

IE 3301-004 / Fall 2017
Engineering Probability

Professor: Victoria (Tory) Chen, 420J Woolf Hall.

Contact: E-mail vchen@uta.edu, Phone 817-272-2342, FAX 817-272-3406.

Office Hours: Tu 3:30–5:00PM, F 3:30–5:00PM

Classes: MWF 10:00–10:50AM in 308 Woolf Hall.

GTA: Shirish Rao; Email: shirish.rao@mavs.uta.edu; **GTA Office Hours:** TBD.

Required Text: *Probability and Statistics for Engineers and Scientists*, 9th edition by Walpole, Myers, Myers and Ye. A student solution manual is available at the bookstore.

Course Prerequisite: Math 2425 or concurrent enrollment.

Course Description: Topics in engineering that involve random processes. Applications and backgrounds for topics in reliability, inventory systems, and queuing problems, including absolute and conditional probabilities, discrete and continuous random variables, parameter estimation, hypothesis testing, and an introduction to linear regression.

Student Learning Outcomes: At the end of this course students should be able to (1) understand the basic concepts of probability theory and hypothesis testing, (2) apply those concepts to solving numerical problems, especially those relating to probability distributions, and (3) collect data and perform descriptive and inferential statistical analyses.

Grading (tentative):

- 25% Test #1 on Chapters 1–4. Monday, October 2nd.
- 25% Test #2 on Chapters 5, 6, and 8. Monday, October 30th.
- 25% Test #3 on Chapters 9–11. Monday, December 11th, 8:00–10:30AM. (Not Comprehensive)
- 10% Homework (last homework due Monday, December 4th)
- 15% Project (last part due Wednesday, December 6th).

Letter grades correspond to the following score system:

A = 90–100; B = 80–89; C = 70–79; D = 60–69; F = below 60.

Project: For the project, additional handouts will be given with detailed instructions. Each student must submit a typewritten report, written in his/her own words. Any form of copying will be severely penalized.

Homework: Homework will be announced during class. Late homework will not be accepted. Only stapled homework is accepted. Each homework assignment will be scored as 0, 1, or 2. To receive full credit for your homework, show all of your work.

Test Policy: For each mid-term exam, you may bring in two letter size sheets of paper written on both sides (four sheets for the final). Calculators with simple functions (ONLY +, −, /, ×, √) may be used during tests (no other calculators permitted). Please bring your UTA ID card to all tests.

Regrading Policy: If you would like a test or project regraded, you must submit a written statement which clearly explains the reason you would like a regrade. Please note that the *entire* test/project will be regraded.

Makeup Policy: A makeup test will be given if the student provides *legitimate written documentation* proving an illness or emergency. If necessary, I may request additional information to verify the validity of your documentation. If you cannot attend an exam, you should make every effort to contact me beforehand.

Attendance: At The University of Texas at Arlington, taking attendance is not required but attendance is a critical indicator in student success. Each faculty member is free to develop his or her own methods of evaluating students academic performance, which includes establishing course-specific policies on attendance. As the instructor of this section, attendance will be taken approximately 4 times during the semester. Students present will earn an attendance point. Each student's accumulated attendance points are added to the raw score of Test #3.

Expectations for Out-of-Class Study: Beyond the time required to attend each class meeting, students enrolled in this course should expect to spend at least an additional 9 hours per week of their own time in course-related activities, including reviewing lecture content, reading required materials, completing assignments, etc.

Grade Grievances: Any appeal of a grade in this course must follow the procedures and deadlines for grade-related grievances as published in the current University Catalog.

Academic Integrity: Students enrolled all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence. I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

UT Arlington faculty members may employ the Honor Code in their courses by having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents' Rule* 50101, Section 2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University. Additional information is available at <https://www.uta.edu/conduct/>.

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance.** Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (<http://www.uta.edu/ses/fao>).

Disability Accommodations: UT Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including *The Americans with Disabilities Act (ADA)*, *The Americans with Disabilities Amendments Act (ADAAA)*, and *Section 504 of the Rehabilitation Act*. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of disability. Students are responsible for providing the instructor with official notification in the form of a **letter certified** by the Office for Students with Disabilities (OSD). Only those students who have officially documented a need for an accommodation will have their request honored. Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations by contacting OSD www.uta.edu/disability or calling 817-272-3364. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability.

Counseling and Psychological Services (CAPS) www.uta.edu/caps/ or calling 817-272-3671 is also available to all students to help increase their understanding of personal issues, address mental and behavioral health problems and make positive changes in their lives.

Electronic Communication: UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

Non-Discrimination Policy: The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit uta.edu/eos.

Title IX Policy: The University of Texas at Arlington (“University”) is committed to maintaining a learning and working environment that is free from discrimination based on sex in accordance with Title IX of the Higher Education Amendments of 1972 (Title IX), which prohibits discrimination on the basis of sex in educational programs or activities; Title VII of the Civil Rights Act of 1964 (Title VII), which prohibits sex discrimination in employment; and the Campus Sexual Violence Elimination Act (SaVE Act). Sexual misconduct is a form of sex discrimination and will not be tolerated. For information regarding Title IX, visit www.uta.edu/titleIX or contact Ms. Jean Hood, Vice President and Title IX Coordinator at (817) 272-7091 or jmhood@uta.edu.

Student Support Services: UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at www.uta.edu/universitycollege/resources/index.php.

University Tutorial & Supplemental Instruction (Ransom Hall 205): UTSI offers a variety of academic support services for undergraduate students, including: 60 minute one-on-one tutoring sessions, Start Strong Freshman tutoring program, and Supplemental Instruction. Office hours are Monday-Friday 8:00am-5:00pm. For more information visit www.uta.edu/utsi or call 817-272-2617.

IDEAS Center (2nd fl. LIBR): This center offers FREE tutoring to all students with a focus on transfer students, sophomores, veterans and others undergoing a transition to UT Arlington. Students can drop in, or check the schedule of available peer tutors at www.uta.edu/IDEAS, or call (817) 272-6593.

English Writing Center (411LIBR): The Writing Center offers FREE tutoring in 15-, 30-, 45-, and 60-minute face-to-face and online sessions to all UTA students on any phase of their UTA coursework. Register and make appointments online at <https://uta.mywconline.com>. Classroom visits, workshops, and specialized services for graduate students and faculty are also available. Please see www.uta.edu/owl for detailed information on all our programs and services.

Campus Carry: Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. Under the new law, openly carrying handguns is not allowed on college campuses. For more information, visit www.uta.edu/news/info/campus-carry/.

Emergency Exit Procedures: Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, which is located down the hall from the classroom. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist handicapped individuals.

Student Feedback Survey: At the end of each term, students enrolled in classes categorized as “lecture,” “seminar,” or “laboratory shall be directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through Mav-Mail approximately 10 days before the end of the term. Each students feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlingtons effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit <http://www.uta.edu/sfs>.

Final Review Week: For semester-long courses, a period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities, such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week, *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

Course Schedule: Chapter sections listed below are from Walpole et al. (2012). Approximate number of class periods is given in parentheses. Class time will also be used to cover practice test questions, conduct tests, and go over test solutions.

- Chapter 1: Descriptive Statistics (3.5 class periods)
- Chapter 2: Probability (4 class periods)
- Chapter 3: Random Variables (2.5 class periods)
- Chapter 4: Expectation (2 class periods)
- Chapter 5: Discrete Distributions (3.5 class periods)
- Chapter 6: Continuous Distributions (3.5 class periods)
- Chapter 8: Sampling (2.5 class periods)
- Chapter 9: Estimation (4.5 class periods)
- Chapter 10: Hypothesis Testing (4.5 class periods)
- Chapter 11: Simple Linear Regression (3.5 class periods)

Emergency Phone Numbers: In case of an on-campus emergency, call the UT Arlington Police Department at **817-272-3003** (non-campus phone), **2-3003** (campus phone). You may also dial 911.