

STA 4210: Regression Analysis

Fall — 2024

Instructor Information

Name: Lingxiao Zhou
Office: FLO 218
Office Hours: T 1:00-2:30 PM
F 11:30-1:00 PM

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Class Information

Time: MWF 10:40-11:30 AM
Classroom: FLO 0100

TA Information

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

Office Hours: M 2:00-4:00 PM (in person)
W 1:00-2:00 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.

Homework

There will be about eight Homework assignments. **Late assignments will not be accepted.** Students may drop their lowest homework score at the end of the semester.

Exams

There will be three exams given **in class**. The exams are tentatively scheduled for 10:40 – 11:30 AM on September 25, October 30 and December 4.

Quizzes

There will be five quizzes given in class. Students may drop their lowest quiz score at the end of the semester.

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 | 94 – 100 | C+ | 77 – 79 |
| A- | 90 – 93 | C | 67 – 76 |
| B+ | 87 – 89 | D | 60 – 66 |
| B | 83 – 86 | E | 0 – 59 |
| B- | 80 – 82 | | |

Attendance and Make-Ups

Attendance is expected and will be essential for performing well in the class. 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, there will not be online options for lectures.

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
- No class Mon/Wed

Week 2

- Review key concept

Week 3

- Simple linear regression
- No class Mon

Week 4

- Inference in SLR model

Week 5

- Normal regression
- Diagnostics

Week 6

- Exam1 Wednesday Sep 25
- Remedial Measures
- Control error rate

Week 7

- Other topics
- Matrix approach to SLR

Week 8

- Matrix approach to SLR

Week 9

- Multiple Regression (I)
- No class Fri

Week 10

- Multiple Regression (II)

Week 11

- Exam2 Wednesday Oct 30
- Model selection

Week 12

- Model validation
- Diagnostics
- Weighted Least Squares

Week 13

- Iteratively Re-Weighted Least Squares
- Regularization
- No class Mon

Week 14

- Regularization

Week 15

- No class this week

Week 16

- Review
- Exam 3 Wednesday Dec 4