Introduction to Probability and Statistics for Engineers

STAT 3470
Summer 2019

Instructor:	Andrew Richards	**Lecture Time:**	TR 9:50-11:25
Email:	richards.1227@osu.edu	**Place:**	260 Pomerene

Office Hours: TR 1-3pm in Cockins 328A.

Required Textbook Probability and Statistics for Engineering and the Sciences (9^{th} edition), by Jay Devore.

WebAssign and Homework The WebAssign electronic homework system includes access to the course textbook in ebook format. The login is located at https://www.webassign.net/osu/login.html. Access is available in three formats (you only need to choose **ONE** of these formats):

- WebAssign only (which includes the textbook in eBook format)
- WebAssign and hard copy textbook
- Cenage Unlimited – which is a digital subscription provided by the course textbook publisher. The university bookstore lists a one-semester subscription for the course, but a 12-month subscription is also available.

Website: Please visit http://www.carmen.osu.edu/ Check periodically for announcements about the class and other class material.

Course description: Introduction to probability, Bayes's theorem, discrete and continuous random variables, expected value, probability distributions, point and interval estimation, hypothesis tests for means and proportions, least squares regression.

General Goals: This course satisfies the General Education (GE) requirement in data analysis. GE expected learning outcomes: Students should understand basic concepts of statistics and probability, comprehend methods needed to analyze and critically evaluate statistical arguments, and recognize the importance of statistical ideas.

Prerequisites: Students should already know calculus (differentiation, integration), the exponential function, finite and infinite sums, and basic set algebra. Prerequisite courses: Math 1152, 1161.xx, 1172, 1181H, 153, or 254.

General disclaimer: Announcements made during lecture or on the Carmen website supersede information in this syllabus. It is each student's responsibility to stay up-to-date with announcements.

Homework and quizzes: Required homework problems will be assigned for each topic covered in the course, through WebAssign, due Fridays at 11:59pm. Quizzes will be administered through Carmen and due Sundays at 11:59pm. No late work will be accepted. In extreme circumstances such as hospitalization credit for missed assignments will be prorated.

Makeup exams: If you absolutely need a makeup exam and have a valid excuse, please see me *in advance* for the necessary arrangements. Exceptions to this policy will be permitted only in extreme situations such as serious injury immediately prior to an exam or severe illness requiring hospitalization. All makeups will be conducted the following Tuesday at 7am.

Full credit on exams: You need to show your justification for your work. Answers without work will not receive full credit.

Course attendance policy: You are expected to attend all lectures and recitations. Office hours should not be used for basic instruction of material that has already been covered in class.

Grading Policy: Your final course grade will be based on the following weighting of assessment components: Homework and quizzes (20%) and each exam (30%). The lowest score among the four items will be downweighted by 10 percentage points.

Grading Scale: The minimum course score required to earn each grade, based on the weightings above, is as follows:

A 93
A- 90
B+ 87
B 83
B- 80
C+ 77
C 73
C- 70
D+ 67
D 60

Email Correspondence: In order to protect your privacy, all course e-mail correspondence must be done through a valid OSU name.nn account. If you have not activated your OSU email account, you can activate your account at https://acctmgt.service.ohio-state.edu/cgi-bin/KRB1EntryAdd.

Academic misconduct: It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct (https://trustees.osu.edu/rules/code-of-student-conduct/)

Special accommodations: The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. The Office for Disability Services is located in 98 Baker Hall, 113 W 12th Ave; telephone 292-3307, TDD 292-0901; https://slds.osu.edu.

Tentative Schedule:

Lecture no.	Date	Topic	Textbook Readings
1	5/9/19	Intro; summarizing data	Ch 1
2	5/14/19	Probability axioms; conditional probability	Ch 2
3	5/16/19	Independence; Random variables; Discrete distributions	Ch 2,3
4	5/21/19	Expected values and variance; binomial distribution	Ch 3
5	5/23/19	Poisson distribution; continuous random variables	Ch 3,4
6	5/28/19	Normal, exponential, and gamma distributions; joint distributions	Ch 4,5
7	5/30/19	Correlation; sampling distributions	Ch 5
8	6/4/19	Central Limit Theorem	Ch 5
9	6/6/19	Point estimation	Ch 6
	6/11/19	**Exam #1**	
10	6/13/19	Confidence intervals	Ch 7
11	6/18/19	Hypothesis testing intro	Ch 8
12	6/20/19	Z tests	Ch 8
13	6/25/19	T tests	Ch 8
14	6/27/19	Goodness of fit tests	Ch 14
	7/2/19	**Exam #2**	
	7/4/19	**Independence day**	
15	7/9/19	Multisample tests	Ch 9,10
16	7/11/19	Simple linear regression intro	Ch 12
17	7/16/19	Simple linear regression inference	Ch 12
18	7/18/19	Assessing model accuracy and transformations	Ch 13
19	7/23/19	Multiple linear regression	Ch 13
	7/25/19	**Exam #3**	