Statistics 324, Spring 2014
Introductory Applied Statistics for Engineers

Instructor:	Keegan Korthauer
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Address:	5730 Medical Sciences Center
Office Hours:	W 8:45a-9:45a, Th 3p-4p, or by appointment

TAs:	Wesley Chang (wchang@cs.wisc.edu)
	Derek Norton (dlnorton2@wisc.edu)

Class Times:

Lecture:	002	MWF	9:55a-10:45a	Social Sciences 5208	
Discussions:	321	M	3:30p-4:20p	Chemistry 2307	Derek
	322	M	2:25p-3:15p	Chemistry 2307	Derek
	323	M	12:05p-12:55p	Chemistry B383	Wesley
	324	M	4:35p-5:25p	Social Sciences 4314	Derek
	325	Tu	5:30p-6:20	Medical Sci Ctr 5295	Wesley
	326	Tu	1:20p-2:10p	Humanities 2625	Wesley

Prerequisite: Math 222. Degree credit can be received for no more than one of the following: Stat 201, 224, 301, and 324.

Credits: 3

Text: *Statistics for Engineers and Scientists*, 3rd Edition

Author: William Navidi; **ISBN:** 978-0-07-337633-2

Course Website: Learn@UW

Objectives: Understanding of statistical methods and concepts including sampling and descriptive statistics; probability, distributions, and random variables; hypothesis tests and confidence intervals for one- and two-sample problems; linear regression, model checking, and inference; analysis of variance and basic ideas in experimental design.

Computing: A scientific or graphing calculator is required for exams and homework. Some homework assignments will require the use of the free statistical program R, through the RStudio interface (obtain from www.rstudio.com). No prior computing experience is necessary as you will learn the necessary commands in class.

Help: Outside of lecture and discussion, help is available by visiting my office hours, the TAs' office hours, and the Statistics tutorial lab (free tutors are available daily in MSC 1586: see www.stat.wisc.edu/courses/Tutorial_Schedule).

Grading: Your final grade will be based on weekly Homework (20%), Midterm Exam 1 (25%), Midterm Exam 2 (25%), and the Final Exam (30%). Letter grades will be assigned roughly according to the following scale:

Grade	Percentage
A	92% - 100%
AB	88% - 92%
B	80% - 88%
BC	76% - 80%
C	68% - 76%
D	60% - 68%
F	$< 60\%$

Homework assignments will be collected on Fridays prior to the start of lecture. Please make sure to write your name, TA, and discussion number on the first page of your assignment, show your work, and staple all pages together. No late homework will be accepted, but the two lowest homework scores will be dropped.

Exams are closed book and closed notes, but a single page of hand-written (no photocopies) notes on both sides of an 8.5in by 11in sheet of paper will be permitted for use on each of the two midterm exams. Two pages (front and back) of the same format will be permitted for use on the final exam.

Policies: You are encouraged to discuss the course material with others, but you must write homework and exams by yourself and make an effort to prevent others from copying your work. (See the UW Academic Misconduct policy.)

If you anticipate conflicts with course requirements, or if you require accommodation due to disability, please notify me during the first three weeks of class. You may not make up missed homework or exams, except in the case of a documented illness or serious problem beyond your control.

This information is subject to change. **Tentative Schedule:**

Week	Date	Subject	Textbook Sections
1	1/22	Course Intro and Sampling	1.1
	1/24	Summary statistics and Graphical summaries	1.2, 1.3
2	1/27	Intro to probability and counting methods	2.1, 2.2
	1/29	Conditional probability and Independence	2.3
	1/31	Random variables	2.4
3	2/3	Functions of random variables	2.5
	2/3	Joint distributions	2.6
	2/7	Measurement error	3.1, 3.2
4	2/10	Uncertainties for functions of measurements	3.3, 3.4
	2/12	Discrete distributions: Bernoulli and Binomial	4.1, 4.2
	2/14	More discrete distributions	4.3, 4.4
5	2/17	Continuous distributions: Normal and lognormal	4.5, 4.6
	2/19	More continuous distributions	4.7, 4.8
	2/21	Probability plots, CLT	4.10, 4.11
6	2/24	Intro to R	
	2/26	Review for Midterm Exam 1	
	2/28	**Midterm Exam 1 in class**	
7	3/3	Large-sample CI for population mean	5.1
	3/5	More CIs: proportions, small sample population mean	5.2, 5.3
	3/7	More CIs: difference in means and proportion	5.4, 5.5
8	3/10	More CIs: Two small samples, Paired data	5.6, 5.7
	3/12	Prediction intervals and Intro to HT	5.8, 6.1
	3/14	Hypothesis Testing: Large-sample	6.1, 6.2
9	3/17-3/21	Spring break, No Class	
10	3/24	More HT: proportions, small-sample means	6.3, 6.4
	3/26	More HT: difference in means (large and small)	6.5, 6.7
	3/28	More HT: difference in proportions, paired	6.6, 6.8
10	3/31	More HT: nonparametric	6.9
	4/2	More HT: Chi-squared, F-test	6.10, 6.11
	4/4	More HT: Type I, Type II error and Power	6.12, 6.13
11	4/7	More HT: Multiple Tests	6.14
	4/9	Using R for HT	
	4/11	Correlation	7.1
12	4/14	Review for Midterm Exam 2	
	4/16	**Midterm Exam 2 in class**	
	4/18	Intro to Simple Linear Regression	7.2
13	4/21	More SLR: Inference on coefficients	7.3
	4/23	More SLR: Model diagnostics and transformation	7.4
	4/25	Intro to multiple regression	8.1
14	4/28	More multiple regression	8.2, 8.3
	4/30	Using R for Regression	
	5/2	Intro to Factorial Experiments and ANOVA	9.1
15	5/5	Pairwise comparisons, 2-way ANOVA	9.2, 9.3
	5/7	More designs: RCB, factorial	9.4, 9.5
	5/9	Review for Final Exam	

Final Exam: 5/11/2014, 2:45p-4:45p in Van Vleck B130