Modern Regression, 36-401/36-601 (Spring 2026)

This course is an introduction to regression methods for applied data analysis. Regression is concerned with relating an outcome variable to a set of covariates (or features). We will cover: linear regression, nonparametric regression, logistic regression, classification, causal inference and more.

We will explore data sets, examine various models for the data, assess the validity of their assumptions, and determine which conclusions we can make. We will cover the theory behind the methods but the emphasis is on the practical implementation of the methods.

Prerequisites: At least a C grade in (36-226 or 36-625 or 73-407 or 36-310) and (21-240 or 21-241).

Course Web Site: All course information will be posted on Canvas. Homeworks and lecture notes will be posted under **Files**.

Textbook: The texbook is *All of Regression.* I will provide a pdf of the text at no charge.

Lecture Notes: Lecture notes will be uploaded to Canvas. Download them and have them handy during class.

Lectures: Tuesdays and Thursdays, 9:30 AM - 10:50 AM, Posner 152.

Instructor: Larry Wasserman `larry@cmu.edu`. Office: BH 132G

Instructor Office Hour: Tuesdays 11:00 a.m. in BH 132G.

TAs: TBD

TA Office Hours: TBD

Learning Objectives:

The goal is for students in this course to do the following:

- Demonstrate how to use exploratory data analysis tools (e.g., graphical displays).
- Develop model-building skills including evaluation of assumptions and interpretation of model-fitting results for linear regression models.
- Learn and apply the basic mathematical theory underlying linear regression models.
- Effectively use R, a widely-used statistical package, in data analysis.

Homework:

There will be regular homework assignments, due **Fridays by 3:00**. Homeworks should be turned in electronically using Gradescope.

I will drop your lowest homework.

NO LATE HOMEWORKS WILL BE ACCEPTED FOR ANY REASON.

Assignments and solutions will be posted on Canvas under Files.

You are allowed to discuss the assignments with other students in the course, but the work that you hand in **must be your own.** This means that each student must perform all of the work and write up the results independently. Failure to do so will constitute a violation of the University's policy on academic integrity.

Note that if only the correct answer is provided, but no relevant derivations, then zero points will be awarded.

See the TA or instructor during office hours for help with homework problems.

Exams: There will be two tests during the semester. There will be a final exam. The date and time are set by the University. **Don't buy any plane tickets until the exam schedule comes out.**

Test 1 Thursday Feb 12
Test 2 Thursday March 19

Final Grades: Final scores will be calculated as follows:

Homeworks	10%
Test 1	30%
Test 2	30%
Final Exam	30%

Final grades will be assigned based on the following scale: 90% and up is an A, 80% to 89% is a B, etc.

Lectures: Lecture notes will be posted on Canvas.

Computing: We will use the software package R to perform computations and simulations during the course. R is an all-around excellent piece of statistical software, and widely used in the sciences and research fields. You can download R (it is free) from

`http://cran.r-project.org/`

You might also want to use R Studio

`http://www.rstudio.com`

R Studio is a user-friendly interface for working with R. You are welcome to use R Markdown if you know what that is, but it is not required.

Academic Integrity: All students are expected to comply with the CMU policy on academic integrity. This policy is online at

`http://www.studentaffairs.cmu.edu/dean/acad_int/`

Cheating, copying, etc. will not be tolerated; please ask if you are unsure of whether or not your actions are complying with assignment/exam instructions.

Policies: Please note each of the following.

1. It is assumed that you check your andrew email at least once per day. Email will be used to communicate important details and announcements regarding the course.
2. Sending email to your professor or teaching assistants should be treated as professional communication.
3. If you have a disability and need special accommodation, please contact the Disability Resources office at 8-2013.