Course Syllabus

Course Information
STAT 4352.501 – Monday and Wednesday, 5:30 – 6:45 PM, GR 3.302
Call Number: 25888
Course Title: Mathematical Statistics
Term: Spring 2017

Professor Contact Information
(Professor's name, phone number, email, office location, office hours, other information)
Yuly Koshevnik, 972-883-4178, yuly.koshevnik@utdallas.edu
Office: FA 2.408 Office Hours: M W => 3:30 – 5 PM, T TH => 6 – 7 PM, F => 12 – 2 PM

Course Pre-requisites, Co-requisites, and/or Other Restrictions
STAT 4351 or equivalent

Course Description
Sampling distributions and order statistics. Decision Theory: minimax and Bayes criteria.
Point estimation: including unbiased estimators, efficiency, consistency, sufficiency, robustness, the method of moments, the method of maximum likelihood, Bayesian estimation.
Interval estimation: including the estimation of means, differences of means, proportions and differences between proportions, variances and ratios of variances.
Hypothesis testing: including Neyman-Pearson lemma, power function and likelihood ratio test. Special tests about means, variances, and proportions. Nonparametric tests.
Foundations of regression, correlation, design and analysis of experiments. Proofs of all main results. Practical examples illustrating the theory.
The course can be used as a preparation for the statistical part of the fourth actuarial exam.

Student Learning Objectives/Outcomes
The overriding objective of this course is to make certain that each student knows the theoretical methods of statistics and its applications. This course is also a preparation for more advanced courses in mathematical statistics. For actuarial students this class covers topics necessary for preparation for Exam 4.

Required Textbooks and Materials
Miller and Miller (2014): John Freund's Mathematical Statistics with Applications, 8th Edition, Pearson, ISBN 978-0-32180709-0. (The 7th edition will be approved as well.)

Suggested Course Materials
    G. Casella and R. Berger (2002): Statistical Inferences, 2nd edition. Duxbury Advanced
    Series.

Assignments & Academic Calendar
(Topics, Reading Assignments, Due Dates, Exam Dates)
Homework will be assigned regularly and collected according to the schedule. Assignments and scheduled due dates will be posted on E-Learning.
There will be four exams (approximately, once a month) based on problems considered in class and / or included into homework.

Grading Policy
Homework assignments: average score in a **100-point** scale contributes **20%** into your overall grade. Two lowest scores (or missing assignments) will be dropped.
Exams: each exam (in a **100-point** scale) contributed **20%** into your overall grade.
No make-up homework and no make-up exam (unless a special arrangement is made prior to the exam date). Exam grades can be discussed until the next exam.

Grading Scale:

[97, 100]	[93, 97)	[90, 93)	[87, 90)	[83, 87)	[80, 83)	[77, 80)	[73, 77)	[70, 73)	[67, 70)	[63, 67)	[60, 63)	[0, 60)
A+	A	A -	B+	B	B -	C+	C	C -	D+	D	D -	F

Course & Instructor Policies
(Make-up exams, extra credit, late work, special assignments, class attendance, classroom citizenship, etc.)
Each exam is taken in class, closed books and notes. NO MAKE-UP (unless special arrangements are made). Students with disabilities may be eligible for special services through the OSA. Please check with the Student Accessibility Office.
Although there is no extra credit for attendance, you are expected to attend the class and be active during each session. It is entirely your responsibility to catch up with the course material that you missed and then use instructor's office hours to clarify the topics covered in class.
I am available during the office hours announced above and by appointment (please use email to arrange a meeting if it does not fit into my office schedule).

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to http://go.utdallas.edu/syllabus-policies for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.

IMPORTANT DATES & HOLIDAYS	
CLASSES START	MONDAY, JANUARY 9
MARTIN LUTHER KING'S DAY	MONDAY, JANUARY 16
CENSUS DAY/ DROP WITHOUT A "W"	WEDNESDAY, JANUARY 25
DROP (APPROVAL REQUIRED)	JANUARY 26 – MARCH 27
DROP WITH WL	FEBRUARY 21 – MARCH 27
EXAM 1	MONDAY, JANUARY 30
EXAM 2	MONDAY, FEBRUARY 27
SPRING BREAK	MARCH 13 – MARCH 19
EXAM 3	WEDNESDAY, MARCH 29
EXAM 4	WEDNESDAY, APRIL 26
LAST DAY OF CLASSES	WEDNESDAY, APRIL 26

TENTATIVE COURSE OUTLINE		
Days	Topics	References
January 9 – 11	Review of Probability Theory	Chapters 2 – 7
January 16	**Martin Luther King's Day – No Classes**	
January 11, 18	Sampling Distributions	Chapter 8
January 23	Homework 1 Due	Chapters 2 – 8
January 18, 23 – 25	Point Estimation	Chapter 10
January 30	**Exam 1**	Chapters 2 – 8
February 1	Homework 2 Due	Chapters 8, 10
	Point Estimation and Examples	Chapter 10
February 6 – 8	Decision Theory	Sections 9.3 – 9.6
February 8	Homework 3 Due	Chapter 10
February 13 – 15, 20	Interval Estimation and Examples	Chapter 11
February 20	Homework 4 Due	Chapters 9 – 11
February 22	Introduction to Hypothesis Testing	Chapter 12
February 27	**Exam 2**	Chapters 9 – 11
March 1 – 8	Hypothesis Testing and Examples	Chapters 12 – 13
March 8	Homework 5 Due	Chapters 10 – 11
	Hypothesis Testing and Examples	Chapters 12 – 13
March 13 – 19	**Spring Break – No Classes**	
March 22 – 27	Hypothesis Testing and MORE Examples	Chapters 12 – 13
March 27	Homework 6 Due	Chapters 12 – 13
March 29	**Exam 3**	Chapters 11 – 13
April 3 – 5	Inferences for Linear Regression Models	Sections 14.1 – 14.4
April 5	Homework 7 Due	Chapters 11 – 13
April 10 – 17	Nonparametric Tests and Estimates	Sections 16.1 – 16.5
April 19 – 24	Course Review	All Topics
April 26	**Exam 4**	All Topics