

STA 4203/5207: Applied Regression Methods Fall 2020

Instructor: Dr. Justin Shows
Email: jhshows@stat.fsu.edu

This course is being held remotely, so virtual office hours will be held through Zoom from 1:00-2:00 Monday through Friday. You can also make an appointment through e-mail. The Zoom link is

<https://fsu.zoom.us/j/4722571439> with Meeting ID 472 257 1439.

COURSE OBJECTIVES

This course provides an introduction to the basic principles of regression. Upon successful completion, a student will be able to confidently carry out a regression study using the SAS system.

Prerequisite: One of STA 2122, 2171, 3032, 4322, 5126, 5354, or QMB 3200

Credit Hours: 3

Topics: Estimation, Inference, Hypothesis testing, Regression diagnostics, Collinearity, Generalized least squares, Weighted least squares, Robust regression, Transformations, Variable selection, Shrinkage methods, Principal component regression

Certificate in SAS Programming and Data Analysis:

This course satisfies one of the four courses required for the SAS Programming and Data certificate jointly sponsored by FSU and the SAS Institute. **Students** interested in the program **must apply to the program before** the end of the semester in which **the second course in the program is taken**. In addition, a portfolio is required to be submitted in the last semester of program and a representative assignment and/or project from this course must be included. For more details see <http://stat.fsu.edu/sas-certificate>.

SCHEDULE:

I will upload notes and videos to a Canvas module every weekend. Each module will also contain an assignment which will be due on the following Tuesday (more than a week after the corresponding video is posted).

Week 1: Syllabus and Introduction

Week 2: Estimation and Inference

Week 3: Comparing Models

Week 4: Variable Selection
Week 5: Exam 1 (Friday September 25)
Week 6: Regression Diagnostics
Week 7: Multicollinearity
Week 8: Generalized Least Squares
Week 9: Robust Regression
Week 10: Exam 2 (Friday October 30)
Week 11: Principal Components
Week 12: Ridge Regression and Lasso
Week 13: Transformations
Week 14: Thanksgiving
Week 15: Exam 3 (Friday December 4)

MATERIALS

Textbook: Optional: *Applied Linear Statistical Models*, 5th ed, by Kutner, Nachtsheim, Neter, and Li. This book contains the course topics but focuses mainly on prerequisite material.

Additional resource: *Linear Models with R*, 2nd ed, by Faraway. None of the R code in the text will be used. We will use SAS instead.

SAS: SAS software will be used in the course. Previous SAS experience is not necessary. You will receive an e-mail containing instructions for registering for the SAS Studio course site.

SYLLABUS CHANGE POLICY

Except for changes that substantially affect implementation of the evaluation (grading) statement, this syllabus is a guide for the course and is subject to change with advance notice.

The syllabus is intended to be an agreement between you (student) and I.

The presence of your name on your section roster after drop/add ends indicates that you have read and understood all of the information and documents posted on the course Canvas site, you have had your questions about them answered, and you accept and will abide by my policies.

Please understand that I deal with hundreds of students each term, and in the interests of fairness, I will not do for one student what we cannot do for all students who are likely to request the same.

ATTENDANCE, ABSENCE AND DROP/WITHDRAWAL

Attendance will be taken the first week of class via an ungraded online quiz. If you are absent, the Registrar's Office will drop you from the course. I expect you to keep up-to-date with the lessons, activities and announcements by getting in touch with a classmate or with me, **and** by reading the course site on Canvas. Drop and withdrawal deadlines are given in the University's academic calendar at https://registrar.fsu.edu/registration_guide/fall/academic_calendar/

University Attendance Policy

Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

Academic Honor Policy:

The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to "...be honest and truthful and...[to] strive for personal and institutional integrity at Florida State University." □ (Florida State University Academic Honor Policy, found at <http://fda.fsu.edu/academic-resources/academic-integrity-and-grievances/academic-honor-policy.>)

Americans With Disabilities Act:

Students with disabilities needing academic accommodation should:

- (1) register with and provide documentation to the Office of Accessibility Services; and
- (2) bring a letter to the instructor indicating the need for accommodation and what type.

Please note that instructors are not allowed to provide classroom accommodation to a student until appropriate verification from the Office of Accessibility Services has been provided.

This syllabus and other class materials are available in alternative format upon request.

For more information about services available to FSU students with disabilities, contact the:

Office of Accessibility Services

874 Traditions Way

108 Student Services Building

Florida State University

Tallahassee, FL 32306-4167

(850) 644-9566 (voice)

(850) 644-8504 (TDD)

oas@fsu.edu

<https://dsst.fsu.edu/oas>

ASSESSMENT AND GRADING

- Assignments will be posted on Canvas along with a due date. You may work together on these assignments, but you must formulate and write your own solutions.
- Assignments must be submitted through Canvas. You may submit a typed document, or a picture or scan of handwritten work.
- The lowest assignment score will be dropped.
- Assignments submitted less than three days after the due date will be penalized by 50%. Assignments submitted more than three days after the due date will not be accepted.
- Exams will be given online through Canvas. You will have 75 minutes for each exam and have one attempt. Exams will open at 8:00 a.m. and end at midnight. You may take the exam on a computer or mobile device. Honorlock will not be used.
- You may not communicate with anyone other than me during an exam. You may not discuss an exam with anyone other than me until after it is closed.
- You may not utilize any websites other than the course Canvas site and SAS Studio.
- You may use a calculator during an exam.
- No early or late exams will be given for any reason. If you miss one exam due to an excused absence (as defined in the University Attendance Policy), the average of your other two exams scores will replace the missed exam score. If you miss two or more exams, you will receive zeroes on all missed exams and may apply for an Incomplete grade.

Privacy: I strictly follow FERPA rules and guidelines. For example, grades cannot be given out in e-mail. For more information, read <https://registrar.fsu.edu/records/ferpa/>

Grading:

Exam 1	15%
Exam 2	15%
Exam 3	15%
Assignments	55%

Weighted Average is rounded up to the next integer.

Grading Scale:

Average	Letter
93-100	A
90-92	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-
67-69	D+
63-66	D
60-62	D-
0-59	F

