Stat 1000. Applied Statistical Methods

Fall 2015

Department of Statistics, University of Pittsburgh

Syllabus   August 25, 2015

Class Meetings: TuTh 11:00am – 12:15pm, 1501 Wesley W Posvar Hall

Instructor: Dr. Kehui Chen, 2706 Cathedral of Learning

E-mail: khchen@pitt.edu

Course Web Site: courseweb.pitt.edu

Office Hours: Mon 2 -4 pm

Teaching Assistant

Mr. David Strasser

- Recitation Hours:
  - (a) Wed 12:00pm – 12:50pm, CL 227
  - (b) Wed 1:00pm – 1:50pm, CL 227
- E-mail: dms195@pitt.edu
- Office Hours: Tue 2:30–3:30 pm (CL 2712)

Mr. Calvin Lutz

- Recitation Hours:
  - (a) Wed 2:00pm – 2:50pm, CL 227
  - (b) Th 9:00am – 9:50am, CL 121
- E-mail: CTL14@pitt.edu
- Office Hours: Tu: 1:30– 2:30pm (CL 2712)

Objectives:

This course is an intensive introduction to statistical methods. It is designed for students who want to do data analysis and to study further ideas in applied statistics beyond this course. By the end of the course, students will be able to

- understand basic concepts of statistics and probability which include descriptive statistics, elementary prob., random sampling, controlled experiments, inference procedures, regression and the analysis of variance;

- be proficient at the use of **Minitab** and apply basic statistical techniques to a variety of subjects with the aid of **Minitab** statistical software;

- understand, analyze, and criticize quantitative arguments.

Note: The material in this course is naturally cumulative in nature. Thus, it is important to not fall behind in your reading or assignments or you will find yourself lost. If you are confused, see me or your recitation instructor for help.

Prerequisites:

No computer science background is needed, yet some familiarity with elementary algebraic notation is assumed.

Textbook:

Moore, David S., McCabe, George P., and Craig, Bruce A. (2014). **Introduction to the Practice of Statistics**, 8th ed., W.H. Freeman and Company, New York.

Minitab Version 17:

Minitab 17 is available on the computers in the Statistics Lab (G26 CL) and also in all the other campus computing labs (CL ground floor, WWPH, Benedum, etc.). If in addition you would like to have **Minitab** on your PC, Pitt's Software Download Service offers that for free.

Course Web:

Course materials will be available through `courseweb.pitt.edu`. Login using your Pitt username and password. Check the web site regularly for important announcements about the course. Homework assignments and their solutions, as well as lecture notes will be made available on the course web site for you to print out.

Recitation:

Recitations will concentrate on the use of Minitab and on the clarification and review of lecture material in smaller classes. In addition, individual questions, especially those pertaining to the homework assignments, may be addressed.

Note: Recitations meet in the Statistics Lab in G26 CL on the following dates: Sep. 9/10, Oct. 28/29, and Nov.18/19.

Free Tutoring:

Beyond my office hours and your TA's office hours, you can get help from the Statistics Lab in G26 CL. Refer to `http://www.stat.pitt.edu/resources/statistics-computing-lab` for hours of operation and names of TAs on staff. Make sure you avoid times when it has been reserved.

Grades:

Course grades will be determined by the following components, with the weights shown:

Homework assignments	25%
Midterm exam	25%
Comprehensive final exam	50%

Homework Assignments:

Homework will include questions from the textbook and computer assignments.

- Homework assignments will be due approximately every week. I will collect homework **at the beginning of the lecture** on the due date. The official course policy is that **no late homework will be accepted**. In a valid scenario that you can not attend the lecture, you might hand in your homework to your recitation instructor before the due date.

- Homework solutions will be posted on the course web site by Monday mornings after assignments are handed in.

- You are free to discuss and work on homework problems with other students, but **you should write up your solutions independently**; otherwise, points will be deducted.

- Your homework should be neat and well-organized. Show your work and circle your answers. Your recitation instructor is a student like you and will not take time to decipher poor handwriting, put pages in order, or read notes scrawled in margins.

- Be sure to print your name and recitation time at the top of the first page of your homework. Put your name or initials at the top of each additional sheet of paper or computer output. Staple your pages together.

Exams:

There will be one in-class midterm exam during the semester, and a comprehensive final exam. A hand calculator will be necessary for all exams. The dates for the exams are

- **Midterm** Thursday, October 22, 2015 from 11:00am – 12:15pm.

  - Covers materials before October 20.
  - One two-sided sheet of notes permitted.

- **Final:** Wednesday, December 16, 2015 from 12pm-1:50pm

  - Cumulative on all covered material.
  - Two two-sided sheets of notes permitted.

No make-up exams will be given. If you will miss the midterm exam (an extremely rare event for an unavoidable emergency), let me know as soon as possible. In this case, you will receive the same percentage score for that midterm as you earn on the final exam.

Extra Credit:

You can earn extra credit by participating surveys and in-class exercise and discussions. Other opportunities might be announced during the semester. But the total may not exceed 5%.

- There will be in-class exercise and interactive activities throughout the semester. You will be credited based on your response accuracy and/or your in-class participation. Some of the questions will use clickers, and detailed instruction on clicker use will be provided.

- Surveys will be administered in class and/or in recitation as a means to gauge the class's progress and the effectiveness of interactive activities. The results of these surveys will not be used to determine your grade. Extra credit will be solely based on your participation.

Clicker Use:

Clicker refers to a student response system that allows you to answer questions I pose in class by pressing remote buttons. **You do not need to buy anything.** At the beginning of the lecture when clicker is needed, you are to pick up your assigned clicker from the case at the front of the room. Likewise, you are to return your clicker to the bins at the end of class. Collective clicker data (e.g. which fraction of the class chose which answer) will be constantly shown to me (and you) in class on the fly, whereas individual clicker data will be passed on to the instructor only at the very end of the term, after all your coursework has been graded.

Disability Statement:

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor 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 reasonable 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, noted below from the February 1974 Senate Committee on Tenure and Academic Freedom reported to the Senate Council, 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 or exam will be imposed.

The integrity of the academic process requires fair and impartial evaluation on the part of faculty, and honest academic conduct on the part of students. To this end, students are expected to conduct themselves at a high level of responsibility in the fulfillment of the course of their study. It is the corresponding responsibility of faculty to make clear to students those standards by which students will be evaluated, and the resources permissible for use by students during the course of their study and evaluation. The educational process is perceived as a joint faculty-student enterprise which will perforce involve professional judgment by faculty and may involve -without penalty- reasoned exception by students to the data or views offered by faculty.

Calendar:

Lecture	Date	Topic
1	Sep. 1	Introduction and Key Terms of Statistics
2	Sep. 3	Describing Distributions
		No Recitation
3	Sep. 8	Describing Distributions Cont.
4	Sep. 10	Density Curves and Normal Distributions
		Recitation Meet in Stat Lab
5	Sep. 15	Relationships of Two Variables
6	Sep. 17	Relationships of Two Variables Cont.
7	Sep 22	Producing Data
8	Sep 24	Producing Data Cont.
9	Sep. 29	Probability and Random Variables
10	Oct. 1	Random Variables Cont.
11	Oct. 6	Sampling Distribution
12	Oct. 8	Estimating with Confidence
13	Oct. 13	Estimating with Confidence Cont.
14	Oct. 15	Review Session
15	Oct. 20	No Class (Fall Break)
16	Oct. 22	**Midterm**
17	Oct. 27	Introduction to Hypothesis Testing
18	Oct. 29	Power and Decision
		Recitation Meet in Stat Lab
19	Nov. 3	Use and Abuse of Tests
20	Nov. 5	Inference for Population Means
21	Nov. 10	Inference for Proportions
22	Nov. 12	Simple Linear Regression
23	Nov. 17	Simple Linear Regression Cont.
24	Nov. 19	Multiple Linear Regression
		Recitation Meet in Stat Lab
25	Nov 24	Two-way Tables (not in exam)
26	Nov 26	Thanksgiving
27	Dec 1	Case Study of Regression
28	Dec 3	One-Way ANOVA
29	Dec 8	One-Way ANOVA Cont.
30	Dec 10	Review Session
31	Dec 16	**Final Exam**