STAT 3470: Introduction to Probability and Statistics for Engineers
Jennings Hall 155
MWF 4:10 – 5:05
The Ohio State University – Spring 2019

Instructor: Kevin Donges
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Office Hours: MWF 10:30 to 11:15 or by appointment

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

General Education (GE) Requirement: This course satisfies the GE requirement in Data Analysis.
- Goals: Students develop skills in drawing conclusions and critically evaluating results based on data.
- Expected Learning Outcomes: Students understand basic concepts of statistics and probability, comprehend methods needed to analyze and critically evaluate statistical arguments, and recognize the importance of statistical ideas.

Prerequisite: MATH 1152, 1161.xx, 1172, 1181H, 153, or 254, or equivalent, or permission of the instructor. Not open to students with credit for 3450, 3460, 427, or 428.

Textbook: *Probability and Statistics for Engineering and the Sciences,* 9th Edition, by Jay L. Devore

Topics: We will be covering all or parts of chapters 1 – 8, 12 – 14.

Website: The course website is carmen.osu.edu; please check it regularly. On the site you will find announcements, the syllabus, solutions to the exams, and exam grades (NOTE: The gradebook on Carmen is just that – a gradebook. It is used solely as a place to record your grade and the default Carmen overall grade is not necessarily correct; as such, it should be ignored.)

Important Dates: The last day to drop a course is Friday, February 1st. The last day to withdraw from a course without petitioning is Friday, March 22nd. There will be no class Monday, January 21st (MLK Day), Monday, March 11th through Friday, March 15th (Spring Break).

Email Correspondence: In order to protect your privacy all email correspondence must be done through a valid OSU name.# account; any email from a non-osu.edu account will be ignored. Please make sure to include "STAT 3470" in the subject line. Note that the faculty and student (buckeyemail) email systems are completely separate. As an alum, I am in both and the latter will autocomplete my buckeyemail address; if you send an email to this address I will not receive it. Your best bet is to contact me through Carmen. In addition, please do not ask for information which is in the syllabus or on Carmen, can be found by a quick search on osu.edu or Google, and/or was announced in class. Please allow up to 48 hours for responses to other inquiries made via email.

Extra Help: The Mathematics and Statistics Learning Center provides group tutoring in Cockins Hall 122 beginning January 14th. More information can be found at https://mslc.osu.edu/mslc-free-tutoring.

Evaluation:

Homework	20%
Exam 1 (Tuesday, February 19th 5:30 – 6:25)	25%
Exam 2 (Thursday, March 28th 5:20 – 6:15)	25%
Final Exam (Wednesday, April 24th 8:00pm – 9:45pm)	30%

Homework will be administered via WebAssign. Your homework grade will be determined as follows: If you earn a grade in the interval $(x - 10, x]$ then your grade will be x where $x = 100, 90, 80, \dots, 10$; if you earn a 0 then you'll receive a 0. No late homework will be accepted.

More information regarding the location of the exams will be made available closer to the dates of the exams. All in-class assessments must be competed in pencil. Please note that solutions, not answers, will be graded; a correct answer alone will not get full credit if the steps leading to it are not clear and/or correct. In addition, presentation/organization and correct use of terminology/notation will be assessed.

If you have a conflict with the primary exam time (class or some other event) you must contact me at least two weeks before the date of the exam. Late requests for make-up exams may be denied. Make up exams will be held at 7:00 am on the day after exam 1 and exam 2 and 10:00 am on the day after the final exam.

If you find a discrepancy in the grading of your exam (e.g., incorrect addition/subtraction, correct answer marked incorrect, etc.) then you must bring it to my attention no later than one week from the day the exams are returned. After that no grade will be changed for any reason whatsoever.

The grading scale will be no harsher than the following scale:

A	A-	B+	B	B-	C+
[93,100]	[90,93)	[87,90)	[83,87)	[80,83)	[77,80)
C	C-	D+	D	E	
[73,77)	[70,73)	[67,70)	[60,67)	[0,60)	

Calculators: Please note that at no time will you be permitted to share a calculator with another student, use a calculator with a CAS, or use any internet enabled device (e.g., a cell phone) as a calculator.

Attendance: While I will not be taking attendance, you are expected to attend every class session. If you miss class then it is your responsibility to get any and all material covered from a classmate. Arriving late or leaving early is distracting to your classmates and me and will not be tolerated.

Electronic devices: Use of communication devices and technology for activities other than class work disrupt the learning process for you and others in the class and will not be tolerated. Cell phones and other electronic devices should be turned off or silenced during class.

Recording of Class: Audio, video, and photographic recording of class content (e.g., lectures) is strictly prohibited without written authorization from the instructor. The transmission or dissemination of all course content onto public, commercial, or social media sites is strictly prohibited.

Academic Misconduct: Please help us to maintain an academic environment of mutual respect, fair treatment, and personal growth. You are expected to produce original and independent work for exams and homework. Although students are often encouraged to work together on homework assignments, all students must submit their own written work in their own words. 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 at http://studentlife.osu.edu/csc/.

Accommodation: 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. You are also welcome to register with Student Life Disability Services to establish reasonable accommodations. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. (**SLDS contact information:** slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.)

Mental Health Statement: As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling 614-292-5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on call counselor when CCS is closed at 614-292-5766 and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-800-273-TALK or at suicidepreventionlifeline.org.

Final Comment: It is crucial that we have a mutual respect for one another as members of the OSU community and that we conduct ourselves accordingly. My responsibilities include coming to class prepared to teach you statistics, giving clear lectures, assigning carefully chosen homework problems that are relevant to our course, and carefully preparing exam questions that accurately measure your progress in the course. Additionally, I am responsible to be available to you outside of class for consultation in office hours and by appointment. Likewise, I expect you to come to class motivated to learn the material. This involves reading the material ahead of time, promptly starting the homework assignments, and seeking additional help before it is too late**.** Ultimately, you are responsible for your university education and what you take from it.

I reserve the right to change any and all items on this syllabus – any changes as well as official due dates for homework will be announced in class.

Tentative Schedule:

#	Date	Lecture Topic	Textbook Reading
1	1/7	Introduction to the Class; Syllabus	Syllabus
2	1/9	Sample Spaces and Events; Probability	1.1, 2.1, 2.2
3	1/11	Axioms and Properties of Probability; Counting	2.3
4	1/14	Conditional Probability	2.4
5	1/16	Independent Events; Random Variables	2.5, 3.1
6	1/18	Probability Distributions for Discrete Random Variables	3.2
	1/21	No Class; MLK Day	
7	1/23	Expected Value and Variance (Discrete)	3.3
8	1/25	Binomial Distribution	3.4
9	1/28	Poisson Distribution	3.6
10	1/30	Probability Density and Cumulative Distribution Functions	4.1, 4.2
11	2/1	Expected Value and Variance (Continuous)	
12	2/4	Normal Distribution	4.3
13	2/6	Gamma, Chi-Square, and Exponential Distributions	4.4
14	2/8	Jointly Distributed Random Variables	5.1
15	2/11	Expected Values, Correlation, and Covariance	5.2
16	2/13	Statistics and Their Distributions	5.3
17	2/15	Statistics and Their Distributions	
18	2/18	The Distribution of the Sample Mean	5.4
	2/19	Exam 1 5:30 – 6:25	
19	2/20	The Distribution of a Linear Combination of Random Variables	5.5
20	2/22	General Concepts of Point Estimation	6.1
21	2/25	General Concepts of Point Estimation	
22	2/27	Methods of Point Estimation	6.2
23	3/1	Basic Properties of Confidence Intervals	7.1
24	3/4	Basic Properties of Confidence Intervals	
25	3/6	Confidence Intervals for a Population Mean or Proportion	7.2
26	3/8	Intervals Based on a Normal Population Distribution	7.3
27	3/18	Hypothesis and Test Procedures	8.1
28	3/20	Hypothesis and Test Procedures	
29	3/22	z Tests for Hypotheses about a Population Mean	8.2
30	3/25	The One Sample t Test	8.3
31	3/27	The One Sample t Test	
	3/28	Exam 2 5:20 – 6:15	
32	3/29	Tests about a Population Proportion	8.4
33	4/1	Confidence Intervals Revisited	7.2
34	4/3	Goodness of Fit Tests	14.1
35	4/5	The Simple Linear Regression Model	12.1
36	4/8	Estimating Model Parameters	12.2
37	4/10	Inferences about Slope	12.3
38	4/12	Inferences about the Mean and Prediction	12.4
39	4/15	Assessing Model Adequacy	13.1
40	4/17	Regression with Transformed Variables	13.2
41	4/19	Multiple Regression	13.4
42	4/22	Multiple Regression	
	4/24	Comprehensive Final Exam 8:00PM – 9:45PM	