MATH 3332/03: PROBABILITY AND STATISTICAL INFERENCE

Fall 2014

Instructor: Xuelei (Sherry) Ni, MS 224A,
Email: xni2@kennesaw.edu
Office Hours: T/R 2:00pm – 3:45pm, or other time by appointment

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Time: T/R 12:30pm – 1:45pm
Classroom: Clendenin Building (CL) Room 1005
Class Website: d2l.kennesaw.edu
All the slides, announcements, homework, solutions, review materials, and other additional resources will be put in this website.

Textbook:

- **Required**:
  Robert V. Hogg and Elliot A. Tanis. *Probability and Statistical Inference*. Eighth Edition. We follow closely this book. Homework is from this book as well. If you use an older or newer edition, make sure you do the correct homework problems.

Prerequisites: Math 2202 Calculus II grade of C or better

Description: This course is designed to introduce the students to probability and both descriptive and inferential statistics. Topics include: random variables and probability distributions, expectation and variance of random variables, properties of estimators, exploratory data techniques, confidence intervals, hypothesis tests for population mean and proportion

Learning outcomes:

- Students should acquire appropriate vocabulary (population, sample, census, parameter, statistic, etc) and notation.
- Students will be able to correctly plot and describe statistical data.
- Students will be able to correctly interpret statistical plots.
- Students will understand the importance of measures of center and variation and be able to use software to get these statistics.
- Students will understand basic probability concepts and be able to use them accordingly.
- Students will learn and understand the concept of random variable and its probability distribution.
- Students will know to distinguish between discrete and continuous distributions and be able to apply the concepts to real-life problems.
- Students will know how to find the expected value and variance of a continuous or discrete random variable and be able to apply the concepts to real world problems
- Students will know how to compute probabilities using the Binomial and Normal models.
- Students will know how to apply the Central Limit Theorem to applications involving sample means
- * Students will be able to build confidence intervals to estimate population parameters such as means and proportions from statistical data.
- * Students will be able to successfully use software to describe, analyze and perform inferential statistics.
- Students will gain appreciation for the importance of statistics in everyday life.

*: These learning outcomes are optional. If there is enough time in the end of the semester, they will be covered.

Software & Calculator: Minitab or TI-83/84 may be used.

Grading:

- Homework will be assigned and due before each exam. Late homework will not be accepted. You are allowed (and encouraged) to work together with other students on homework, as long as you write up and turn in your own solutions. You are also allowed (and encouraged) to ask me questions, although you should try to think about the problems before asking. I strongly encourage you to work on extra problems from the book on your own.

- There will be several random quizzes in class. Quizzes will be graded on a scale of 0 to 10 and the worst grade will be dropped from the final grade calculation.

- Exams include four midterms and one final. They are close book exams. However, you are allowed to bring 1-page note (single sided) for each midterm and 2-page note (single sided also) for the final. Calculators such as a TI-83 are also allowed during the exams. Only the final is cumulative. The worst grade of the 5 exams will be dropped from the final grade calculation.

- Make-up exams are not permitted except in cases of serious illness, business travel, or KSU Athletic Association conflicts. **You should have a pardon letter from the appropriate officer to ask for a make-up exam.**

- Re-grade policy: if you feel that I have made an error in grading your homework or test, please turn in your home work or test with a *written* explanation to me, and I will consider your request. Please note that re-grading may cause your grade to go up or down.

- Distribution of points:
  - Class Attendance + Quiz 30 points
  - Quizzes 70 points
  - Homework 100 points
  - Midterm I 100 points
  - Midterm II 100 points
  - Midterm III 100 points
  - Midterm IV 100 points
  - Final 100 points (Tuesday, December 09 **1:00pm~3:00pm**)

Total 600pts = 700 points – 100 points (the worst exam grade will be dropped)

A: 525 points or above
B: 440 – 524 points
C: 370 – 439 points
D: 320 – 369 points
F: 319 or below

Course Drop Date:

The last day to withdraw from the course and possibly receive a "W" is __October 8, 2014_____. Two exams will be taken before this date as a guide for making this decision.

Students who find that they cannot continue in college for the entire semester after being enrolled, because of illness or any other reason, need to complete an online form. To completely or partially withdraw from classes at KSU, a student must withdraw online at www.kennesaw.edu, under Owl Express, Student Services.

The date the withdrawal is submitted online will be considered the official KSU withdrawal date which will be used in the calculation of any tuition refund or refund to Federal student aid and/or HOPE scholarship programs. It is advisable to print the final page of the withdrawal for your records. Withdrawals submitted online prior to midnight on the last day to withdraw without academic penalty will receive a "W" grade. Withdrawals after midnight will receive a "WF". Failure to complete the online withdrawal process will produce no withdrawal from classes. Call the Registrar's Office at 770-423-6200 during business hours if assistance is needed.

Students may, by means of the same online withdrawal and with the approval of the university Dean, withdraw from individual courses while retaining other courses on their schedules. This option may be exercised up until **__October 8, 2014_____ .**

This is the date to withdraw without academic penalty for Fall Term, 2014 classes. Failure to withdraw by the date above will mean that the student has elected to receive the final grade(s) earned in the course(s). The only exception to those withdrawal regulations will be for those instances that involve unusual and fully documented circumstances.

Academic Honor Code: It is your responsibility to get familiar with the KSU Student Code of Conduct. For any questions involving these or any other Academic Honor Code issues, please consult http://www.kennesaw.edu/judiciary/code.conduct.shtml

Weekly Schedule (subject to change)

Week	Date	Topic	Notes
Week 1	Aug. 19	Syllabus Section 1.1 Basic Concepts	
	21	Section 1.2 Properties of Probability	
Week 2	26	Section 1.3 Methods of Enumeration	
	28	Section 1.4 Conditional Probability	
Week 3	Sep. 02	Section 1.5 Independent Events	
	04	Section 2.1 Random Variables of the Discrete Type	
Week 4	09	Review	HW1 due Quiz1 due
	11	**Test I**	
Week 5	16	Section 2.2 Mathematical Expectation	
	18	Section 2.3 The Mean, Variance, and Standard Deviation	
Week 6	23	Section 2.4 Bernoulli Trials and the Binomial Distribution	
	25	Section 2.6 The Poisson Distribution	
Week 7	30	Section 3.3 Random Variables of the Continuous Type	
	Oct. 02	Review	HW2 due
Week 8	07	**Test II**	
	08	**Last Day to Withdraw With Grade "W"**	
	09	Section 3.4 The Uniform Distribution	
Week 9	14	Section 3.5 The Gamma Distribution Family	
	16	Section 3.6 The Normal Distribution	
Week 10	21	Section 5.1 Functions of One Random Variables	
	23	Section 5.4 The Moment-Generating Function Technique	
Week 11	28	Section 5.6 The Central Limit Theorem	
	30	Review	HW3 due
Week 12	Nov. 04	**Test III**	
	06	Section 6.1 Point Estimation	
Week 13	11	Section 6.2 Confidence Intervals for Means	
	13	Section 6.5 Confidence Intervals for Proportions	
Week 14	18	Section 7.1 Tests about Proportions	
	20	Section 7.2 Tests about One Mean	
Week 15	25	*Fall break, no class*	
	27	*Fall break, no class*	
Week 16	Dec. 02	Review	HW4 due
	04	**Test IV**	
Week 17	Dec. 09 **1:00pm~** **3:00pm**	**Final Exam.** Check http://registrar.kennesaw.edu/calendars/final_exam_Fall2014.php for updated information	

Course Syllabus Review Statement and Signature Form

I have carefully read the syllabus for MATH3332/03, fall semester 2014, and have had the opportunity to ask the instructor any questions I may have about it. I understand its contents, including the course requirements and grading policy.

Print Name _____

Signature _____ Date _____

Acknowledgment and Acceptance of Academic Integrity Statement

In any academic community, certain standards and ethical behavior are required to ensure the unhindered pursuit of knowledge and the free exchange of ideas. Academic honesty means that you respect the right of other individuals to express their views and opinions and that you, as a student, not engage in plagiarism, cheating, illegal access, misuse or destruction of college property, or falsification of college records or academic work.

As a member of the Kennesaw State University academic community you are expected to adhere to these ethical standards. You are expected to read, understand and follow the code of conduct as outlined in the KSU graduate and undergraduate catalogs. You need to be aware that if you are found guilty of violating these standards you will be subject to certain penalties as outlined in the college judiciary procedures. These penalties include permanent expulsion from KSU.

Read the Academic Integrity Statement and then sign the date in the space below. You are required to abide by these ethical standards while you are a student at KSU. Your signature indicates that you understand the ethical standards expected of you in this academic community, and that you understand the consequences of violating these standards.

Print Name _____

Signature _____ Date _____