

University of Houston
Department of Mathematics
Math 3338: Probability

Prerequisite: Math 1432.

Course Description: Sample spaces, events and probabilities; random variables and distributions; expectations, variances and covariances; basic discrete and continuous distributions; the central limit theorem.

Text: *Modern Mathematical Statistics, with Applications*, by J.L. Devore and K.N. Berk, Thomson Learning, 2007.

Chapter and Section	Suggested Exercises
Chapter 1: Descriptive Statistics	
1.1: Populations and Samples	Read
1.2: Pictorial and Tabular Methods	13, 21
1.3: Measures of Location	33, 38, 39
1.4: Measures of Variability	41, 48, 54
Chapter 2: Probability	
2.1: Sample Spaces and Events	4, 5, 8, 10, 11
2.2: Axioms, Interpretations, and Properties	14, 15, 17, 20, 22, 28
2.3: Counting Techniques	31, 33, 35, 36, 40
2.4: Conditional Probability	45, 47, 48, 49, 54, 64
2.5: Independence	67, 70, 71, 75, 77, 78, 81
Chapter 3: Discrete Random Variables	
3.1: Random Variables	1, 5, 6, 7, 8
3.2: Discrete Distributions	12, 13, 14, 17, 18, 27
3.3: Expected Values	28, 29, 31, 32, 33, 36, 40, 43
3.4: Moments and Moment Generating Functions	45, 46, 47, 49, 54
3.5: Binomial Distributions	58, 59, 60, 61, 66, 68, 69, 75, 77
3.6: Hypergeometric and Negative Binomial Distributions	80, 81, 83, 86, 91, 92
3.7: Poisson Distributions	93, 94, 97, 98, 99, 101, 104, 108
Chapter 4: Continuous Random Variables	
4.1: Density Functions and Cumulative Distribution Functions	1, 3, 4, 7, 10, 11, 13, 17
4.2: Expected Values and MGFs	18, 23, 24, 27, 28, 31, 33

4.3: Normal Distributions	39, 40, 41, 42, 43, 45, 49, 60, 62, 63, 66
4.4: Gamma Distributions	69, 70, 71, 75, 78, 80
4.5: Other Continuous Distributions	82, 86, 89, 95
4.6: Probability Plots*	97, 98
4.7: Transformations	108, 111, 112, 114

Chapter 5: Joint Distributions

5.1: Jointly Distributed Random Variables	1, 2, 7, 9, 11, 17
5.2: Expected Values, Covariance, Correlation	18, 21, 22, 24, 25, 26, 29, 33
5.3: Conditional Distributions*	36, 37, 38, 44, 45
5.5: Order Statistics*	65, 66, 68, 70

Chapter 6: Statistics and Sampling Distributions

6.1: Statistics and Their Distributions	1, 3, 4, 7
6.2: The Distribution of the Sample Mean	11, 12, 13, 16, 17, 19, 21, 24
6.3: Linear Combinations	28, 29, 33, 34, 37, 39
6.4: Distributions Based on a Normal Sample*	46, 50, 51, 59

* Starred sections are to be covered if time permits.