COURSE OUTLINE FOR MATH 441: INTRODUCTION TO PROBABILITY

TEXT: John E. Freund's Mathematical Statistics, 6th Ed., Miller & Miller, prentice-Hall,

CHAPTER	APPROXIMATE WEEKS

1. Introduction **2**

Emphasize counting techniques including permutations and combinations. Light on 1.3 (Binomial coefficients).

2. Probability **3**

Do entire chapter and prove most of the theorems using postulates of probability. Assign many applied problems and do many in class. Possibly mention Monte Carlo methods & the "birthday problem".

3. Probability Distributions and Densities **3**

Light on or omit cumulative distribution functions and light on joint and marginal distributions for more than two variables. Stress applied problems throughout.

4. Mathematical Expectation **1**

In 4.3 (Moments), do mean and variance only. Light on Chebyshev's Theorem in 4.4. omit 4.5 (Moment Generating Functions) and do only covariance in 4.6 (Product Moments). Light on linear combinations in 4.7 and omit 4.8 (Conditional Expectations).

5. Special Probability Distributions **1 ½**

Emphasize applied problems throughout and omit most proofs.

6. Special Probability Densities **2**

Emphasize applications throughout. Omit the Gamma, Chi-Square and Beta distributions in 6.3 and 6.4. Emphasize the univariate normal distribution but omit the bivariate normal in 6.7.

7. Sampling Distributions 1 ½

Illustrate sampling distributions and Central Limit Theorem in 8.2. Omit rest of chapter.

NOTE: Cover as much of interval estimation as you can in Chapter 11 as time permits.

	13 Weeks
Exams, reviews, etc.	1 Week
TOTAL	14 Weeks