MTH 375-W1   Mathematical Statistics
Winter 2022
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Welcome to MTH 375-W1, Mathematical Statistics. Statistics is one of the most useful branches of mathematics; practically every science there is makes extensive use of its methods. This is a course in *Mathematical Statistics*; that means that we will study not only the methods of statistics, but focus on the principles of probability that underly those methods.

UM-Flint Catalog description:
MTH 372 with a grade of C (2.0) or better; or MTH 222, MTH 370, each with a grade of C (2.0) or better. (3)
Limiting distributions, stochastic convergence, central limit theorem, point and interval estimation of parameters, hypothesis testing, nonparametric tests, sufficiency, completeness, linear regression, analysis of variance. Not offered every semester; see www.umflint.edu/math. Graded ABCDE

Our class meets TR 4:00-5:15pm, synchronously (i.e., together) on-line using Blackboard Collaborate Ultra. (The link to Collaborate Ultra is in upper left hand corner of our Blackboard site, directly under the name of the course.) I will record all of our class meetings except on exam days, so you can watch the class repeatedly at your convenience.

I will stay on line after class for at least 10 minutes every day, during which time we can briefly discuss the course or we can set up a longer meeting at another time. Since the Collaborate Ultra Course Room is open all day every day, we can meet electronically in groups of any size at your convenience (or you can meet classmates without me). Just let me know when you would like to meet. We can also correspond by email. I will respond to your email as quickly as I can, by the end of the day it arrives and usually much sooner.

Our text is *Mathematical Statistics*, by Richard Rossi. There is a copy of the text on the MTH 375 Blackboard site. We covered most of Chapters 1-3 in MTH 372. We will cover as much as possible of the remainder of the text this term, along with some material on non-parametric statistics. We will also make use of the open-source statistical programming language R, which is available as a free download.

Homework
There will be weekly homework assignments found in the Course Content section of Blackboard, which you are to submit via Blackboard. Answers to problems are not sufficient; you must submit solutions. Unsupported answers will earn little or no credit. It is essential that you keep up with the homework assignments. It is impossible to learn mathematics passively; the only way to learn the material is by solving problems. In other words,

Mathematics is not a spectator sport.

Exams and Grades

A midterm exam is tentatively scheduled for Thursday, 2/24. Our final exam is scheduled for Thursday, April 21.

Grades will be based on homework assignments (60%), class participation (10%), and the midterm and final exams (@ 15%).

The course

The schedule will be approximately

Multivariate normal distribution and sampling distributions	1.5 weeks
Parametric point estimation (Ch.4)	3 weeks
Likelihood-based estimation (Ch.5)	3 weeks
Hypothesis testing (Ch.6)	2 weeks
Linear models (Ch.7)	2.5 weeks
Non-parametric statistics	2 weeks

Disability Statement: The University of Michigan-Flint strives to make learning experiences as accessible as possible and complies with Section 504 of the Rehabilitation Act of 1973 and the Ameri- can with Disabilities Act. The university provides individuals with disabilities reasonable accommodations to participate in educational programs, activities, and services. Students with disabilities requiring accommodations to participate in class activities or meet course requirements must self-identify with Disability and Accessibility Support Services as early as possible at (810) 762-3456 or dassflint@umich.edu. The office is located in 264 Univer- sity Center, inside the CAPS Office. Once your eligibility for an accommodation has been determined you will be issued an Accommodation Letter. Please present this letter to each faculty member in each class at the beginning of the term, or at least two weeks prior to the need for the accommodation (test, project, etc.).

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