IEMS 303
STATISTICS I
SPRING 2019

Statistics I : 5:00PM-6:30PM TuTh, Tech, M164
Lab : 5:00PM-6:30PM W, Tech, C135

Instructor	**Email**	**Office Hours**
Özge Sürer	ozgesurer2019@u.northwestern.edu	Tue 9:00AM-11:00AM, Tech C211
Teaching Assistant	**Email**	**Office Hours**
Moses Chan	yuchan2021@u.northwestern.edu	Mon 4:00PM-6:00PM, Tech C236

Description: Introduction to the foundations of statistics and statistical computing for data analysis and their applications. Covers descriptive statistics and statistical inference for estimation, testing and prediction.

Prerequisite(s): IEMS 202 and EECS 111

Credit Hours: 1 Unit

Text: Probability and Statistics for Engineering and the Sciences, 9th ed., by Jay L. Devore, 2011. ISBN: 9781305251809.

Objectives: At the completion of this course, students will be able to:

- Understand statistics from a mathematical and conceptual level
- Visualize single and multidimensional datasets
- Leverage confidence intervals and hypothesis testing to make proper probabilistic inferences
- Conduct inference on multidimensional data including correlation and regression analysis
- Have a basic understanding of the software package R. R is freely available for download.

Ethical Policy: The professor, any teaching assistants and the students are expected to abide by all rules and regulations put in place by the Northwestern University, the School of Engineering and the Department of Industrial Engineering and Management Science.

Work and Grading

	Portion	Date
Pre-test	3%	Due April 15th 11:59PM
Quizzes	8%	Random
Lab Assignment	8%	Due on Wednesdays 11:59PM on CANVAS
Homework	18%	Due on Tuesdays, 5:00PM No homework April 30th, May 28th Last homework June 6th
Lab Practical Exam 1	4%	April 24th 5:00PM-6:30PM Tech, C135
Lab Practical Exam 2	4%	May 22nd 5:00PM-6:30PM Tech, C135
Midterm 1	15%	April 25th 5:00PM-6:30PM Tech, M164
Midterm 2	15%	May 23rd 5:00PM-6:30PM Tech, M164
Final	25%	June 11th 5:00PM-7:00PM Tech, M164

Pretest: IEMS has implemented pretesting in this course in order to ensure that student prerequisite knowledge is sufficient for success in the course. Data from these pretests will also be used to identify potential areas for improvement in the IEMS curriculum and as support for future program assessments. It is extremely important that you take these pretests seriously. They will have a significant impact on future of our program.

Passing the pretest is worth 3% of your final course grade. You must achieve a passing score of 70% or higher by Monday, April 15 at 11:59 p.m. This deadline will be firmly enforced. You may repeat the pretest in order to achieve this passing score; however after 15 attempts you must request additional attempts from Prof. Wilson in person (students rarely, if ever, need this many). Feedback will be provided at the end of each attempt pointing out concepts that you should review before a subsequent attempt. Note that informational questions (such as "Are you currently declared as an IE major?") do not count towards your score on the pretest.

It is in your best interest to achieve a passing score on the pretest by the end of the add/drop period (April 5) so that you can drop this course if necessary and add a replacement course.

To take the pretest, go to https://assessments.mccormick.northwestern.edu and log in with your netid and password. If you encounter any problems, contact Prof. Wilson immediately. You are strongly encouraged to complete this requirement early, so that you can get help with any technical glitches that arise. Tech support will only be provided from the software developers during business hours. Technical issues will not be considered a valid excuse for not passing the pretest by the deadline.

Quizzes: Quizzes will be given randomly in class and will have a time limit of approximately ten minutes. They will be submitted on paper. During quizzes, students will use the material deemed acceptable during the class period. Collaboration on quizzes will be allowed with explicit permission. No makeup quizzes will be given. Each student's lowest quiz grade will be dropped at the end of the term when calculating the final grade.

Lab Assignment: Lab assignments will be distributed before Wednesday and due on Wednesday at 11:59pm. Attendance at the lab section is not required, but might help in solving the lab problems. The lab assignments will be submitted via CANVAS on Wednesday. To complete the assignment, the coding package R should prove helpful. No late laboratory assignments will be accepted. Each student's lowest lab grade will be dropped at the end of the term when calculating the final grade.

Homework: Homework will be posted weekly and due Tuesday at 5:00pm. Homework can be worked on in groups but must consist of the submitter's own knowledge and understanding. No late homework will be accepted. Each student's lowest homework grade will be dropped at the end of the term when calculating the final grade. Homework will be broken out into two types of problems:

- Without R (w/o R): This will indicate if R should not be used. Using R will result in a more complicated solution than needed. Using R on a problem marked "Without R" will result in a 0 for that problem. The solutions to these problems can be done with equations in slides and possibly with lookup tables provided alongside the homework. This part should be submitted at the beginning of class, written on paper.
- With R (w/ R): This will indicate that R will prove helpful on a problem. While R will not be required for the solution, it will improve the speed at which the problem can be done and is recommended. This part should be submitted either at the beginning of class, printed on the paper or on CANVAS due at 5:00pm.

Lab Practical Exams: During lab practical exams, students will only use the R scripts from the previous lab assignments. No other materials are acceptable.

No collaboration is allowed on examinations.

Exams: During both the midterms and the final exam, students will only use (i) a single letter-sized sheet of paper with hand written notes, with both sides acceptable, and (ii) a calculator that does not have internet abilities. No other materials are acceptable. No collaboration is allowed on examinations.

Grading Scale: The grading scale is predetermined so as to eliminate competition with other students, and to ensure that you always know your grade in the class. Your grade is based upon your performance only.

Numerical range	Grade
93–100	A
90–93	A-
87–90	B +
83–87	B
80–83	B -
77–80	C +
73–77	C
70–73	C -
60–70	D
00–60	F