IE 3301-001 Fall 2014
Engineering Probability
MWF 9:00-9:50am Room 404 Woolf Hall

Instructor: Li Zeng, Ph.D.

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Office Hours: Mon/Wed 9:55-10:55am

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Required Text: *Probability and Statistics for Engineers and Scientists*, 9th Edition, by Walpole, Myers, Myers and Ye.

Course Prerequisites: Math 2326 or concurrent enrollment

Course Description: Topics in Industrial Engineering that involve random processes and data. Applications and background for topics in reliability, inventory systems, and queuing problems, including absolute and conditional probabilities, discrete and continuous random variables, confidence intervals, hypothesis testing, and other topics included in the text book through Chapter 13.

Student Learning Objectives: 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) perform descriptive and inferential statistical analyses of data.

Topics Covered:
1. Descriptive statistics
2. Probability theory
3. Random variables and probability distributions
4. Mathematical expectation
5. Discrete probability distributions
6. Continuous probability distributions
7. Linear combinations of random variables
8. Sampling distributions
9. Estimation and confidence Intervals
10. Hypothesis testing
11. Introduction to Simple Linear Regression analysis

Key Assignments: During the semester one or more assignments will be designated as key assignments. To pass this class you must successfully complete all key assignment requirements. Key assignments and their respective grading criteria will be announced in each particular course.

The key assignments are as follows:

- Certain problems on the first two tests will be designated as key assignments. If a student makes less than two-thirds of full credit on any such problem, he/she must rework the problem correctly and submit it to complete this key assignment. This reworking will not result in a change of the test score.
- Two projects. If a student makes a major mistake, he/she must rework the problems correctly and submit it to complete this key assignment. This reworking will not result in a change of the project score.

Grading (tentative):
(25%) Test #1 on Chapters 1-4; Monday, September 29th.
(25%) Test #2 on Chapters 5-6; Monday, October 27th.
(25%) Test #3 on Chapters 8-11; Wednesday, December 10th. (Not Comprehensive)
(10%) Homework
(15%) Project (key)

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 exam, you may bring in two letter size sheets of paper written on both sides. Please bring your UTA ID card to all tests.

Makeup Policy: There will be no make-up test, unless 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. Any make-up exam may be given on the second to last or last week of class and may be comprehensive. If an exam is missed without reason, the student will get 0 for the exam.

Attendance: Regular and punctual attendance are expected in accordance with UTA's policies (see undergraduate catalog).

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://wweb.uta.edu/aao/fao/).

Inclement Weather Policy: If the University is closed this class will not meet. Any scheduled assignments or examinations will be rescheduled to the next class period that the class meets. You can get information by dialing 972-601-2049 or checking the main website at www.uta.edu.

Americans with Disabilities Act: The University of Texas at 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). 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 that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

Academic Integrity: Students enrolled in this course 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 as they see fit in their courses, including (but not limited to) 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, §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.

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/resources.

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.

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 MavMail approximately 10 days before the end of the term. Each student's feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington's 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: 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.

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. 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.

The instructor reserves the right to modify this syllabus as needed during the semester, either in class or on the website. Students are responsible for such changes.