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[Nancy Pfenning](#)

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Stat 90-707 Statistical Reasoning

Fall 2021, Mon.Wed. 1:25-2:45 in Hamburg 1002; 12 units

[Heinz College](#)

[Carnegie Mellon University](#)

Instructor Dr. Nancy Pfenning

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Office Wednesdays 11:30-12:30 in Hamburg 2108 or by

Hrs appointment

News

- [Powerpoint Lecture Slides](#)
- [Practice Quizzes and Solutions](#)
- [Blank Homework Forms](#) to be completed and turned in according to rules TBA
- Here is a brief guide to [MINITAB 17 Basics](#), used in this course; for work on a Mac, see [MinitabForMac](#).

Description

This course provides an introduction to the principles of data collection, display and summary tools, basic probability, and--most importantly-- methods of statistical inference. An easy-to-use interactive statistical computing package called MINITAB will be used periodically; the correct interpretation of output produced by software will be stressed. Data collection is accomplished via sample surveys, observational studies, and experiments, with careful attention paid to how such studies can avoid bias. Inference procedures--both confidence intervals and hypothesis tests--will cover single means or proportions; paired, two-sample, or ANOVA comparisons; chi-square; simple linear regression.

Prerequisites

High-school level Algebra. No Comp. Sci. background needed.

Textbook/Calculator

Pfenning [Elementary Statistics: Looking at the Big Picture](#) (c)2011 Brooks/Cole, Cengage Learning, Do **NOT** use the Instructor Edition. If you'd like to consult other statistics books for reference, ask me in office hours. A calculator (any kind) is needed.

Requirements

Homework, group responses to journal articles, Minitab tasks, quizzes, two midterms, and a comprehensive final exam.

Grading

12 Homeworks	340
Recitation work (Group Responses about Journal Articles; Minitab Tasks)	110
Best 10 of 11 Quizzes	100
Midterm 1	150
Midterm 2	150
Final Exam [see calendar for date/time]	200
Total	1050
Course %	Total divided by 10

Course Grade

90-105% A; 80-89% B; etc. Plusses are assigned to the students at the top of each grade range and minuses to the students at the bottom. None of us can know in advance if an individual student will be a "borderline case"; completing all the assignments throughout the semester can help you to optimize your chances for the best possible grade; no late homeworks will be accepted.

Recitation

Fridays from 3:05 to 4:25 in Hamburg 1002

TA Andrew Breazeale email abreazea@andrew.cmu.edu

Office Hr Day/Time/Location TBA

Recitations will give students the opportunity to explore real-life use of statistical methods via the analysis and discussion of *journal articles* in relevant disciplines. Besides this group work that reinforces broader appreciation for statistical applications, there will be quizzes that home in on the most essential skills and concepts covered in a given week. Preparation for these quizzes is best accomplished by trying each week's practice quiz in advance and then self-checking with the answer key provided (see the Practice Quizzes and Solutions link above). There will also be periodic instruction on the use of MINITAB (our computer package), as well as clarification and review of lecture material as needed. Most questions pertaining to the homework assignments will probably be addressed in instructor's and TA's office hours, as these questions tend to vary a great deal from student to student.

Note: The material in this course is cumulative in nature. Thus, it is important not to 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.

Note to Students with Disabilities: If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and Disability Resources access@andrew.cmu.edu as early as possible in the term. See their website <https://www.cmu.edu/disability-resources/>

Academic Integrity Every student is responsible for understanding and abiding by the University's code for ethical behavior, as outlined on this website: <https://www.cmu.edu/policies/student-and-student-life/academic-integrity.html>

About me: Having received my PhD in Mathematics from Carnegie Mellon University in 1985, I taught math and statistics part-time at the University of Pittsburgh from 1987 to 1999, and began lecturing full-time in 2000. My textbook Elementary Statistics: Looking at the Big Picture was published by Cengage in 2011. In 2012 I received Pitt's highest recognition for teaching in the Arts and Sciences, the David and Tina Bellett Award. In 2016 I was honored with the University's Chancellor's Distinguished Teaching Award. I retired from full-time teaching in September 2018. In recent semesters I taught an honors course **Patients in Literature's Pages** at Pitt and at Duquesne University, and have been employed since 2019 as visiting faculty at Brown University, writing curriculum to incorporate Data Science into middle- and high-school instruction. It is my pleasure to return to teaching statistics this fall (2021) with the added bonus of returning to my alma mater!

About you: Students in this course represent a refreshingly diverse group with a broad range of areas of interest, including arts and entertainment management, public policy and management, and health care policy. Thus, you are in an excellent position to make good on John Tukey's assertion: the great thing about statistics is that it lets you play in *everyone's* backyard!