Math 530: Linear Algebra for Statisticians

Basic Info

- Meeting times/Place: MWF 10:50am -11:50am at LN2403
- Office hours: MWF 9:45 - 10:30 AM, Monday 1 - 2 PM (in person, office WH136, or by Zoom), or by appointment
- Prerequisites: Math 304 (Linear Algebra), 329, 330 or equivalent.

Texts

1. We will use Strang “Linear Algebra with Applications”, and “Numerical Linear Algebra” by Lloyd Trefethen and David Bau.

The electronic versions of these books are available at the Piazza course webpage.

Learning outcomes

We will cover several types of matrices, various matrix decompositions including SVD, QR and Cholesky, their application to linear regression, and Multivariate Gaussian distribution.

Computing

I will ask students to subscribe to Datacamp.com for 1 or 2 months (do not pay annual subscription!) and take 3 Datacamp courses in “Python”. Specifically, “Introduction to Python”, “Intermediate Python”, “Python Data Science Toolbox 1”. Every datacamp course will be expected to be finished in 1 or 2 weeks and at the end of each one, the student will send me a proof that he or she has passed the course. There will be additional Python based exercises.

Communication

I will mostly use Piazza Forum (https://piazza.com). In particular, I will post all announcements and lecture notes on this website. So make sure that you are enrolled at Piazza. You can either sign up at “https://piazza.com/binghamton/fall2022/math488math530” or send me an email. Since this is a forum, questions and answers by students are encouraged. I will use MyCourses/Brightspace only minimally if at all.

Homework Policy

The homework on linear algebra will be assigned using Gradescope.

There will be a deduction of 25% of the grade for homework assignments that are not typeset using LaTeX. (For users with no experience with LaTex, I suggest trying “https://www.overleaf.com/”.)

There will be a deduction of 15% of the grade for each day homeworks are late (the final grade for a late homework that is N days late will be 0.85^N times the real grade). Homeworks may be discussed with classmates but must be written and submitted individually.

There will also be some Python homework which will have to be submitted both on Gradescope (pdf file) and through a Google form (source file).

Exams

The will be two midterms and one final exam.

Grading

The grading scale will be different for undergraduate and graduate students.

- Linear Algebra Homework 25%
- Python Courses + Python Homework 25%
- Midterms 20% (10% each)
- Final Exam 30%

Tentative Schedule

Midterm Exam I	September 30
Midterm Exam II	October 28