MEEN 2110   **Engineering Data Analysis Syllabus**   **Fall 2022**

Instructor:	Weihuan Zhao
Office:	NTDP F115G
Phone:	940-369-5929
Email:	weihuan.zhao@unt.edu
Lecture Time:	Tuesday & Thursday **8:30-9:50am**; Room NTDP F175
Instructor Office Hours:	Tuesday & Thursday: 10:00-11:00am plus open office policy

Instructional Assistant (IA): Bheemangouda Mudnal (bheemangoudamudnal@my.unt.edu)

Required Textbook: Applied Statistics and Probability for Engineers, 6th Edition
Montgomery, Douglas C. and Runger, George C.
ISBN-13 9781118539712

Course Description:
The course is designed for the engineering students to use appropriate statistical methods for engineering problem solving in manufacturing, engineering testing, material synthesis, and etc. The students will have a good understanding of the concepts on probability, random variables, intervals, distributions, randomization, replications, and experimental errors. The knowledge learned from the course is to help the students to draw meaningful engineering conclusion from the data. The practical applications of these techniques will be discussed using the actual data and interpretation of the problems.

Pre-requisites: MATH 1710 Calculus I.

Course Learning Outcomes (CLO):
Upon successful completion of this course, students will be able to:
  i.   Students will understand the concepts of probability, random variables, confidence level, distributions, mean, variance, standard deviation, and replication.
  ii. Students will have the knowledge on different data distributions, including Normal, Binomial, Poisson, Exponential, Gamma, Weibull, and Lognormal, to conduct effective data analysis and to make appropriate conclusions.
  iii. Student will learn to use z-distribution and t-distribution for data analysis and to find the confidence intervals.
  iv. Students will learn to use Spreadsheet for the basic data analysis and plotting.
  v.   Students will learn the procedure to apply the statistical tools in engineering, such as finding the lower or higher percentile from the data distributions used for design value determination of an engineering product.

ABET EAC Student Outcomes (SO):
  1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics;

2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors;
3. An ability to communicate effectively with a range of audiences;
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts;
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives;
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions;
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

MEEN 2110 CLO	ABET EAC Student Outcomes (SO)						
	1	2	3	4	5	6	7
i	X						
ii	X						
iii	X						
iv	X						
v	X						

Grades:

Homework (~10)	10%	≥ 85%	A
Quizzes (~5)	15%	70-84.9%	B
Midterm Exam I (Ch 2-4)	25%	55-69.9%	C
Midterm Exam II (Ch 4-7)	25%	40-54.9%	D
Final Exam (Ch 7-10)	25%	< 40%	F
Total	**100%**		

Class Policy:

(1) If you are experiencing any symptoms of COVID-19, please seek medical attention from the Student Health and Wellness Center (940-565-2333 or askSHWC@unt.edu) or your health care provider PRIOR to coming to campus. UNT also requires you to contact the UNT COVID Hotline at 844-366-5892 or COVID@unt.edu for guidance on actions to take due to symptoms, pending or positive test results, or potential exposure. While attendance is an important part of succeeding in this class, your own health, and those of others in the community, is more important.

(2) Come in time before the class starts.

(3) Review the materials covered/taught in the previous class before coming to the class.

(4) Bring the textbook either as a hard copy or as an e-book to every class. This will help in following the class worked-out examples as well as the materials covered that day and assigned for further reading.

(5) Participate in Q&A.

Homework Policy:

(1) Homework will be submitted on Canvas in e-copy with **one single pdf file**.

(2) Please turn in your homework on the due date *before 9:50am*. **NO late homework will be collected.**

(3) Definition of "late": when the clock on Canvas passes the due time (9:50am), homework turned in thereafter will be considered as "late" and will not be collected.

(4) Having no textbook is not a valid excuse for not doing your homework. It is the student's responsibility to acquire textbook for his/her study and bring to the classroom.

(5) Homework can be turned in (uploaded) on Canvas earlier than the due date.

(6) Homework dropped in the instructor's departmental mailbox will NOT be collected.

(7) Homework slid into the instructor's office will NOT be collected.

(8) Homework emailed to instructor's and IA's email boxes will NOT be accepted.

(9) Exceptions (late homework will be collected): medical emergence (student and important ones), religious holidays/duty, jury duty and military duty. Evidences must be submitted.

Exam and Quiz Policy:

(1) **Quizzes are open book and open notes.**

(2) **Exams are closed book and closed notes with formula sheets.**

(3) Formula sheets can be maximum 1 page (for Midterm) or 2 pages (for Final), A4 or letter size, **single** side.

(4) **Student is responsible for preparing his/her own formula sheets. Instructor will NOT provide any formula sheets for the exam.**

(5) Formula sheets could include anything **BUT**: **solutions of any kind/format** (numerical or symbolic) to homework problem or lecture/textbook examples. Student who failed to follow this rule will score zero in the exam and this cheating matter will be reported to Mechanical Engineering department and University.

(6) Instructor will check students' formula sheets before each exam.

(7) **There will be NO make-up quiz. Exceptions**: medical emergence (student and important ones), transportation/traffic emergency; religious holidays/duty, jury duty and military duty. **Documentary evidences** must be submitted.

(8) **There will be NO make-up exam. Exceptions**: medical emergence (student and important ones), transportation/traffic emergency; religious holidays/duty, jury duty and military duty. **Documentary evidences** must be submitted.

(9) **Exchanging anything without the approval from the proctor, including but not limited to, calculators/scratch papers/formula sheets/writing tools during the exam between/among students is prohibited.**

(10) **Using cell phone for whatever purpose during the exam is prohibited.**

(11) **Using Internet through whatever devices during the exam is prohibited.**

(12) **Peeking, talking & discussing (either by oral/written/sign language) between/among students during the exam is prohibited.**

(13) **Using any unauthorized/unapproved materials during the exam is prohibited.**

(14) **Using any type of earpiece/earbuds/earphone/Bluetooth/Stereo Headset (unless a with doctor's prescription/notes) during the exam is prohibited.**

(15) **Using any type of smart glasses (unless a with doctor's prescription/notes) during the exam is prohibited.**

(16) **Using any type of smart watches during the exam is prohibited.**

Calculator:

Graphing calculators will not be allowed during quizzes and exams. Only NCEES-approved calculators can be used (http://ncees.org/exams/calculator/).

Acceptable calculators are:

- Casio: All fx-115 and fx-991 models (Any Casio calculator must have "fx-115" or "fx-991" in its model name.)
- Hewlett Packard: The HP 33s and HP 35s models, but no others.
- Texas Instruments: All TI-30X and TI-36X models (Any Texas Instruments calculator must have "TI-30X" or "TI-36X" in its model name.)

Disability Accommodations: If you need academic accommodations for disability you must have document which verifies the disability and makes you eligible for accommodations, then you can schedule an appointment with the instructor to make appropriate arrangements. For more information, please refer the Office of Disability Accommodation website at https://disability.unt.edu/

Academic Dishonesty:

There is a zero-tolerance policy for academic dishonesty. Cheating of whatsoever will result in an automatic 'F' in this course and the matter will be turned over to the appropriate student disciplinary committee.

IMPORTANT EXAM DATES

Quizzes: The date will be announced. A quiz will be given every other chapter.

Midterm Exam I (Temporary schedule and subject to change):
    Oct. 4th, 2022, Tuesday, 8:30-9:50am, NTDP F175

Midterm Exam II (Temporary schedule and subject to change):
    Nov. 8th, 2022, Tuesday, 8:30-9:50am, NTDP F175

Final Exam (UNT official final schedule):
    Dec. 13th, 2022, Tuesday, 8:00-10:00am, NTDP F175

MEEN 2110 Data Analysis
Schedule Overview
(Please note the schedule may change based on the needs during the semester)

Week	Date	Topics	Homework Due
#1	Aug.30th – Sep.1st	**Overview of syllabus; Ch 1. Introduction** **Ch 2. Probability**	---
#2	Sep.6th - Sep.8th	**Ch 2. Probability**	9/15
#3	Sep.13th - Sep.15th	**Ch 3. Discrete Random Variables and Probability Distributions**	9/22
#4	Sep.20th - Sep.22nd	**Ch 3. Discrete Random Variables and Probability Distributions**	9/29
#5	Sep.27th - Sep.29th	**Ch 4. Continuous Random Variables**	---
#6	Oct.4th - Oct.6th	**Midterm I (Oct. 4th): covers Ch 2-4;** **Ch 4. Normal Distribution**	10/13
#7	Oct.11th - Oct.13th	**Ch 4. Normal Distribution** **Ch 5. Joint Probability Distributions**	10/20
#8	Oct.18th - Oct.20th	**Ch 5. Joint Probability Distributions**	10/27
#9	Oct.25th - Oct.27th	**Ch 6. Descriptive Statistics**	11/3
#10	Nov.1st - Nov.3rd	**Ch 6. Descriptive Statistics** **Ch 7. Point Estimate of Parameters and Sampling Distributions**	---
#11	Nov.8th - Nov.10th	**Midterm II (Nov. 8th): covers Ch 4-7;** **Ch 7. Point Estimate of Parameters and Sampling Distributions**	11/17
#12	Nov.15th - Nov.17th	**Ch 8. Statistical Intervals for a Single Sample**	11/29
#13	Nov.22nd - Nov.24th	**Ch 9. Test of Hypotheses for a single sample** **No class, Thanksgiving**	---
#14	Nov.29th - Dec.1st	**Ch 9. Test of Hypotheses for a single sample** **Ch 10. Statistical Inference for Two Samples**	12/8
#15	Dec.6th - Dec.8th	**Ch 10. Statistical Inference for Two Samples** **Pre-final Day (Last Class Day)**	---
#16	**Dec. 13th, Tuesday (8:00-10:00am)**	**Final Exam: covers Ch 7-10**	---

Disclaimer:

The course schedule, content, and assignments are subject to modification when circumstances dictate and as the course progresses. If changes are made, you will be given due notice.

Link for **Fall 2022 Final Exams** - **Discovery Park**
https://registrar.unt.edu/exams/final-exam-schedule/fall