Course Objective: The objective of this course is to introduce to students the basic theory of probability, which is fundamentally important for understanding commonly used statistical concepts and methods. This course also provides students a necessary basis for a further study of advanced statistical courses.

Course Topics:

1. Probability theory: Basics of probability theory, conditional probability, independence, random variables, distribution function, density and mass functions.

2. Transformations and expectations: expectation, moments and moment generating functions, differentiating under integrals.

3. Common families of distributions: discrete and continuous distributions, exponential families, location and scale families, probability inequalities.

4. Multiple random variables: joints and marginal distributions, conditional distributions, mixture distributions, bivariate transformations, covariance and correlation, multivariate distributions.

5. Properties of a random sample: distributions derived from the normal distribution, order statistics, convergence theory.

Prerequisites: MATH 261, 172, or equivalent

Recommended texts/references:


Grading Rule: Assignments: 10%; First midterm: 25%; Second midterm: 25%; Final examination: 40%. The percentage grades needed to achieve an A, B, C, or F will follow approximately the following scale: 90 – 100 = A, 80 – 89 = B, 70 – 79 = C, 60 – 69 = D, below 60 is F.

Lectures: MWF 8:30 am - 9:20 am   classroom: Recitation Building 114
Tentative Office hours: MW 3:30pm-4:30pm

Midterm Examinations: October 1 (test 1) and October 31 (test 2).

Final Examination: December 6, Friday, 12:30–2:30pm

Statements on the Course:

- Class attendance is an important part of your success in the class. The syllabus, homework assignments, exam dates, etc. may be changed by in-class announcements.

- The homework will be assigned approximately one week before its due date and will also be posted on the class web page. The homework must be finished (written) independently. Discussion is okay, but identical copies are not acceptable since your homework must reflect YOUR understanding of the material. If identical solutions are found, all the parties involved will receive a 0 on that assignment. Homework must always be stapled if it is longer than one page.

- No late assignments will be graded. To allow for illness, family emergencies, etc., the lowest homework scores will be dropped at the end of the fall semester.

- A makeup examination will be only given to the students who could provide satisfactory evidence that the absences are due to some causes beyond their control. Contact me as soon as possible if you are unable to take an exam at the scheduled time. It is STUDENT’S responsibility to contact me IN ADVANCE to check if a make-up is possible. You may use a calculator during all exams if you wish.

ADA, Plagiarism, and Academic Integrity Statement:

- STATEMENT ON DISABILITIES: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation for their disabilities.

  If you are a student registered with the Disability Resource Center and you are in need of academic accommodations, please see me during my office hours listed on the syllabus as soon as possible. If you have an Accommodation Letter from the Disability Resource Center, we need to meet during my office hours to discuss your needs.

- STATEMENT ON PLAGIARISM: The handouts used in this course are copyrighted. By "handouts," I mean all materials generated for this class, which include but are not limited to syllabi, quizzes, exams, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy the handouts, unless I expressly grant permission. As commonly defined, plagiarism consists of passing off as one’s own ideas, words, writing, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that
person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated.

- ACADEMIC INTEGRITY STATEMENT: Purdue prohibits "dishonesty in connection with any University activity. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty." [Part 5, Section III-B-2-a, University Regulations] Furthermore, the University Senate has stipulated that "the commitment of acts of cheating, lying, and deceit in any of their diverse forms (such as the use of substitutes for taking examinations, the use of illegal cribs, plagiarism, and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest." [University Senate Document 72-18, December 15, 1972]