

SYLLABUS FOR 4530, FALL 2026

TEXTBOOK

Probability, Jim Pitman, Springer Texts in Statistics.

LIST OF TOPICS

- 1.1 Equally likely outcomes
- 1.3 Distributions
- 1.4 Conditional probability and independence
- 1.5 Bayes' rule
- 1.6 Sequences of events
- 2.1 Binomial distributions
- 2.5 Random sampling
- 3.1 Random variables
- 3.2 Expectation
- 2.2 & 3.3 Standard deviation and normal approximation
- 3.4 Discrete distributions
- 2.4 & 3.5 Poisson distributions and Poisson approximation
- Review I
- **MIDTERM I**
- 4.1 Probability densities
- 4.2 Exponential and Gamma distributions
- Moment generating function
- 4.4 Change of variable
- 4.5 Cumulative Distribution Functions
- 5.1 Uniform distributions
- 5.2 Densities
- 5.3 Independent Normal variables
- Chi-square distributions
- 5.4, Operations
- Review II
- **MIDTERM II**
- 6.1 Conditional distributions: discrete case
- 6.2 Conditional expectation: discrete case
- 6.3 Conditioning: density case
- 6.4 Covariance and correlation
- 6.5 Bivariate normal
- t and F -distributions
- Final review
- **FINAL EXAM**