

Mathematical Statistics I. MA 486-586-2F Fall 2025

Class meets Tuesdays and Thursdays 15:30-16:45, in room UH 4002

Instructor: Dr. Nandor Simanyi

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Office hours: Fridays, 12:00-2:00, or by appointment

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Text: R. V. Hogg, E. A. Tanis, D. L. Zimmerman *Probability and Statistical Inference*, Pearson.

Text: Dr. Nikolai Chernov *Mathematical Statistics*

Grading policy:

Homework	20 %
Midterm I (around early October)	20 %
Fall break: November 24–30	
Midterm II (early November)	20 %
Final Test: Tuesday, December 9, 4:15 pm – 6:45 pm	40 %

Homework: Problems will be assigned weekly on Thursdays, unless announced otherwise. Homework will be due 8 days later, the next Friday. The submission is exclusively Canvas PDF upload. You can use any software (including MATLAB) for doing homework problems.

To 586 students: You are taking this course at a *graduate* level! You will be given extra, more difficult, assignments periodically. The extra assignments will make 20% of your course grade, the rest will count for 80%, scaled appropriately. The 586-level problems can be uploaded on Canvas (PDF) at any time before the final exam.

Class Attendance: Class attendance is mandatory. One can get a passing grade only if the number of their unexcused absences is not more than 20% of the number of classes.

All tests in this course are open-book and open-notes. You may use a calculator, and you will actually need one.

Syllabus: Basic sampling and data analysis, Simulation, Point estimation, Confidence Intervals, Sufficient statistics, Cramer-Rao bound, Tests for binomials, Tests for normals, Goodness-of-fit test, Contingency tables, Two factor analysis, Regression, Order statistics, Nonparametric methods: Wilcoxon test, Kolmogorov-Smirnov test.

The syllabus is tentative, some changes are possible.

Classnotes, homework assignments, the list of computer projects will be available at

<http://people.cas.uab.edu/~simanyi/teaching/486-586/>

Learning outcomes: By the end of the course students will learn how to efficiently and effectively set up mathematical statistical models to tackle real-life statistical problems and obtain statistical inference, useful in trade, industry, and in the financial sector.

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All University faculty, instructors and teaching staff have the academic freedom to explore, discuss, and provide instruction on a wide range of topics in an academic setting. This class may present difficult, objectionable, or controversial topics for consideration, but will do so through an objective, scholarly lens designed to encourage critical thinking. Though students may be asked to share their personal views in the academic setting, no student will ever be required to assent or agree with any concept considered "divisive" under Alabama law, nor penalized for refusing to support or endorse such a concept. All students are strongly encouraged to think independently and analytically about all material presented in class and may express their views in a time, place, and manner, consistent with class organization and structure, and in accordance with the University's commitment to free and open thought, inquiry, and expressions.

Collaboration, integrity, respect, and excellence are core values of our institution and

affirm what it means to be a UAB community member. A key foundation of UAB is diversity. At UAB, everybody counts every day. UAB is committed to fostering a respectful, accessible and open campus environment. We value every member of our campus and the richly different perspectives, characteristics and life experiences that contribute to UAB's unique environment. UAB values and cultivates access, engagement and opportunity in our research, learning, clinical, and work environments. Our College of Arts and Sciences aims to create an open and welcoming environment and to support the success of all UAB community members.

Welcome to MA 486/586 and best of luck to you all.