

UNIVERSITY OF TEXAS AT EL PASO
IE 3373 – ENGINEERING PROBABILITY AND STATISTICAL MODELS
Syllabus

Instructor:	Amit Joe Lopes, Ph. D.														
How to Reach:	Office: College of Engineering, A-244 E-mail:ajlopes@utep.edu														
Office Hours:	8:30am-9:30am T&R or By Appointments														
Prerequisite:	Calculus I, II & III														
Textbook:	Engineering Statistics , Fifth Edition; Authors: Douglas C. Montgomery, George C. Runger and Norma F. Hubele. Publisher: Wiley. ISBN-13: 978-0-470-63147-8; Hardcover commercial version. ISBN-13: 978-1-119-92746-4; Paperback custom text.														
Software:	Minitab														
Assignments:	Homework Problems will be assigned during class. They are due one week later after they have been assigned. Assignment will be graded. Assignments will not be accepted after the due date and Solution to the problems must be hand written . When computer outputs are needed the conclusions must be hand written .														
Class Attendance:	Attendance will have impact on the class participation portion of your grade.														
Exams:	There will four exams during the semester, as well as two pop quizzes. Exam dates will be announced in class.														
Class Content:	Data summary and Presentation. Probability, Random Variables and Distributions. Hypotheses Testing for One and Two Samples Simple Linear Regression Chapters 1 through 6.														
Grading scheme:	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">First Exam</td> <td style="text-align: right;">17.5%</td> </tr> <tr> <td>Second Exam</td> <td style="text-align: right;">17.5%</td> </tr> <tr> <td>Third Exam</td> <td style="text-align: right;">17.5%</td> </tr> <tr> <td>Fourth Exam</td> <td style="text-align: right;">17.5%</td> </tr> <tr> <td>Assignments</td> <td style="text-align: right;">20%</td> </tr> <tr> <td>Attendance</td> <td style="text-align: right;">10%</td> </tr> <tr> <td>Total</td> <td style="text-align: right;">100%</td> </tr> </table>	First Exam	17.5%	Second Exam	17.5%	Third Exam	17.5%	Fourth Exam	17.5%	Assignments	20%	Attendance	10%	Total	100%
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Third Exam	17.5%														
Fourth Exam	17.5%														
Assignments	20%														
Attendance	10%														
Total	100%														
Plagiarism:	Plagiarism or cheating will not be tolerated, anyone caught cheating will receive a failing grade for the class.														

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Students with disabilities:

Students with disabilities or who suspect they have a disability may wish to self-identify for purposes of modifications. You can do so by providing documentation to the Office of Disabled Student Services located in the UTEP Union. If you have a condition which may affect your ability to exit safely from the premises in an emergency or which may cause an emergency during class, you are encouraged to discuss this in confidence with the instructor and/or director of the Disabled Student Services. For general information about the American with Disabilities Act (ADA), please call 747-5184.

Late Work Policy:

Late homework or reports will not be accepted, unless certified medical proof is given. If you are unable to attend the class at which the homework is due, it is your responsibility to submit it earlier.

Academic Honesty

During exams and quizzes, you are **not allowed to use any form of wi-fi enabled electronic device**, including cell phones or other electronic communication devices or methods (calculators, wrist watches, earbuds, etc.). No wrist watch or other electronic device may be worn.

During exams and quizzes, you are allowed to use only instructor approved calculators. Check your syllabus for the list of approved calculators.

No electronic version of the book, loose paper print-outs of the book or extra sheets of paper of any kind are allowed unless explicitly mentioned in writing by the instructor. As a part of the zero-tolerance policy, if you have a cellphone or other electronic device capable of communication on your person; or if any proctor sees or hears any electronic device during the exam or if you share your work with someone else, you will be reported to the proper authorities and you may receive a zero on the exam and an F in the class. Other actions including suspension may also be perused.

If you have a disability that requires the use of an electronic device during exams you must have a letter of accommodation from the Center for Accommodations and Support Services (CASS). This accommodation must be coordinated in advance with the instructor.

During exams, you will not be allowed to leave the examination room until you complete the exam. This includes restroom breaks. Students with disabilities must have a letter of accommodation and coordinate this in advance with the instructor.

Instructors and/or proctors may record and/or use their personal cell phones to document activity during the exam. Recording devices may also be located at various locations in the room and may be out of sight of the students. These recordings will be managed according to the UTEP approved regulations for such media.

If you are suspected of scholastic dishonesty you may not be directly confronted about your conduct by the instructor or proctor. You will however, be reported to the Office of Student Conduct and Conflict Resolution (OSCCR) and your exam will not be admissible. Your grade in the class may not be available until OSCCR makes a final ruling, this may adversely impact your ability to enroll in other classes or graduation.

If you arrive more than 15 minutes late to an exam, you will not be allowed to enter the examination room.

UNIVERSITY OF TEXAS AT EL PASO
IE 3373 – ENGINEERING PROBABILITY AND STATISTICAL MODELS
Syllabus

There will be no makeup exams administered. If you have a university approved excuse, your instructor will have a process for determining how to handle the missing grade outlined in the syllabus. However, no makeup exams will be given.

If you miss more than one exam, the instructor may choose to administratively drop you from the class. This may adversely impact a visa and financial aid.

No food or drinks will be allowed in the examination room.

Departmental policy allows for the use of assigned seats. All students must present their UTEP issued ID prior to and during every exam and may be required to sign in. Not having a UTEP issued ID when asked will result in forfeiture of the exam.

Scholastic dishonesty on homework, lab assignments and all other class assignments will be held to the same standards and requirements of academic honesty as quizzes and exams.

Class Attendance Policy

Attendance is mandatory. Anyone with 5 or more absences will be dropped from the class. A drop for not attending will count toward the State Allowed Six Drop Limit. If you are failing the class at the time of the drop you may also be given a WF designation. Be advised that a drop could adversely impact visa status, financial aid and other programs.

As per UTEP rules, you may be asked to show a UTEP ID at any time during class.

Harassment Policy

The department has a zero-tolerance policy for harassment. Engagement in any behavior considered harassment will be reported to the proper authorities. In addition to generally understood forms of harassment, the department also treats the following behavior as harassment:

- Repeated emails and/or calls regarding subjects that have already been addressed. Once a decision has been made or a question answered, a student who continues to ask the same question will be given a warning by the recipient of the email/call. If the student continues, the behavior will be reported. Questions that seek understanding of course material are not harassment; but repeated questions about a grade or an administrative decision are.
- Grades are NOT negotiable, ever. If you believe a grading mistake has been made, you must follow the process described in the UTEP catalog. Any request for a grade elevation that is NOT based on a mistake is considered harassment and will be reported immediately.
- Remaining in an office after the occupant requests you leave is considered harassment and potentially threatening. You will be reported immediately without warning and depending on the severity, may be reported to law enforcement.
- Similar behavior towards department staff, and student advisors will also be treated as harassment, including persistent phone calls, emails, and badgering. Department staff and student advisors are there to help students, and should be treated with due respect.

Topics to be covered

The Following sections are taken from the Textbook “**Engineering Statistics**, Fifth Edition by Douglas C. Montgomery, George C. Runger and Norma F. Hubele.

UNIVERSITY OF TEXAS AT EL PASO
IE 3373 – ENGINEERING PROBABILITY AND STATISTICAL MODELS
Syllabus

1. Summarizing and Presenting Data

- 1.1. Collecting Engineering Data
- 1.2. Stem-and-Leaf Diagram
- 1.3. Histograms
- 1.4. Box Plot
- 1.5. Scatter Plot

2. Probability

- 2.1. Introduction
- 2.2. Basic Ideas
- 2.3. Conditional Probability
- 2.4. Random Variables

3. Commonly Used Distributions

- 3.1. The Normal Distribution
- 3.2. The Lognormal Distribution
- 3.3. The Binomial Distribution
- 3.4. The Poisson Distribution
- 3.5. The Exponential Distribution
- 3.6. Probability Plots
- 3.7. The Central Limit Theorem

4. Hypothesis Tests for a Single Sample

- 4.1. Point Estimation
- 4.2. Hypothesis t Testing
- 4.3. Inference on the Mean of a Population, Variance Known
- 4.4. Inference on the Mean of a Population, Variance Unknown
- 4.5. Inference on the Variance of a Population
- 4.6. Inference on the Population Proportion

5. Inference for Two Samples

- 5.1. Inference on the Means of a Two Population, Variances Known
- 5.2. Inference on the Means of a Two Population, Variances Unknown
- 5.3. Inference on the Variances of Two Populations
- 5.4. Inference on the Difference Between Two Proportions
- 5.5. Inference Using Paired data

6. Inference In Linear Models (Tentative)

- 6.1. Simple Linear Regression
- 6.2. Inference Using the Least-Square Coefficients
- 6.3. Checking Assumptions

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Tentative Course Calendar:

Date	Class Topic	Readings/Assignments/Activities
Week 1	Course Introduction: Data Models Data Representation	Lecture 1
Week 1	Probability and Distributions: Bayes Theorem; Binomial Distribution	Lecture 1,2
Week 2	Distributions Continued; Poisson Distribution	Lecture 2
Week 2	Distributions Continued; Geometric, Normal, Distribution	Lecture 3 HW 1
Week 3	Distributions Continued; Normal, Exponential	Lecture 3
Week 3	Distributions Continued; Cumulative Distribution Function, Lognormal	HW 1 Due
Week 4	Distributions Continued; Gamma, Weibull	Lecture 4 Exam 1 Review
Week 4	Homework Discussion - Exam 1	
Week 5	Distributions: Normal Approximations – Binomial and Poisson; Probability Plots	Lecture 5
Week 5	Exam 1	
Week 6	Hypothesis Testing Z test	Lecture 5
Week 6	Hypothesis Testing Z test	Lecture 6
Week 7	Hypothesis Testing T test	Lecture 6
Week 7	Hypothesis Testing T test	Lecture 6 Exam 2 Review
Week 8	Exam 2	
Week 8	Exam 2 Discussion; Beta Error T, Binomial Proportions	Lecture 7
Week 9	Chi-Square Test	Lecture 7
Week 9	Chi Square Test Beta Error – Confidence Interval	Lecture 8
Week 10	Hypothesis Testing on two samples means - Variance Known	Lecture 8
Week 10	Using Minitab	Lecture 9
Week 11	Exam 3 Review	Lecture 9
Week 11	Exam 3	
Week 12	Hypothesis Testing on two samples means - Variance Known	
Week 12	Hypothesis Testing on two samples means - Variance Unknown	Lecture 10
Week 13	Hypothesis Testing on two samples Variances	Lecture 10
Week 13	Inferences on two proportions	Lecture 11
Week 14	Exam 4 Prep	Lecture 11
Week 14	Exam 4	Lecture 12
Week 15	ANOVA	Lecture 12
Week 15	ANOVA/Non Parametrics	Lecture 12
Week 16	Make Up Lecture	