



## STA 4210 – Regression Analysis (16388)

Spring 2025

Period 4: Monday, Wednesday, Friday 10:40am – 11:30am

Room: Anderson Hall 134 (AND 0134)

### **Instructor:**

David Lindberg

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Office: Griffin-Floyd 115B

Office Hours:

Monday, Wednesday 2:00pm - 4:00pm

### **Teaching Assistant:**

Yisen Jin

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Zoom Office Hours (link on Canvas)

Tuesday, Thursday 9:00am - 11:00am

**eLearning Course Webpage on Canvas:** <http://elearning.ufl.edu/>

### **Catalog Description**

Simple linear regression and multiple linear regression models. Inference about model parameters and predictions, diagnostic and remedial measures about the model, independent variable selection, multicollinearity, autocorrelation, and nonlinear regression. SAS implementation of the above topics.

### **Prerequisite(s)**

STA 3100 and (STA 3024 or STA 3032 or STA 4321 or MAS 3114 or MAS 4105).

### **Credit Hours**

This is a 3 credit hour class

### **Course Objectives and Goals**

By the end of the course successful students should have achieved the following learning goals: (i) A clear understanding of the principles, assumptions, and methods in regression analysis, (ii) the skill to know when and how regression might be useful in a variety of application areas, (iii) the selection of appropriate statistical models in regression situations and the ability to validate selected models, (iv) the skills to analyze data involving several variables, (v) The ability to provide correct interpretations of results and to recommend appropriate decisions, (vi) the possession of strong computing skills and familiarity with statistical software, and (vii) the possession of skills directed to the communication of statistical results to a variety of audiences.

## Required Text(s)

None

## Optional Text(s)

1. *Applied Linear Statistical Models* by M. Kutner, C. Nachtsheim, J. Neter and W. Li, 5th Edition [This textbook is what the class notes are based off of]
2. *A Second Course in Statistics: Regression Analysis* by W. Mendenhall and T. Sincich, 8th Edition.

## Calculator(s)

Any scientific or graphing calculator may be used for homework, quizzes, and exams. Internet-enabled electronic devices, such as cell phones or tablets, cannot be used as calculators during exams.

## Software

You will need a statistical software program for homework assignments and practice. The software used in class will be R <http://www.r-project.org> although you can use any other software you wish that yields similar results. We encourage the use of R Studio <https://posit.co/download/rstudio-desktop/>.

## Tentative Schedule of Course Topics

Week(s)	Chapters from Notes	Description
1-2	1	Simple Linear Regression
3-4	2	Inference in Simple Linear Regression
5	3	Diagnostics, Remedial Measures
<b>Exam 1</b>		
6	4	Simultaneous Inferences
7	5	Matrix Algebra
8-9	6	Multiple Linear Regression I
10	7	Multiple Linear Regression II
<b>Exam 2</b>		
11	8	Polynomial Regression and Qualitative Predictors
12	9-10	Model Building, Diagnostics
13	11-12	Remedial Measures, Time Series
14	14	Logistic Regression
<b>Exam 3</b>		

## Course Assignments

The course assignments will be three (3) exams, eight (8) homework assignments, and eleven (11) quizzes.

### (A) Exams

Three (3) exams will be held in class will be administered tentatively scheduled as follows:

- Exam 1: Monday, February 17
- Exam 2: Friday, March 28
- Exam 3: Wednesday, April 23

Exam 1 will cover Chapters 1-3 from the notes, Exam 2 will cover Chapters 4-7, and Exam 3 will cover Chapters 8-12 and 14. Each exam has a maximum score of 200 points.

For the exam, you may bring a calculator and writing utensil. A formula sheet will be provided.

### (B) Quizzes

Eleven (11) quizzes are assigned. All quizzes are given in the eLearning environment. The quizzes will have five questions covering the previous week's material. You will have 60 minutes to complete the quiz. You should have a reliable internet connection when you start the quiz. Computers and study rooms are available at the UF Libraries.

All quizzes are available at 12:00 am on the release date and will be due at 11:59 pm on the due date. The release dates and due dates are shown in the table below. Each question on the quiz is worth 4 points, which means that the highest score on one quiz is 20 points.

Each quiz will have a maximum of two attempts and the best grade out of two will be the grade for each quiz. The highest ten quiz scores will be used to calculate the total quiz score. A maximum of 200 points can be earned for the total of the ten best quiz scores.

Quiz	Date Released	Date Due
1	Wednesday, January 22	Friday, January 24
2	Wednesday, January 29	Friday, January 31
3	Wednesday, February 5	Friday, February 7
4	Wednesday, February 12	Friday, February 14
5	Monday, February 24	Wednesday, February 26
6	Monday, March 3	Wednesday, March 5
7	Monday, March 10	Wednesday, March 12
8	Monday, March 24	Wednesday, March 26
9	Friday, April 4	Monday, April 7
10	Friday, April 11	Monday, April 14
11	Friday, April 18	Monday, April 21

## (C) Homework

A total of 8 homework assignments will be given throughout the semester, each worth 25 points. Homework assignments will be posted on the e-Learning course page. The homework due dates are below. The homework is to be turned in to the eLearning system on the due date. Any homework assignment received after 11:59 pm on the due date is subject to a 5-point penalty out of 25 points for each day after the due date (for example the maximum score for homework turned in one day late would be 20 points).

The homework must be typed. You may use any document editing software to type up your solutions. All code must be included that was used to produce results to answer the questions. It is suggested to use R Markdown to type the solutions. A homework template file is provided on the eLearning system.

Homework is assigned to help reinforce the material learned in class—not just to get the right answer and improve your course grade. Homework solutions must show all formulas and steps used to arrive at the answer and be the sole work of each individual student.

Homework	Date Assigned	Date Due
1	Monday, January 13	Monday, January 27
2	Monday, January 27	Wednesday, February 5
3	Wednesday, February 3	Friday, February 14
4	Wednesday, February 19	Friday, February 28
5	Friday, February 28	Monday, March 10
6	Monday, March 10	Wednesday, March 26
7	Monday, March 31	Friday, April 11
8	Friday, April 11	Monday, April 21

## Total Course Points and Grades

Grades will be posted on the e-Learning course page at <http://elearning.ufl.edu/>. The current UF grading policies for assigning grade points is available at <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.

Assignment	Points
Exam 1	200
Exam 2	200
Exam 3	200
Highest 10 Quiz Scores	200
Homework Assignments	200
Total	1000

### Letter Grade Distribution:

Letter	Points
A	920 to 1000
A-	890 to 919
B+	860 to 889
B	820 to 859
B-	790 to 819
C+	760 to 789
C	690 to 759
C-	660 to 689
D	620 to 659
E	619 and below

## Statistics Major, Data Science Major, and Statistics Minor

STA 4210 is a 3 credit-hour course that satisfies a requirement for the Statistics Major and Minor and the Data Science Major. Dr. Demetris Athienitis is the academic advisor for undergraduate statistics majors and minors and data science majors. For more information on advising, see <https://stat.ufl.edu/academics/undergraduate/>

## School Closures

If classes at the University of Florida are canceled, the course will be suspended until the university re-opens. The University will announce this closure on the University of Florida homepage. Any announcements about the course will be posted at the course e-Learning webpage.

## Course Policies

The instructor reserves the right to update parts of this syllabus in the event of extenuating circumstances (such as changing the due dates for homework and quizzes or exam dates, eliminating or modifying course material, etc.). Students will promptly be notified of any changes.

## Privacy Policies

Student records are confidential. Only information designated “UF directory information” may be released without your written consent. UF views each student as the primary contact for all communication. If your parents contact me about your grade, attendance or other information that is not “UF directory information”, they will be directed to contact you. More information can be found at <https://catalog.ufl.edu/UGRD/academic-regulations/ferpa-confidentiality-student-records/>

## E-mail

E-mail relating to information about the class should be sent to the instructor at [dlindberg@ufl.edu](mailto:dlindberg@ufl.edu) or through the course management system. Your message will be answered within one working day, in most cases. However, we ask that you refer to this syllabus and the course website to try to find the answers yourself. Questions regarding the material covered should be asked before, during, or after class, at the instructor’s office hours, or at the teaching assistant’s office hours. It is often

difficult to answer questions regarding material through e-mail. Questions about quizzes should be sent to the instructor and it should include the quiz number and question number.

## **Make-up Policy**

The requirements of this course for class attendance, exams, assignments, and other work are consistent with university policies. See UF Academic Regulations and Policies for more information on university attendance policies.

## **Instructor's Honor Code**

We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity by abiding by the Student Honor Code. On all work submitted for credit by Students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."

## **Academic Honesty**

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: 'On my honor, I have neither given nor received unauthorized aid in doing this assignment.'" The Honor Code (<https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor.

## **Students with Disabilities**

Students who require special accommodations in class or during exams should first register with the Disability Resource Center at 352-392-8565, <https://disability.ufl.edu/> by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation for an exam or quiz. The instructor must be emailed the form at least 7 days before an exam or quiz for accommodations to be arranged.

## **Grading**

Grades will be changed only when an error has been made; negotiation is not appropriate.

## **Incomplete**

Incomplete grades are only assigned when extraordinary circumstances (such as an accident, or extended hospitalization), arising after the date for dropping the course, prevent the student from completing the course requirements. Having a failing grade in the course is not a valid reason for requesting an Incomplete.

## Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://gatorevals.aa.ufl.edu/>. Evaluations are typically open during the few weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://gatorevals.aa.ufl.edu/instructors/instructor-reports/>.