

**STA 4321/5325 Mathematical Statistics**  
**Dr. Yaşar Yeşilçay**

**Some important web addresses For STA  
4321/5325:**

Statistics Department: [www.stat.ufl.edu](http://www.stat.ufl.edu)

My Web page: [www.stat.ufl.edu/~yy](http://www.stat.ufl.edu/~yy)

**Course Announcements:**

Visit this page before every class  
For announcements, links to new documents,  
etc.

[www.stat.ufl.edu/~yy/STA4321.doc](http://www.stat.ufl.edu/~yy/STA4321.doc)

**Course outline:**

[www.stat.ufl.edu/~yy/STA4321Spr09.doc](http://www.stat.ufl.edu/~yy/STA4321Spr09.doc)

**Course Documents:**

[www.stat.ufl.edu/~yy/STA4321Spr09](http://www.stat.ufl.edu/~yy/STA4321Spr09)

UNIVERSITY OF FLORIDA DEPARTMENT OF STATISTICS  
STA4321/5325 MATHEMATICAL STATISTICS

Spring 2009 Course Outline

Check the following link or updates, announcements and more  
<http://www.stat.ufl.edu/~yy/STA4321.doc>

**Instructor:** Dr. Yaşar Yeşilçay ([yy@stat.ufl.edu](mailto:yy@stat.ufl.edu)) in FLO 101B, Phone: 273 - 1839  
**Lectures Sections 7476 and 7488:** MWF Period 4 (10:40 – 11:30) in FLO 100 and

**Sections 1192 and 7515:** MWF Period 5 (11:45 – 12: 35) in TUR L011

**My Office Hours:** MTWR Period 7 (1:45 – 2:45) and by appointment.

• **Revised office hours for teaching assistants:**

- Minzhao Liu ([liuminzhao@stat.ufl.edu](mailto:liuminzhao@stat.ufl.edu)) in FLO 218  
**Office Hours:** Monday and Wednesday 12:30 – 1:30, Thursday 3:00 – 4:00
- Shibasish Dasgupta ([dasgupta@stat.ufl.edu](mailto:dasgupta@stat.ufl.edu)) in FLO 115  
**Office Hours:** Tuesday 11:45 – 12:35 and Thursday 10:40 – 12:35

**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:** Wackerly/Mendenhall/Scheaffer *Mathematical Statistics with Applications*,  
7<sup>th</sup> Edition, Thomosn, CA, 2008  
(ISBN-13: 978-0- 495-4408-4, ISBN-10: 0-495-11081-- 7)

**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 lectures or not.

**Tests:** There will be 5 short exams (or long quizzes) on the dates given in the tentative schedule. Coverage 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).

**Letter Grades:**    90 – 100 **A**; 85 – 89 **B+**; 80 – 84 **B**  
                         75 – 79 **C+**;            65 – 74 **C**;   60 – 64 **D**  
                         0 – 59 **E**;    (D+ grade is not given as a department policy).

Week	Days MWF	Topics	Sections	Assignment (TBA during the term)
1	1/5			
	1/7	Introduction	1.1 – 1.3	
	1/9	Statistical Inference	1.4 – 1.5	
2	1/12	Probability and Inference	2.1 – 2.2	
	1/14	Review of Set Notation	2.3	
	1/16	Probability Calculations	2.4 – 2.5	
		<b>Quiz 1</b>		
3	1/19	M L King Day. No Classes		
	1/21	Tools for Counting	2.6	
	1/23	<b>Test – 1 Covers Sections 1.1 – 2.6</b>		
4	1/26	Independence, and Rules of Probability	2.7 – 2.9	
	1/28	Some Law of Probability and Bayes' Rule	2.10 – 2.12	
	1/30	Discrete Random Variables	3.1 – 3.3	
5		<b>Quiz 2</b>		
	2/2	The Binomial Family of Distributions	3.4 – 3.6	
	2/4	Hypergeometric Distribution	3.7	
6	2/6	<b>Test – 2 Covers Sections 2.7 – 3.7</b>		
	2/9	The Poisson Distribution	3.8	
	2/11	Tchebysheff's Theorem - I	3.11	
7	2/13	Continuous Random Variables	4.1 – 4.2	
		<b>Quiz 3</b>		
	2/16	Expected Values of Continuous Random Variables	4.3	
8	2/18	The Uniform distribution	4.4	
	2/20	<b>Test – 3 Covers Sections 3.8, 3.11, 4.1 – 4.4</b>		
	2/23	The Normal Distribution - I	4.5	
9	2/25	The Normal distribution - II	4.5	
	2/28	Gamma Distribution	4.6	
		<b>Quiz 4</b>		
10	3/2	Beta Distribution	4.7	
	3/4	Comments, Moment Generating Functions	4.8 – 4.9	
	3/6	Tchebysheff's Theorem - II	4.10	
11	3/8 – 3/15 Have a nice Spring Break. Please drive safely.			
12	3/16	Bivariate and Multivariate Distributions	5.1 – 5.2	
	3/18	Marginal and conditional distributions	5.3	
	3/20	<b>Test – 4 Covers Sections 4.5 – 4.10 and 5.1 – 5.3</b>		
13	3/23	Independent Random Variables	5.4	
	3/25	Expected Values and Some Theorems	5.5 – 5.6	
	3/27	More Expected Values	5.7 – 5.8	
14		<b>Quiz 5</b>		
	3/30	The Multinomial Distribution	5.9	
	4/1	Functions of Random Variables	6.2 – 6.2	
15	4/3	<b>Test – 5 Covers Sections 5.4 – 6.2</b>		
	4/6	Methods of distribution functions & Transformations	6.3 – 6.4	
	4/8	Method of Moment – Generating Functions	6.5	
16	4/10	Multivariable Transformations	6.6	
		<b>Quiz 6</b>		
	4/13	Order Statistics	6.7	
17	4/15	Sampling distributions	7.1 – 7.2	
	4/17	Central Limit Theorem - I	7.3	
	4/20	Central Limit Theorem - II	7.4	
18	4/22	Normal Approximation to Binomial distribution	7.5	
4/24 – 25 Reading Days – No classes				

***Final Exam on Thursday April 30, 2009***  
***Sections 7488 & 7476 at 7:30 – 9:30 AM (Early Morning)***  
***Sections 1192 & 5325 at 12:30 – 2:30 PM.***