STAT 211 - 509: Principles of Statistics I

Fall 2018

Instructor:	Patrick Ding	**Email:**	patrickding@stat.tamu.edu
Lectures:	Tue/Thu 12:45pm – 2:00pm	**Place:**	Blocker 150
Office hours:	Mon/Wed 11:00am – 12:00pm	**Office:**	Blocker 455
TA:	Junsouk Choi	**Email:**	jchoi@stat.tamu.edu
Office hours:	Wed 12:45pm - 2:45pm	**Office:**	Blocker 420

Help Sessions:	Grad students	**Place:**	Blocker 162
Times:	Mon/Wed		10:15am-12:15pm, 1:45pm-3:45pm, 5:00pm-7:00pm
	Tue/Thu		10:15am-12:15pm, 2:00pm-4:00pm, 5:00pm-7:00pm

1 Course Overview

Description: Introduction to probability and probability distributions; sampling and descriptive measures; inference and hypothesis testing; linear regression, analysis of variance.

Prerequisites: MATH 152, 172 or instructor's permission. This course will use some calculus and is more math intensive than the corresponding 3-0 levels of statistics. Knowledge of calculus is mandatory. To be more specific, basic calculus is mandatory as of the first day of class and a working knowledge of double integration will be a requirement by about 1/3 of the way through the semester, for those taking MATH 172 concurrently.

Learning Outcomes:

1. Identify appropriate graphs, summary statistics, and inferential statistics for real-world contexts.
2. Interpret graphs and statistics in real-world contexts.
3. Calculate summary and inferential statistics.
4. Infer appropriate conclusions about populations based on data.
5. Explain and compare properties of summary and inferential statistics.
6. Combine concepts in new ways to solve various problems.

Course Outline:

Week	Date	Topic	Homework
1	Aug 28, Aug 30	Introduction and R tutorial	
2	Sep 4, Sep 6	Probability and random variables	HW 1 due Sep 7
3	Sep 11, Sep 13	Introduction to statistical inference	
4	Sep 18, Sep 20	Expectation	HW 2 due Sep 17
5	Sep 25, Sep 27	Conditional probability and Bayes' theorem	HW 3 due Sep 26
6	Oct 2, Oct 4	Review, exam 1 during class	HW 4 due Oct 3
7	Oct 9, Oct 11	Statistical inference with simulation	
8	Oct 16, Oct 18	Bayesian inference	HW 5 due Oct 15
9	Oct 23, Oct 25	Continuous random variables	HW 6 due Oct 22
10	Oct 30, Nov 1	Classical inference	HW 7 due Oct 29
11	Nov 6, Nov 8	Review, exam 2 during class	
12	Nov 13, Nov 15	Linear regression	HW 8 due Nov 14
13	Nov 20	Analysis of variance	HW 9 due Nov 21
14	Nov 27, Nov 29	Data production	
15	Dec 4	Review	HW 10 due Dec 3
16	Dec 12: 8:00am - 10:00am	Final exam	

2 Course Resources

Main References: There is no required textbook. You will be provided with lecture notes and other materials that will be sufficient to support this course. An optional book to consider is *Mathematical Statistics with Resampling and R* by Chihara and Hesterberg; an electronic version of this book is available on the TAMU library website. A good beginner's resource for R is *The R Cookbook* by Paul Teetor; an electronic version of this book is available on the TAMU library website.

Course Pages:

1. eCampus: Lecture notes, datasets, grades, and practice exams will be here.
2. Piazza: Rather than emailing questions to the teaching staff, I encourage you to post your questions on Piazza. Find our class page at: `https://piazza.com/tamu/fall2018/stat211509/home`.
3. Webassign: Homework will be here.

Software: We will use the R programming language, available for download here: https://www.r-project.org/. I recommend you use Rstudio as your development environment: https://www.rstudio.com.

Help Sessions: On Mondays through Thursdays at Blocker 162 you can get help on the course from STAT grad students. See the first page for times.

3 Grading

Grading Policy: Homework (30%), Midterm 1 (20%), Midterm 2 (20%), Final (30%).
Grade cutoffs:

$$100 \geq \boldsymbol{A} \geq 90 > \boldsymbol{B} \geq 80 > \boldsymbol{C} \geq 70 > \boldsymbol{D} \geq 60 > \boldsymbol{F} \geq 0$$

For grades within 1% of a higher grade I reserve the right to bump your grade up, provided you have consistently answered questions correctly on Piazza and/or have demonstrated improvement over time.

Homework: Homework is posted and submitted via Webassign (`https://www.webassign.net/tamu/login.html`). The cost of Webassign is $22 and can be accessed and purchased by going to the eCampus

site for this course and clicking on the link for Webassign on the left side. All homeworks are due at 8:00 am. Check the course outline for due dates. **Late homework will never be accepted**, but the lowest homework score will be dropped. You are encouraged to work together, but the answers must be your own.

Exams: If you know you will miss the exam for a valid reason, please notify me or the main office of the Department of Statistics as soon as possible. For what constitutes a university excused absence, see http://student-rules.tamu.edu/rule07. All exams will be held in Blocker 150.

Midterm #1 ..... Oct 4
Midterm #2 ..... Nov 8
Final Exam ..... Dec 12

4 Class Policy

Attendance: You are responsible for the material covered in lectures that you miss. If you miss a lecture, get the notes from someone who was in class.

Disability Accommodation: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information visit http://disability.tamu.edu/

Plagiarism: As commonly defined, plagiarism consists of passing off as one?s own ideas, words, writing, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. If you have any questions regarding plagiarism, please consult the latest issue of the Texas A&M University Student Rules, under the section "Scholastic Dishonesty."

Academic Integrity: "An Aggie does not lie, cheat or steal, or tolerate those who do." Please refer to the Honor Council Rules and Procedures (http://aggiehonor.tamu.edu/) for more information on the honor code.

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