KENNESAW STATE UNIVERSITY

COLLEGE OF SCIENCE AND MATHEMATICS
Department of Statistics and Analytical Sciences

STAT 7010: Mathematical Statistics I
Fall Semester 2020
Instructor – Joe DeMaio

Course Description:

STAT 7010: Mathematical Statistics I

3 Class Hours 0 Laboratory Hours 3 Credit Hours
Prerequisite: STAT 8120 and STAT 8210
Fundamental concepts of probability, random variables and their distributions; review of sampling distributions; theory and methods of point estimation and hypothesis testing, interval estimation, nonparametric tests, introduction to linear models.

Expected Learning Outcomes:

1. Understand the basic theory of sets and set operations as applied to probability theory.
2. Utilize techniques of counting as applied to probability theory.
3. Recognize and utilize specific discrete and continuous random variables to solve probability problems.
4. Work with joint distributions (discrete and continuous) to solve probability problems.
5. Compute and interpret results of expected values, variance, covariance and correlations.
6. Show understanding of the moment generating function and use it to compute moments of random variables.
7. Explain and work with limit theorems (law of large numbers and Central Limit Theorem).
8. Be familiar with and explain the normal-based random variables (χ^2, t and F) and how they relate to the normal random variables and each other.
9. Be able to utilize the method of moments and maximum likelihood methods for parameter estimation.
10. Utilize and explain the theoretical underpinnings of statistical hypothesis testing.

Textbook and Online Resource Requirements:

Textbook: Modern Mathematical Statistics with Applications, Second Edition Devore & Berk

Course website: http://facultyweb.kennesaw.edu/jdemaio/stat%207010%20home.php

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Web Page: http://facultyweb.kennesaw.edu/jdemaio/

<u>Grading</u>

There will be three tests and a final exam. Each counts 25% towards your final grade. Letter grades will be assessed on a 10-point scale. However, tests will have more than 100 possible points available so extra points are available to be earned. **Tests will be take-home, open book but closed everything else (people and internet).** The final exam will be cumulative. Cheating may result in the grade of an 'F' for the course.

Tests will be distributed on a Tuesday and due by 3PM on Friday.
September 25-Test 1 due
October 23-Test 2 due
November 20-Test 3 due
December 11-Final Exam due

I do not drop nor do I replace any grades!
I do not give make-up tests (unless there is a good reason and you must contact me prior to 48 hours after the test)!
There are no extra credit projects!
I do not make deals at the end of the semester for grades!

Homework

There will be homework problems for each section covered. This homework will not be taken up and graded. It is to give you a point of reference from which to work. Test problems are often slight variations of homework problems if not the exact problem. The only way to succeed in this class is by doing all of the assigned homework! Merely, attending class will not be enough. A student will encounter a large number of techniques and examples in this course. It is vital to know and understand these new concepts. Successive lectures will assume the knowledge of previously stated techniques and examples. One must keep up with this material on a day-to-day basis! Because homework problems are not graded, you are allowed and strongly encouraged to work together on homework problems. I believe that it is very beneficial to regularly work problems in small groups of two to four people. This will decrease your chances of getting stuck on a problem and give you someone, other than your instructor, with whom to discuss homework problems. Obviously however, you must also be able to work problems without guidance for testing situations and when presenting at the board.

Homework is mandatory (if you want a good grade) despite the fact that there is no homework grade!

Attendance

Every mathematics class is a building process from day one (actually, even from grade one). A student who misses classes has seriously compromised his or her knowledge of the material and will begin to feel an effect on their final grade. Attendance and class participation are important elements to incorporate into your study habits. We will meet via MS Teams. Class session will be recorded for review purposes.

Effort is mandatory (if you want a good grade) despite the fact that there is no participation grade! Students with poor effort will be reminded of such during discussions of their grade or special requests.

Important Dates

The fall 2020 academic calendar can be accessed at https://registrar.kennesaw.edu/academic-calendars/fall-2020-academic-calendar.php

WITHDRAWAL FROM THE UNIVERSITY OR FROM INDIVIDUAL COURSES AND ACADEMIC INTEGRITY

Fall Term, 2020

Withdrawal

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 **Oct. 7, 2020**.

This is the date to withdraw without academic penalty for **Fall** Term, 20**20** 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 Integrity

Every KSU student is responsible for upholding the provisions of the Statement of Student Rights and Responsibilities, as published in the Undergraduate and Graduate Catalogs. Section II of the Statement of Student Rights and Responsibilities addresses the University's policy on academic honesty, including provisions regarding plagiarism and cheating, unauthorized access to University materials, misrepresentation/falsification of University records or academic work, malicious removal, retention, or destruction of library materials, malicious/intentional misuse of computer facilities and/or services, and misuse of student identification cards. Incidents of alleged academic misconduct will be handled through the established procedures of the Department of Student Conduct and Academic Integrity (SCAI), which includes either an "informal" resolution by a faculty member, resulting in a grade adjustment, or a formal hearing procedure, which may subject a student to the Code of Conduct's minimal one semester suspension requirement.
See also http://scai.kennesaw.edu/codes.php for updated versions of all policies.