

# STA 4210: Regression Analysis

## Spring — 2025

### Instructor Information

*Name:* Lingxiao Zhou  
*Office:* FLO 218  
*Office Hours:* F 9:30-11:30 AM

*Email:* zhou.l@ufl.edu  
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*Preferred contact:* Email

### Class Information

*Time:* MWF 8:30-9:20 AM  
*Classroom:* AND 0134

### TA Information

*Name:* Shuaihang Zhou  
*Email:* zhou.sh@ufl.edu  
*Office:* FLO 117A

*Office Hours:*  
T 11:40 AM-12:40 PM (in person)  
R 1:30-2:30 PM ([Zoom](#))

### Course Description

This course is about the theory and application of linear regression. After some review of basic statistics, we will discuss the simple linear regression model and its matrix formulation, the multiple regression model, and a number of related tools such as model diagnostic measures, collinearity statistics, and variable selection procedures. Computations will be carried out in the R programming language.

### Course Objective

Students will be able to investigate the purposes, methods and applications of regression.

### Recommended Textbooks

The following textbook is NOT REQUIRED but recommended: Applied Linear Statistical Models by M. Kutner, C. Nachtsheim, J. Neter and W. Li, 5th edition.

### Course Website

Canvas course page. Please check the canvas site regularly. Course documents and important information, including quiz solutions, exam topics and special announcements, will be posted in canvas.

### Homework

There will be about eight Homework assignments. **Late assignments will not be accepted.** For extensions, students need to email the instructor with a valid reason at least 48 hours prior to the due time. Students may drop their two lowest homework scores at the end of the semester.

### Exams

There will be three exams given **in class**. The exams are scheduled for 8:30 – 9:20 AM on **February 19, March 28 and April 23**.

Make-up exams are available only in extreme situations. They may be more challenging than regular exams and may have a different format. To request a make-up exam, students should contact the instructor as soon as possible.

### Quizzes

There will be five pop quizzes given in class. Each will take place during the final 5 to 10 minutes of class time. No books, notes or other references may be used during a quiz. Students may drop their lowest two quiz scores at the end of the semester. No make-up quizzes will be offered.

### Grading

The course grade is determined by the following components:

Exam1	25%
Exam2	25%
Exam3	25%
Homework	20%
Quizzes	5%

### Grade Scale

Final grades will be assigned according to the following scale:

A	93 – 100	C+	77 – 79
A-	90 – 92	C	67 – 76
B+	87 – 89	D	60 – 66
B	83 – 86	E	0 – 59
B-	80 – 82		

### Lecture Attendance

Attendance is expected and will be essential for performing well in the class. If you miss class for any reason, it is your responsibility to get any notes and information you might have missed from another student. See university attendance policies: <https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/>

### UF Grading Policy

<https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>

### **Evaluations**

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

### **Accommodations**

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center. See <https://disability.ufl.edu/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

### **Lecture Format**

This class is 100% in-person. Lectures will not be recorded.

### **Academic Misconduct**

Students will be held accountable to the [UF Honor Code](#). Unless otherwise specified in writing by the instructor, students are expected to work independently. General discussion of the course material is encouraged, but offering or accepting solutions from others is plagiarism. When in doubt, direct your questions to the instructor or TA.

## Tentative Schedule

The following is a *tentative* schedule for the course.

### Week 1

- Introduction
- Review key concepts
- Review key concepts

### Week 2

- No class Mon
- Review key concepts
- Simple linear regression

### Week 3

- Simple linear regression
- Inference in SLR model
- Confidence interval, Prediction interval

### Week 4

- Sum of Squares
- Checking model assumptions by plots
- Checking model assumptions by tests

### Week 5

- Checking model assumptions by tests
- Remedial measures
- control error rate

### Week 6

- Review for Exam 1
- Exam 1 on Wednesday Feb 19
- Matrices and operators

### Week 7

- Linear dependency, rank, inverse
- Random Vectors and Matrices
- Matrix form for SLR

## **Week 8**

- Multiple regression
- Qualitative variables
- Multiple regression in matrix form

## **Week 9**

- Extra sum of squares
- General linear test
- standardized regression

## **Week 10**

- Spring break

## **Week 11**

- VIF, multicollinearity
- Review for Exam 2
- Exam 2 on Friday Mar 28

## **Week 12**

- Model Selection
- Model Selection
- Model Selection

## **Week 13**

- Model validation
- Diagnostics
- Weighted Least Square

## **Week 14**

- IRLS
- Penalized regression
- Penalized regression

## **Week 15**

- Review for Exam 3
- Exam 3