Answer**	**Midterm Exam** (Chapters 1, 2, 3 & 4)
9	04-Dec	Ch 7	Law of large numbers and the central limit theorem	
10	11-Dec	Ch 8	Point Estimation	
11	18-Dec		Interval Estimation (Confidence Intervals)	Quiz 3 (Ch 5 & 7)
12	25-Dec		Hypothesis Testing	
13	01-Jan		Linear Regression	Quiz 4 (Ch 8)
14	08-Jan		Project presentation, Final review	
15	15-Jan		**Question & Answer**	**Final Exam**

CLASS REGULATION: Students are expected to:

1. Punctually attend all scheduled classes.
2. Be responsible for all instructions and assignments given in class as well as for the supporting textbook content.
3. Read the textbook material **before** the lecture covering that material and attempt the suggested problems before the material is covered in class.
4. Be an active participant in this class while being respectful of everyone else in the class.
5. **Turn off cell phones when you enter the classroom. If your cell phone rings during class, you will be asked to leave the class.**

ABSENCES:

IF YOU MISS MORE THAN THREE CLASSES--EXCUSED OR UNEXCUSED--YOU WILL RECEIVE A FAILING GRADE (grade of **"F"**) **FOR THE COURSE.**

THIS SYLLABUS IS TENTATIVE AND SUBJECT TO CHANGE. *The instructor may make changes if deemed necessary. Changes will be announced in class.*