**STAT 1293/2292: Topics in Applied Statistics 2**

Statistical Practice Using R

Summer 2020

**Instructor:**  Dr. Junshu Bao

Department of Statistics, University of Pittsburgh

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**Lecture:** T/TH 12:00 – 3:15 PM

**TA:** Jiaxuan Duan

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**Course Description:** This course is focused on using statistical software R to solve statistical problems. Topics include descriptive statistics, probability, sampling distributions, inference such as confidence interval and hypothesis test, and categorical data analysis. The background knowledge will be briefly reviewed but the major part of the class will be about problem solving using R. A lot of examples and exercises will be used to give students hands-on experience on data analysis.

**Prerequisite**: STAT 200, STAT 1000, or STAT 1100. You don’t need to know how to program in R.

**Software:** Throughout the semester we will use the software R.

**Canvas:** You should visit Canvas frequently (<http://canvas.pitt.edu>). You will be able to access lecture slides, homework assignments, quizzes, exams and other materials that will aid in the learning of class topics.

**Lectures** will be video-recorded and posted through Canvas. Students are recommended to follow the regular class schedule and watch videos each week. Each lecture (3-hour) will be chunked to shorter (about 20 minutes) videos.

**Office hours:** The most efficient way to seek help is sending emails to me. I will try my best to respond quickly. If you need to schedule a meeting, send me a request via email and I can meet you on Zoom.

**Grading:** Homework 30%

Quiz 20%

Midterm 25%

Final Exam 25%

100%

**Course Grades:**

A+

A

A-

B+

etc…

**Examinations:** The two exams (midterm and final exam) will be take-home. They will be posted on Canvas and you will submit your completed exams through Canvas.

**Quizzes**: There will be four quizzes throughout the semester. Quizzes will be posted on Canvas and will be take-home.

**Homework Assignments:** Homework assignment are found and submitted through Canvas. Rules:

* You may, and are encouraged to work together on the assignments, but everyone must submit their own assignment.
* Late homework will not be accepted. In a valid emergency, your recitation instructor may make an exception.
* Your homework should be neat and well-organized.

**Material References:**

Montgomery, D. C. and Runger, G. C. *Applied Statistics and Probability for Engineers,* 5th Edition

Moore, D. S. (2004). *The Basic Practice of Statistics* (Vol. 3rd). New York: W.H. Freeman and Co.

Rice, J. A. (1995). Mathematical Statistics and Data Analysis, 2nd Ed. Wadsworth, Inc.

Pfenning, N. (2011). *Elementary statistics: looking at the big picture*.

**Disability Statement:** If you have a disability for which you are or will be requesting an accommodation, you are encouraged to contact both me, and the Office of Disability Resources and Services, 216 William Pitt Union, (412) 648-7890 / (412) 383 - 7355 (TTY) as early as possible in the term. DRS will verify your disability and determine appropriate accommodations for this course.

**Academic Integrity Statement:** Cheating/Plagiarism will not be tolerated. Students suspected of violating the University of Pittsburgh Policy on Academic Integrity, as stated in the February 1974 Senate Committee on Tenure and Academic Freedom, will be required to participate in the outlined procedural process as initiated by the instructor. A minimum sanction of a zero score for the quiz, homework, or exam will be imposed.

**Tentative class calendar:**

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| Lecture # | Date | Day | Topic | Coursework |
| 1 | 2020-06-23 | T | Introduction to R |  |
| 2 | 2020-06-25 | TH | Probability |  |
| 3 | 2020-06-30 | T | Statistics and graphs (quantitative data) | HW 1 due |
| 4 | 2020-07-02 | TH | Statistics and graphs (categorical data) | Quiz 1 |
| 5 | 2020-07-07 | T | Inference about means | HW 2 due |
|  | 2020-07-09 | TH | Review for midterm exam | Quiz 2 |
| 6 | 2020-07-14 | T | ANOVA | HW 3 due |
| 7 | 2020-07-16 | TH | Inference about proportions | Quiz 3 |
| 8 | 2020-07-21 | T | Chi-square tests | HW 4 due |
| 9 | 2020-07-23 | TH | Regression and correlation | Quiz 4 |
| 10 | 2020-07-28 | T | Inference about regression | HW 5 due |
|  | 2020-07-30 | TH | Review for final exam |  |