Math/Stat 282: Introduction to Statistics

Fall 2026

"The whole of science is nothing more than a refinement of everyday thinking."
– Albert Einstein, Physics and Reality (1936)

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Office Hours: Official (guaranteed) hours, Mon & Wed 3-4, Tue 9-11, also make an appointment or come see me.

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Course Goals

The Real Goals

Are we really seeing what we think we're seeing, or is it a fluke? We want to explain the world. However, it contains some things outside our control, beyond our understanding, or just plain random. You will learn how to use statistical inference to know what can be known through all the noise. Generally, this is done by making some calculation on the characteristics of a *sample*, which — to a greater or lesser degree — represents the population. In this class, you will learn to use sampling to infer truths about the larger population from which they are drawn.

The Official Goals (Student Learning Outcomes)

At the completion of the course, the student will be able to:

1. Create and critically evaluate numerical and visual summaries of data.
2. Use linear models to represent relationships between two variables.
3. Estimate population mean and proportion from sample data.
4. Conduct hypothesis tests for means and proportions.

Course Activities

The central activities of the class, around which everything else is designed, are two projects. In one, you will design and conduct a study in which you use inferential statistics to determine what's really happening in a situation you care about. In another, you will use probability to model some physical aspect of your life. More details on both projects will be forthcoming. You will also be asked for your evaluation of the work of others; frequently the statistical work of an end-user of statistical knowledge is in seeing somebody else's work and knowing what does — or doesn't — make sense.

The class will meet on Monday, Wednesday, and Friday at 2:00. A typical meeting will begin with a discussion of any questions folks have. This will be followed by a discussion of new material (often in the form of problems, on which students will work together). On all or most days of class, there will be a brief assignment in the last few minutes as a quick assessment of your learning from the day.

You should be in every class meeting, and should make sure that you are actively engaged. It goes without saying that when a problem is assigned for group work, you must do it. If you wait for me to tell you how to do it, then by the time I talk about the solution with the class, everybody else will understand it and will be ready to ask about issues you haven't encountered, and you will be lost. Worse, you won't be practicing your statistical thinking. Don't do this. You should be careful to ask any questions you have. You should also feel free to be wrong. We all will be at some point in the class. That's why we gather together, instead of just reading the book on our own: we can help one another understand better, and we can try out ideas on each other, even if we aren't quite sure of them.

There will be homework. If you really understand how to do the homework, you're generally in pretty good shape. If you can't, you've got plenty of time to figure it out, ask me, ask a friend, or take whatever other action you see fit.

Cooperation on homework is strongly encouraged. There will almost certainly be problems on which it is necessary. Talk with each other, talk with me, talk with friends, use any resource. It is important, however, to be sure that you understand the solution you present. In evaluating your work on the projects, I will assume that you are familiar with the material of all homework due on or before the due date of the project.

You are also encouraged to visit me in my office (see note on office hours above) or to call or e-mail me. To be more clear: It's a hard class. I'd like to see you do well in it. I'd love to talk with you and to help you in any way that I can.

You must have access to the Pearson My Lab Statistics system for this course. Homework will be done in that online environment. A TI-30 calculator is recommended for the course.

There will be several programming projects assigned throughout the course. Essentially nobody left in the world collects their data and enters it by hand into a pocket calculator to draw their statistical inferences. These programming projects will give you an opportunity to try out what you're learning in a more realistic environment.

In all activities for this class, make sure that you *do something*. It is depressing how often students who probably know something relevant to a problem do absolutely nothing, allowing no opportunity to receive credit on the part they actually know.

Grading

Grades will be calculated from the following sources:

In-class assignments	100
Homework	200
Statistical Research Project	250
Probability Modeling Project	150
Peer Evaluations	200
Programming Projects	100
	1000pts

Failure to attend class regularly will certainly adversely affect your grades on each of these factors. For instance, while I do not artificially lower grades for bad attendance, it has consistently held that almost all grades below C- that have been achieved in classes that I have taught have been associated with significant attendance problems.

In like manner, you should not underestimate the impact of your homework. Not only does the experience of the homework problems impact your test grades, but the homework itself is a considerable portion of the grade in the class.

In all work done for this class, work is more important than answers. A correct answer without correct work (or worse, with work that does not match the answer) is not worth much at all, while generally correct work with an incorrect answer is almost as good as being completely right. Thus, getting the right answer does not guarantee a good grade on the problem, and getting a wrong answer does not guarantee a bad one.

I will make the following guarantees about letter grades. I may decide to lower these criteria (i.e. give a higher grade than the one shown here, if I see that the questions were hard enough that lower numbers more accurately reflect my true standards), but will never raise them.

Percent of total	Grade
90–100	A
80–89	B
70–79	C
60–69	D
≤ 59	E

Student Engagement

At the times announced above under "Office Hours," I plan to be in my office, and my first priority at that time will be talking with my students. I will also usually be in my office most business hours, and if you find me there, I will usually be able to make time for you. You can make sure I'm available by calling or e-mailing in advance.

I will make a serious effort to reply to e-mail within one business day (Monday–Friday, excluding holidays or university closures). If your e-mail is not getting answered in the time you need (whether one business day has passed or not), call me by telephone and I will try to help.

Prerequisites

The prerequisite of this course is MATH 108 with a C or better. If you have concerns about your preparedness for this course, be sure to talk with me.

Catalog Description

MATH 282/STAT 282 - Introduction to Statistics Designed to introduce beginning students to basic concepts, techniques, and applications of statistics. Topics include the following: organization and display of data, measures of location and dispersion, elementary probability, statistical estimation, and parametric and nonparametric tests of hypotheses. Prerequisite: MATH 108 with C or better. Satisfies University Core Curriculum Quantitative Reasoning requirement in lieu of 110 or 101.