MTH 210, Applied Statistics
2024 Fall term (Sept-Dec/2024)

CLASS Thursday (14:00-16:45) , 406D7

WORTH 3 credits

PREREQUISITE A grade of C or better in MTH 112.

Google Classroom **Code "ne7y5eb"**
https://classroom.google.com/c/NzE4MDI5NzM4OTAx?cjc=ne7y5eb

INSTRUCTOR Dr. Pho Duc Tai
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COURSE DESCRIPTION
The aim of this course is to understand randomness, uncertainty, ands applications of statistical techniques, such as experimental design, hypothesis testing, parametric and non-parametric tests along with descriptive statistics in contemporary research.

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. Random processes including processing of random signals, Poisson processes.
6. Simulation using EXCEL/MegaStat and R.
7. 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/

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 3 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: 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	26-Sep	Ch 1	Basic concepts	
2	3-Oct	Ch 2	Combinatorics	
3	10-Oct	Ch 3	Discrete Random Variables, I	
4	17-Oct		Discrete Random Variables, II	Quiz 1 (Ch 1 & 2)
5	24-Oct	Ch 4	Continuous Random Variables, I	
6	31-Oct		Continuous Random Variables, II	Quiz 2 (Ch 3)
7	7-Nov	Ch 5	Joint probability distributions Review for Midterm	
8	14-Nov		**Question & Answer**	**Midterm Exam** (Chapters 2, 3 & 4)
9	21-Nov	Ch 7	Law of large numbers and the central limit theorem	
10	28-Nov	Ch 8	Interval Estimation	
11	5-Dec			Quiz 3 (Ch 7)
12	12-Dec		Linear regression (Add as BONUS: Non-linear regression & Time-series).	
13	19-Dec		Hypothesis Tests	Quiz 4 (Ch 8)
14	26-Dec		Project presentation, Final review	
15	2-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 TWO 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.*