The University of Kansas
Electrical Engineering and Computer Science
EECS 461 Probability and Statistics
Fall Semester 2022

1. General Information

Place, Times, Credits:	1136 LEA, 11:00 am - 12:15 pm TR, 3 credit hours
Discussion Sessions:	5:00 - 7:00 pm M, 1131 LEA
Pre-requisites:	Math 127 (or 147), Math 290 (or 291), and upper-level EECS eligibility
Texts:	*Probability and Stochastic Processes,* 3^{rd} *Edition* Yates/Goodman, Wiley, 2014. Reference: *Elements of Engineering Probability and Statistics* Ziemer, Prentice-Hall, 1997.
Professor:	David W. Petr
Office Hours:	2001C Eaton: TR 1:30-2:30, W 3:00-4:00 or by appointment
Telephone and email:	864-8823, dwp@ku.edu

2. Catalog Description

Introduction to probability and statistics with applications. Reliability of systems. Discrete and continuous random variables. Expectations, functions of random variables, and linear regression. Sampling distributions, confidence intervals, and hypothesis testing. Joint, marginal, and conditional distribution and densities.

3. Course Objectives

This course is designed to give juniors in electrical engineering, computer engineering, computer science, and interdisciplinary computing an introduction to the theory, tools and techniques for working with probabilistic events and statistical analysis. An effort will be made to illustrate these topics with applications relevant to the above majors.

4. Course Schedule (subject to change, and number of meetings is a wild guess)

Topic	Meetings (75 min)
Probability Foundations (Chapter 1)	2
Sequential Experiments (Chapter 2)	2
Discrete Random Variables (Chapter 3)	4
Continuous Random Variables (Chapter 4)	4
Multiple Random Variables (Chapter 5)	4
Functions of Random Variables (Chapter 6)	3
Conditional Probability Models (Chapter 7)	3
Sums of Random Variables (Chapter 9)	3
The Sample Mean (Chapter 10)	4
Hypothesis Testing (Chapter 11)	If time allows
Midterm Exam	1
Final Exam	(Tuesday 13 December 2022, 10:30 am - 1:00 pm)

5. ABET Course Outcomes

These will be developed as the course progresses.

6. Learning Management System

We will be using Canvas as the Learning Management System for this class.

7. Policies

7.1 Grade Composition and Letter Grades

Homework	10 Course Points
Quizzes	12 Course Points
Midterm Exam	40 Course Points
Final Exam	40 Course Points
Total	102 Course Points

The mapping from your final course score to your grade for the course will be based *to a first approximation* on the thresholds of 93 Course Points for an A, 90 Course Points for an A-, 87 for a B+, 83 for a B, 80 for a B-, etc. Note that the Course Points total to 102 instead of 100, giving you a 2 point "bonus" built into the grading scheme. This is how I handle variations in student performance due to personal circumstances, etc., rather than dropping the lowest quiz score or some other policy.

However, I reserve the right to adjust the letter grade thresholds based on the final distribution of course scores. As an example of what I mean by this, if there are several students with scores from 94 to 99 Course Points, several more with scores from 87 to 90 Course Points, and none in between, the entire second group of students would likely get the same grade, which would likely be a B+. The thresholds could also be moved down, e.g., under other circumstances I may assign an A- to a student with a score of 89 Course Points.

As an example of the calculation of grades, suppose that a student had a homework average of 90%, a quiz average of 70%, scored 78 out of 100 (78.0%) on the midterm exam, and 100 out of 125 (80.0%) on the final exam. The student's course score would be 80.6 Course Points and the student would most likely receive a grade of B- for the course.

7.2 Exams

The midterm exam will be given on a Monday during the discussion time period (5:00 - 7:00 pm). The regular class period on the prior Thursday will be a review/problem session (see "Discussion Sessions" below). All exams are closed book. I will provide any reference information (tables, etc.) I think you may need. You will also be allowed one 8 1/2 by 11 sheet of notes (one side) for the Midterm Exam and two sides of 8 1/2 by 11 notes for the Final Exam. The exams are cumulative (since course material tends to build on previous material). The final exam is comprehensive (though it will emphasize material not tested by the midterm exam).

7.3 Quizzes

To provide extra incentive for you to complete the assigned reading, we will have a short (approximately

10 min) quiz every week on Thursday at the end of class. The quiz will be identical to one of the end-of-section quizzes (or a subset of its questions) in the textbook in the assigned reading for that week, but you will not know which quiz it will be. Solutions to all of these quizzes are available on the publisher's website.

7.4 Make-Ups

Make-up exams will be given only if: 1) I am informed in **ADVANCE** of the exam (in person or by phone conversation, email, voice mail, message left with staff person, etc.), and 2) I deem the reason to be sufficiently meritorious (job interviews are not). If the reason is illness, I **REQUIRE** documentation of the illness from a health-care professional. This documentation can be provided after the exam. There will be no make-up quizzes, but I will drop your lowest 2 quiz scores.

7.5 Discussion Sessions

As a part of this class, you have enrolled in "Discussion" sessions on Monday afternoons. Except for exam days (see "Exams" above), the discussion sessions on Monday afternoons consist of a review/problem session. These are opportunities for you to ask questions about course material, examples, homework problems, etc. and get some problem solving practice in an informal group setting.

Attendance at these Discussion sessions is not strictly required (just as class attendance is not strictly required), but will be beneficial for most, if not all, students.

7.6 Homework

Generally, there will be one homework assignment each week, typically given on Tuesday and due the following Tuesday. Homework will be turned in during class. Late homework is NOT accepted (no exceptions). Problems must be stapled together and include student name, KUID, course number and date due. Generally only a subset of the problems will be graded, but you are responsible for all problems assigned. Problem solutions (for all problems) will be posted on Canvas.

7.7 Reading

You are responsible for all reading material assigned, even if it is not explicitly covered in lecture.

7.8 Academic Misconduct

Although I encourage students to *study* together, *cheating* will be dealt with severely, with penalties up to and including a grade of F in the class and referral to the Dean. Cheating is essentially representing someone else's work as your own. Cheating includes, but is not limited to, copying solutions/answers from another student or from a solution manual, having another person do your work for you (this includes "tutoring" sites like Chegg), giving or receiving quiz answers to/from another student, using a MATLAB script that another student has developed for a homework problem, etc. If you are ever in doubt about what level of collaboration is acceptable, contact me.

8. Dates of Interest

22 August	Monday	First day of classes
26 August	Friday	Last day to add a class or change sections on-line
26 August	Friday	Last day to drop with 100% refund

5 September	Monday	Labor Day Holiday (no classes)
12 September	Monday	Last day to drop with no transcript record
13 September	Tuesday	First day of withdraw period (W on transcript)
19 September	Monday	Last day to withdraw with 50% refund
8 October	Saturday	First day of Fall Break
11 October	Tuesday	Last day of Fall Break
7 November	Monday	Midterm Exam (tentative date)
16 November	Wednesday	Last day to withdraw (W on transcript)
23 November	Wednesday	First day of Thanksgiving Break
27 November	Sunday	Last day of Thanksgiving Break
8 December	Thursday	Last day of classes
10 May	Tuesday	Final Exam: 1:30 - 4:00 pm

NOTICES

Student Access and Support Services: The University Academic Support Centers provide a variety of academic support programs designed to support learning for all KU students. The Student Access Center (SAC) assists students with disabilities by facilitating accommodations that remove barriers to their academic success. If you wish to request accommodations and have not contacted SAC, please do so as soon as possible. Their office is located in Strong Hall, and their phone number is 785-864-2700. Information about their services can be found at https://academicsupport.ku.edu/. Please contact me privately in regard to your needs in this course.

Online EdTech Services: KU School of Engineering faculty and instructors are aware that some students are actively uploading/downloading homework, laboratory, and exam questions and responses to online EdTech services (e.g., Chegg) even during exam time frames.

Keep in mind that when a person signs up to participate by uploading, and/or downloading, and/or using posted material from these sites, the "terms of service" that are agreed to **do not protect the person when KU and/or the School of Engineering decide to conduct investigations related to academic misconduct (e.g., plagiarism and/or cheating).**

EdTech services, like Chegg, retain contact information of students who use their services and will release that information, which is traceable, upon request. Using these services for cheating purposes constitutes **academic misconduct,** which is not tolerated in the School of Engineering. It violates Article 3r, Section 6 of its *Rules & Regulations,* and may lead to grades of F in compromised course(s), transcript citations of academic misconduct, and suspension (even expulsion) from the University of Kansas.

If unsure about assignments, it is important that students use the allowable available resources, such as instructor office hours, graduate teaching assistants, and/or tutoring. The School of Engineering wants students to be successful; cheating is not the way to attain that success.

Concealed Carry: Individuals who choose to carry concealed handguns are solely responsible to do so in a safe and secure manner in strict conformity with state and federal laws and KU weapons policy. Safety measures outlined in the KU weapons policy specify that a concealed handgun:

- Must be under the constant control of the carrier.

- Must be out of view, concealed either on the body of the carrier, or backpack, purse, or bag that remains under the carrier's custody and control.
- Must be in a holster that covers the trigger area and secures any external hammer in an un-cocked position.
- Must have the safety on, and have no round in the chamber.

Tests and Quizzes: Instructors are allowed by Kansas Board of Regents policy to require backpacks, purses and other bags be placed together in a designated place in the classroom during exams and quizzes, and as such those items will not be under the constant control of the individual. Students who choose to carry a concealed handgun in a purse, backpack, or bag must review and plan each day accordingly, and are responsible for making alternate arrangements as necessary. The university does not provide appropriate secured storage for concealed handguns.

Individuals who violate the KU weapons policy may be asked to leave campus with the weapon and may face disciplinary action under the appropriate university code of conduct.

Course Materials: Course materials prepared by the instructor, together with the content of all lectures and review sessions presented by the instructor are the property of the instructor. Video and/or audio recording of lectures and review sessions without the consent of the instructor is prohibited. On request, the instructor will usually grant permission for students to make audio recordings of lectures, on the condition that these audio recordings are only used as a study aid by the individual making the recording. Unless explicit permission is obtained from the instructor, recordings of lectures and review sessions may not be modified and must not be transferred or transmitted to any other person, whether or not that individual is enrolled in the course.

Dropping/Withdrawing from Class: An engineering course can be dropped between the start of classes and [the date shown above] with no record of the enrollment appearing on the student's transcript. After that date, a student may withdraw from a class and receive a "W" on the transcript until [the date shown above]. This is the last opportunity to withdraw from a class. Also, any student on probation will violate the probation agreement if he or she drops or withdraws from a course without obtaining prior permission from the Associate Dean.

