ME335 - Engineering Statistics - Spring 2026

- **Time:** Tuesday/Thursday 8:00am-9:15am
- **Professor:** Hairong Wang
  - **Office:** ETC 5.120
  - **Email:** hairong.wang@austin.utexas.edu
  - **Office Hours:** Tuesdays 9:15 AM - 10:00 AM, and Thursdays 9:15 AM - 10:30 AM in my office (ETC 5.120). You can also email me for a Zoom, or in-person meeting at other times.
- **Online Materials:** All class materials will be available via the *Canvas* system. This includes homework assignments and solutions, lecture notes used in the class, supplementary materials and all handouts.
- **Communication:** You are responsible for ensuring that the primary email address you have recorded with the university is the one you will check for course communications because that is the email address that Canvas uses. All course related announcements, including the posting of homework assignments and solutions, changes in due dates, topics covered for exams, and exam policies, will typically be made during class meetings and via Canvas announcements. You are responsible for staying up to date with these announcements.
- **Text:** *Probability and Statistics for Engineers and Scientists, 4th Edition* by Anthony J. Hayter (Cengage Learning).

  The materials for this class are available through the Longhorn Textbook Access (LTA) program, an initiative between UT Austin, The University Co-op and textbook publishers to significantly reduce the cost of digital course materials for students. You are automatically opted into the program but can easily opt-out (and back in) via Canvas through the 12th class day (Jan 28). To opt out, simply press the "My Textbooks" link in Canvas and then press the "Opt Out" button on the material. You will be billed for your LTA material after the 5th class day through your "What I Owe" page but still have through the 12th class day to opt out. You must pay for your LTA materials through the What I Owe page by the 20th class day. If you do not pay by the 20th class day, you will lose access to the materials after the 20th class day and your charge will be removed. More information about the LTA program is available at here.
- **Computational Tools:** We will be using *Microsoft Excel*.
- **Grading Policy:** Your final grade will be calculated using the following weights:

Homework Assignments		10%
Midterm Exam 1		30%
Midterm Exam 2		30%
Final Exam		30%
UT Instapolls	3%	(extra credit)

Letter grades will be determined according to the following conversion:

A	93% or greater
A–	90% to $<$ 93%
B+	87% to $<$ 90%
B	83% to $<$ 87%
B–	80% to $<$ 83%
C+	77% to $<$ 80%
C	73% to $<$ 77%
C–	70% to $<$ 73%
D+	67% to $<$ 70%
D	63% to $<$ 67%
D–	60% to $<$ 63%
F	$<$ 60%

I may choose to raise your final grade by curving or some other method. However, these adjustments will never lower your grade.

- **Exams:**
  - Midterm #1, February 17, 8:00-9:30am, in class
  - Midterm #2, March 26, 8:00-9:30am, in class
  - The final exam will take place at the university scheduled time, which is Thursday, April 30, 1:00-3:00pm.

  1. You are required to take all exams to pass the class. No early exams will be given. Make-up exams will not be given without a valid medical excuse.
  2. The final exam will will focus on material given in the latter part of the semester. You will be given an outline of exam topics before each exam.
  3. For all exams you will be allowed one standard-sized (8.5in by 11in) cheat sheet (hand written or typed). You may write on both sides.
  4. If you request a regrade of a problem on an exam, I reserve the right to regrade the entire exam (possibility resulting in a lower overall score). So, I suggest only requesting a regrade if I made a blatant grading error.

- **Homework Assignments:** Problem sets will be assigned about once a week. The due date will be posted on Canvas. Please submit your solution electronically to Canvas as PDF files, which can be based on typed documents or scanned written work.

Guidance on Homework Policy: Full credit will be awarded as long as every problem is attempted, regardless of correctness. Homework submissions must reflect your own original work. You may discuss the homework problems with your fellow classmates. However, you must write up and understand your solutions individually. If I suspect you have used someone else's homework solutions to an unreasonable extent, you will be asked to come to my office to give me a detailed explanation of your solutions. If you cannot explain what you wrote down adequately, you will not receive credit for that homework. Solutions generated in whole or in part by ChatGPT or other AI tools will receive no credit.

- **Attendance and Extra Credit:** I will not take attendance or formally penalize you for not participating in the lectures. You are responsible for learning all of the course material and you are ultimately free to decide whether to attend the lectures synchronously in-person or skip them. I believe strongly that participating in the lectures in real time is immensely valuable because it allows you to fully engage with the material, interact with your classmates, and ask questions to deepen your understanding. Furthermore, I am more likely to feel comfortable adjusting your grade upward at the end of the semester if you regularly attended and participated in lecture.

  Throughout the semester, I will use the UT Instapoll app in Canvas to ask questions where you can respond during lecture and see your classmates' responses in real time. To respond, you will need to attend lectures synchronously and have Canvas open on your computer or smartphone. These Instapoll questions are intended to motivate the lecture topic, help me gauge your familiarity with important concepts, and stimulate open-ended discussion. Canvas will automatically track your responses, and depending on the question, you will receive extra credit for simply participating or for submitting a correct answer. You can gain upto 3 extra credit points if you participate in the Instapolls over the course of the semester and get the answers correct when required. You will get partial extra credit points if you only participate in few Instapolls. Note: Extra credit grading will linearly scale from 0 - 3 depending on the number of Instapolls questions answered.

- **Academic Integrity:** All allegations of academic misconduct will be referred by faculty to the Office of the Dean of Students. Students who violate University rules on academic misconduct are subject to the student conduct process. A student found responsible for academic misconduct may be assigned both a status sanction and a grade impact for the course. The grade impact could range from a zero on the assignment in question up to a failing grade in the course. A status sanction can include a written warning, probation, deferred suspension, suspension, or expulsion from the University. To learn more about academic integrity standards, tips for avoiding a potential academic misconduct violation, and the overall conduct process, please visit the Student Conduct and Academic Integrity website at: http://deanofstudents.utexas.edu/conduct.

  To avoid ambiguity, all of the following actions related to problem sets will be treated as violations of the Honor Code: copying from a solutions manual, obtaining solu-

tions from the internet, copying from students who took the course in prior years, and copying solutions from classmates without fully participating in solving the problems. For exams, you are not allowed to talk to any other person (whether they are in this class or not) about the exam in any capacity for the full duration of the exam — zero exceptions. Do not make course materials available to anyone outside this course, including websites that can be accessed by the general public (e.g., CourseHero). Doing so is not only a violation of academic integrity, but is also copyright infringement subject to legal consequences. If you witness or become aware of other students committing academic integrity violations, please report the issue to Student Conduct and Academic Integrity. For more information, please see: http://deanofstudents.utexas.edu/conduct/index.php.

- **Prerequisites:** M408D, with a grade of at least C, and admission to an appropriate major sequence in engineering.

- **Sharing of Course Materials is Prohibited:** No materials used in this class, including, but not limited to, lecture hand-outs, videos, assessments (quizzes, exams, papers, projects, homework assignments), in-class materials, review sheets, and additional problem sets, may be shared online or with anyone outside of the class without my explicit, my written permission. Unauthorized sharing of materials may facilitate cheating. The University is aware of the sites used for sharing materials, and any materials found online that are associated with you, or any suspected unauthorized sharing of materials, will be reported to Student Conduct and Academic Integrity in the Office of the Dean of Students. These reports can result in initiation of the student conduct process and include charge(s) for academic misconduct, potentially resulting in sanctions, including a grade impact.

- **Accessible, Inclusive, and Compliant Statement:** The university is committed to creating an accessible and inclusive learning environment for students with disabilities consistent with university policy and federal and state law. Please let me know if you experience any barriers to learning so I can work with you to ensure you have equal opportunity to participate fully in this course. If you are a student with a disability, or think you may have a disability, and need accommodations please contact Disability and Access (D&A). Please refer to D&A's website for contact and more information: http://disability.utexas.edu/. If you are already registered with D&A, please deliver your accommodation letter to me as early as possible in the semester so we can discuss your approved accommodations and needs in this course.

- **University Policies and Resources:** For a list of important university policies and helpful resources that you may need as you engage with and navigate your courses and the university, see the University Policies and Resources Students Canvas page. The page includes the language of the University Honor Code, Title IX legal requirements for Texas employees, and information about how to receive support through the office of Disability & Access. Some additional university resources

- Wellbeing Resources
  Longhorn Wellness Center resources for self-care
  Virtual Mindfulness and Stress Reduction Activities
- Undergraduate Writing Center
- UT Libraries

ABET Info

- **Course Goals:** To develop a thorough understanding of the methods of probability and statistics which are used to model engineering problems and develop the necessary skills to implement and analyze basic statistical models using computer software packages.
- **Knowledge, Abilities, and Skills students should have before entering this course:** familiarity with multivariate integral and differential calculus, sums and series, basic knowledge of the *Excel* spreadsheet software.
- **Knowledge, Abilities, and Skills students should gain from this course:** ability to model and analyze engineering problems involving random factors, including: calculating probabilities, expectation, variance, correlation, modeling using appropriate random variables; ability to model problems using simple statistical methods, including: awareness of situations in which statistical methods are valid, assumptions used in basic statistical models, construction of confidence intervals for one and two sample data problems, formulation and analysis of hypothesis tests, ability to do simple linear regression analysis (predictions on the regression line, correlation analysis, residual analysis).
- **Impact on Subsequent Courses in Curriculum:** improved ability to analyze and properly interpret data collected in engineering testing, better understanding of random factors in engineering experiments.
- **Quantitative Reasoning:** This course carries the Quantitative Reasoning flag. Quantitative Reasoning courses are designed to equip you with skills that are necessary for understanding the types of quantitative arguments you will regularly encounter in your adult and professional life. You should therefore expect a substantial portion of your grade to come from your use of quantitative skills to analyze real-world problems.

General Comments

1. If you find yourself falling behind in class, please come by and see me. It is very important not to get confused early on, since each new topic builds upon the previous topics.

2. The only way to learn probability and statistics is to do lots of problems. This course will likely be different than previous courses you have had in many respects. In particular, you may understand both the lectures and the book quite well, but may not be able to do the homework problems efficiently.

3. Attendance is not compulsory. However, you are responsible for keeping up with any lecture material you have missed. All homework assignments will be posted on the web on the day they are handed out in class. Any lecture notes I use in class will be posted on the web. However, the lecture notes usually not have sufficient detail for you to recover the lecture and not all lectures will be given from lecture notes.

Course Outline

Provided below is a rough outline of the topics of the course. The order and number of lectures may change during the semester, depending on time. In parenthesis are the related sections in the *Hayter* textbook which is related to each lecture topic.

I. Intro to Prob and Stat (1 lecture)

   - What is probability?
   - Famous problems and paradoxes – The Monty Hall problem, St. Petersburg Paradox
   - Probability and stat in everyday problems – Polling, disease tests, winning at the casino.

II. Probability Theory (4-5 lectures)

   - Events and sample space (1.1–1.3), conditional probability (1.4–1.5).
   - Posterior probability (1.6), Bayes' Theorem (1.6).
   - Combinations and permutations (1.7).

III. Discrete Random Variables (3 lectures)

   - Discrete random variables (2.1).
   - Binomial (3.1), geometric & negative binomial (3.2)
   - Poisson (3.4), multinomial (3.5), hypergeometric (3.3).
   - Expected value (2.3).

IV. Continuous Random Variables (4 lectures)

- Continuous random variables (2.2).
- Uniform (4.1), exponential (4.2), Gamma (4.3), Weibull (4.4), beta (4.5).
- Expected value (2.3).
- Variance (2.4).
- The Normal distribution (5.1–5.3).
- Joint random variables (2.5).

V. Descriptive Statistics (1 lecture)

- Data presentation, sample statistics (6.1–6.3).

VI. Statistical Estimation (2-3 lectures)

- Point estimates, sampling distributions (7.1–7.3)

VII. Inferences on one Population Mean, Two Population Means, and Proportions (6-7 lectures)

- Confidence intervals (8.1), hypothesis testing (8.2)
- Modeling historical data (see posted notes)
- Paired samples (9.2), independent samples (9.3)

VIII. Itroduction to Statistical Learning (4-5 lectures)

- What is statistical learning? (learning from data, supervised vs. unsupervised)
- Supervised learning: Linear regression, logistic regression, decision trees & random forest
- Unsupervised learning: K-means, Gaussian mixture models
- Bayesian statistics: prior, likelihood, posterior, uncertainty quantification

Additional Information

- **Course Evaluation:** Near the end of the course you will have an opportunity to anonymously evaluate the course and instructor using the standard College of Engineering evaluation form.

- **Class Web Site and Privacy:** For this class, web-based, password-protected class sites will be available via the Canvas system. The syllabus, handouts, assignments and other resources are types of information that may be available within this site. Site activities could include exchanging e-mail, engaging in class discussions and chats, and exchanging files. In addition, a class e-mail roster will be a component of the site. Students who do not want their names included in this electronic class roster must restrict their directory information in the Office of the Registrar, Main Building, Room 1. For information on restricting directory information see: https://onestop.utexas.edu/student-records/personal-information/.

- **Honor Code:** The core values of The University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the university is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community.

- **Behavior Concerns Advice Line (BCAL):** If you are worried about someone who is acting differently, you may use the Behavior Concerns Advice Line to discuss by phone your concerns about another individual's behavior. This service is provided through a partnership among the Office of the Dean of Students, the Counseling and Mental Health Center (CMHC), the Employee Assistance Program (EAP), and The University of Texas Police Department (UTPD). Call 512-232-5050 or visit http://www.utexas.edu/safety/bcal.

- **Religious Holy Days:** By UT Austin policy, you must notify me of your pending absence for a religious holy day as far in advance as possible of the date of observance. If you must miss a class, an examination, a work assignment, or a project in order to observe a religious holy day, you will be given an opportunity to complete the missed work within a reasonable time after the absence. For questions regarding religious accommodations, please contact the Office of the Dean of Students.