

# UNIVERSITY OF FLORIDA DEPARTMENT OF STATISTICS

STA4321 MATHEMATICAL STATISTICS AND  
STA5324 MATHEMATICAL METHODS OF STATISTICS

Spring 2008 Course Outline

**For updates and announcements please check**

<http://www.stat.ufl.edu/~yy/STA4321/Announcements.doc>

**Instructor:** Dr. Yaşar Yeşilçay ([yy@stat.ufl.edu](mailto:yy@stat.ufl.edu)) in FLO 101B, Phone: 392-1941/206

**Lectures for Sections 7476 and 7488:** MWF Period 4 (10:40 – 11:30) in FLO100 and

**for Sections 1192 and 7514:** MWF Period 5 (11:45 – 12: 35) in MAEB 0211

**Office Hours:** MTWR Period 7 (1:45 – 2:45)

**Teaching Assistant:** Ruitao Liu (FLO 117D) and Herman Hooker (in FLO 209)

**Office Hours:** MWR 9:35 – 10:40 TR 2:00 – 4:00

**Course Objectives:** The sequence of courses STA 4321 – 4322 (and 5325 – 5328) provide a formal and systematic introduction to mathematical statistics **for students who have taken at least three semesters of calculus**. STA4321/5325 introduces the necessary background in probability that is necessary to understand the classical statistical theory introduced in STA4322/5328. Major topics include the basic formal elements of probability, distributions of univariate and some multivariate discrete and continuous random variables, distributions of functions of random variables and the fundamental limit theorems.

**Textbook:** R. L. Scheaffer and Linda J. Young, *Introduction to probability and its applications*, **Revised Edition**. Photocopy of pre-published version available at University Copy & More (1620 W. University Avenue).

**Prerequisites:** MAC2311, 2312, 2313 (or equivalent three semesters of calculus sequence)

**Attendance:** Class attendance is fully expected. It is your responsibility to learn all the material in the text, whether it is presented during the lecture or not.

**Tests:** There will be 5 short exams (or long quizzes) on the dates given in the tentative schedule. Contents of these tests may change depending on how much we cover before the test dates. Each test will

contribute 10% towards your overall grade. Final exam will be cumulative and will carry a 30% weight.

**Assignments:** You are expected to solve all assigned problems **and more**. Although assignments will not be collected or graded, one or more of the assigned problems will be in the quiz.

**Grading:** 50% for the in semester tests (10% for each test)  
+24% for the 6 quizzes (4 points for each quiz)  
+30% for the cumulative final examination.  
104% Total (giving you a 4% bonus points).

**STA4321/5325 Tentative Schedule Spring 2008**

Week	Days	Topics	Sections	Assignment
1	1/7	Introduction	1.1 – 1.5	Read Chapters 1 & 2
	1/9	Set Algebra, Statistical experiments, Events	2.1 - 2.2	2.5 – 2.16
	1/11	Probability of Events	2.3	2.17 – 2.25
2	1/14	Counting Rules Useful in Probability	2.4	2.27 – 2.52
	1/16	More Counting Rules	2.5	2.53 – 2.79
	1/18	Conditional Probability of Events Quiz 1	3.1	3.1 – 3.14
3	1/21	M L King Day. No Classes		
	1/23	Independence of Events	3.2	3.15 – 3.29
	1/25	Test – 1 Covers Sections 1.1 – 3.1		
4	1/28	Total Probability and Bayes' Rule	3.3	3.31 – 3.40
	1/30	Random Variables and their Distributions	4.1	4.1 – 4.12
	2/1	Expected Value of Random Variables Quiz 2	4.2	4.13 – 4.26
5	2/4	The Bernoulli Family of Distributions I	4.3 – 4.4	4.27 – 4.44
	2/6	The Bernoulli Family of Distributions II	4.5 – 4.6	4.45 – 4.64
	2/8	Test – 2 Covers Sections 4.1 – 4.6		
6	2/11	The Poisson Distribution	4.7	4.65 – 4.80
	2/13	The Hypergeometric Distribution	4.8	4.81 – 4.95
	2/15	Continuous Random Variables & Distributions Quiz 3	5.1	5.1 – 5.12
7	2/18	Expected Values of Continuous Random Variables	5.2	5.13 – 5.22
	2/20	The Uniform distribution	5.3	5.23 – 5.36
	2/22	Test – 3 Covers Sections 4.7, 4.8, 5.1 – 5.3		
8	2/25	The Exponential Distribution	5.4	5.37 – 5.54
	2/27	The Gamma Distribution I	5.5	5.55 – 5.61
	2/29	The Gamma Distribution I Quiz 4		
9	3/3	The Normal distribution I	5.6	5.65 – 5.90
	3/5	The Normal distribution II		
	3/7	The Beta Distribution	5.7	5.91 – 5.102
10	Have a nice Spring Break. Please drive safely.			
11	3/17	Moment Generating Functions I	4.9 &	4.97 – 4.110
	3/19	Moment Generating Functions II	5.10	5.125 – 5.128
	3/21	Test – 4 Covers Sections 4.9 and 5.1 – 5.7 and 5.10		
12	3/24	Bivariate and Marginal and Conditional Distributions	6.1 & 6.2	6.1 – 6.20
	3/26	Independent Random Variables	6.3	6.21 – 6.30
	3/28	Expected Values of Functions of rv's Quiz 5	6.4	

13	3/31	Conditional Expectation	6.5	6.31 – 6.38
	4/2	The Multinomial Distribution	6.6	6.39 – 6.48
	4/4	Test – 5 Covers Sections 6.1 – 6.6		
14	4/7	More on Moment Generating Functions	6.7	6.49 – 6.52
	4/9	Functions of Discrete Random Variables	7.1 & 7.2	7.1 – 7.4
	4/11	Method of distribution Functions Quiz 6	7.3	7.5 – 7.16
15	4/14	Method of Transformations in One Dimension	7.4	7.17 – 7.22
	4/16	Method of conditioning	7.5	7.25 – 7.28
	4/18	Method of Moment Generating Functions	7.6	7.29 – 7.36
16	4/21	The Central Limit Theorem	8.4	8.11 – 8.36
	4/23	Applications of CLT		
	4/25	Reading Day – No classes		
17	Final Exam on Thursday 5/1/2008			