

Midterm Exam Info – Stat 495 – Advanced Data Analysis

Date: Friday, Oct. 13, 10-10:50 in SM 006

Material: Chapters 1-5, (section) 7.3, 8, and 16 in CASI

General Concepts Covered: (this is not an exhaustive list!)

Importance of Visualization in Understanding Data, Building Models, and Communicating Results
Frequentist vs. Bayesian Methodology – Comparisons, Basic Concepts such as MLEs, Conjugate Families, and Neyman-Pearson

Exponential Families – Examples, Role in Development of Classical Statistics, Multivariate Normal Distributions and Properties, Multinomial Distributions and Properties

Bootstrapping and Permutation/Randomization Tests

Shrinkage/Selection Estimators - Ridge Regression + LASSO (and Lars)

Generalized Linear Models – Concept, Natural Parameters/Link Functions, Logistic Regression, Poisson Regression

Trees – Regression and Classification Trees

Comparing Models – MSEs, Use of Training/Test sets, Use of Cross-Validation

Materials for the exam:

Instructor Provided: Exam

Student Provided: Writing Utensils, Calculator

Notes sheets are NOT permitted. I will supply any formulas that I believe you need to solve a problem. You can feel free to make notes sheets while studying, if that helps you organize your thoughts.

Note on cell phones: **You are not permitted to use your cell phone as a calculator or as a clock.** You can check a calculator out of Frost or the Science library if you need one. There is a clock in the classroom and I will post time remaining notices on the board.

What to expect: 3-5 problems depending on length of each problem; Practice questions provided separately.

Accommodations: These should be in place through AIM. Scheduling to be arranged through accessibility services (at least, that's my understanding of the exam coordination agreement).

I strongly encourage you to review your homework and feedback, as well as the posted solutions, to make sure concepts you encountered issues with there are clarified before the exam.