

STAT 608: Regression Analysis
Spring 2022

Instructor: Dr. Alan Dabney

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Office Hours: Monday 11am-12pm CDT and Thursday 2pm CDT. I will hold my Thursday office hours over Zoom. See main Canvas course page for Zoom links.

Course Description: Multiple, curvilinear, nonlinear, robust, logistic and principal components regression analysis; regression diagnostics, transformations, analysis of covariance.

Prerequisites: STAT 601 or 641. Also some linear algebra.

Time and Place: MWF 12:40-1:30pm CDT in BLOC 457; Question and Answer Session W 5pm-6pm CDT over Zoom (link on Canvas main page).

Teaching Assistant: Weiwei Wang (weiweiwang@stat.tamu.edu); office hours M 3-4pm and W 4-5pm CDT. Her office is Blocker 419.

Learning Outcomes: At the conclusion of this course, successful students will be able to:

- Identify appropriate graphs, summary statistics, models, and inferential statistics for various contexts
- Interpret graphs, statistics, and model in various contexts
- Calculate summary and inferential statistics
- Compare and contrast various models
- Create appropriate models for various contexts
- Infer appropriate conclusions about populations based on data
- Explain and compare properties of summary and inferential statistics and models
- Combine concepts in new ways to solve different problems

Course Website: We will use the Canvas learning management system for our grade book, discussion boards, etc.

Course Materials:

- Required textbook: *A Modern Approach to Regression with R* by Sheather.
- Software: SAS, R, STATA, or Python. You are welcome to use whatever statistical package works best for the problem at hand. I would encourage you to either use SAS or R, whichever corresponds best with your career path. In my classroom examples, I will primarily use R.
- Notes: Course notes will be posted on Canvas.
- Calculator: A scientific (non-programmable) calculator such as a TI-36X, TI-30X, or Casio fx-260 for exams.

Grading: Your grade will be computed as follows:

- **Homework:** 15%. All homework is to be submitted in PDF format, along with any computer code used. All students will submit through Canvas.
- **Midterm Exams:** 25% each.
- **Final Exam:** 35%.

Letter grades will be assigned as follows: 90-100 = A, 80-89 = B, 70-79 = C, 60-69 = D, and 0-59 = F.

Course Schedule:

Week 1 : Syllabus, Chapter 2
Week 2 : Chapter 2
Week 3 : Chapters 2-3, HW 1 Due
Week 4 : Chapter 3, HW 2 Due
Week 5 : Chapter 3, HW 3 Due
Week 6 : Exam 1 (2/21), Chapter 4
Week 7 : Chapter 4
Week 8 : Chapters 5-6, HW 4 Due
Week 9 : Review, Spring Break
Week 10 : Chapter 6-7
Week 11 : Chapter 7, HW 5 Due
Week 12 : Exam 2 (4/5), PCA
Week 13 : Chapter 8
Week 14 : Chapter 8, HW 6 Due
Week 15 : Chapter 9, HW 7 Due

- Final Exam: May 6 10:30am-12:30pm CDT

Exams: We will have two midterm exams and a final. Exam 1 is scheduled for Monday, February 21. Exam 2 is scheduled for Monday, April 4. The Final Exam date and time are May 6 10:30am-12:30pm CDT. Local students will take the midterm exams in the classroom during regular class time. Students in the Distance Learning program will take their midterm exams during 6:00-6:50pm CDT; they will be given an additional 30 minutes to scan and upload their submissions to Canvas. Proctors will ensure that all work on the exams is done by the end of the exam period and that only scanning and uploading is done beyond the exam time. All students will take the Final Exam at the same time.

If you miss an exam, email me within 24 hours, and make-up exams will be handled on a case-by-case basis. If you are graduating, please comment in the appropriate thread on Canvas so I can grade your exam first. Unexcused absences will be handled on a case-by-case basis; if we cannot get you a make-up exam within one week, we will weight your other exam and final more heavily.

You may bring one cheat sheet to the first exam, two to the second, and three to the final with anything you want written or typed on it. You will also need a non-programmable calculator, such as a TI 36X. Please do your best to write everything directly on the exam form; if you need extra paper, please make a note on the appropriate page and staple your extra paper to the back of the exam. If you are scanning the exam back to me, I don't need the graphs or tables in the appendix unless you have made notes on them.

Homework: Homework is required so that you get a better understanding of the material covered; plus it will help you to keep up. Each homework is worth the same percentage of your grade, regardless of the number of "points" it is worth. Please use a cover sheet with your name, your email address, the homework number, and the due date. It is strongly encouraged that you work with another student; you will get a better understanding of the material if you discuss it with someone. You must submit your own work, however (see the section on Scholastic Dishonesty below). Homework assignments will be assigned approximately weekly. All homeworks will be submitted through Canvas.

You may use your textbook and notes from this class and other related classes you have taken or are taking, textbooks and references available in the TAMU library and Canvas, discussion with the instructor or grader, and voluntary and cooperative discussion with other students currently taking the class. You may also use Wikipedia, the Matrix Cookbook, and Dr. Sheather's website, including all of his code for the textbook. There will be an online discussion board. You may post code snippets, especially as they pertain to discussion.

You may not use solutions manuals from our textbook, other textbooks, previous classes, or other students who have taken our class. You may not copy from other students.

Incomplete Grade: A temporary grade of I (Incomplete) at the end of a semester indicates that the student has COMPLETED THE COURSE WITH THE EXCEPTION OF A MAJOR QUIZ, FINAL EXAM, OR OTHER WORK. The instructor shall give this grade only when the deficiency is due to an authorized absence or other cause beyond the control of the student.

Attendance Policy: The university views class attendance and participation as an individual student responsibility. Students are expected to attend class and to complete all assignments.

Please refer to Student Rule 7 in its entirety for information about excused absences, including definitions, and related documentation and timelines.

Late Work Policy: Late submissions of homeworks will be graded with a 10 point penalty. Homeworks submitted after solutions have been posted will not be accepted. Late work submitted as the result of an excused absence will be exempted from the late work policy (Student Rule 7).

Makeup Work Policy: Students will be excused from attending class on the day of a graded activity or when attendance contributes to a student's grade, for the reasons stated in Student Rule 7, or other reason deemed appropriate by the instructor.

Please refer to Student Rule 7 in its entirety for information about makeup work, including definitions, and related documentation and timelines.

Absences related to Title IX of the Education Amendments of 1972 may necessitate a period of more than 30 days for make-up work, and the timeframe for make-up work should be agreed upon by the student and instructor" (Student Rule 7, Section 7.4.1).

"The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence" (Student Rule 7, Section 7.4.2).

Students who request an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code. (See Student Rule 24.)

Academic Integrity Statement and Policy:

"An Aggie does not lie, cheat or steal, or tolerate those who do."

“Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one’s work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case” (Section 20.1.2.3, Student Rule 20).

You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at aggiehonor.tamu.edu.

Statement on Plagiarism: The handouts used in this course are copyrighted. As such, you do not have the right to copy them unless I expressly grant permission. As commonly defined, plagiarism consists of passing off as one’s own ideas, words, writing, etc., that belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you have the permission of that person. If you have any questions, please consult the latest issue of the Texas A&M University Student Rules, under the section “Scholastic Dishonesty.”

Copyright Statement: Faculty members own copyright in their educational work at Texas A&M University, as stated in the Texas A&M University System Policy for Intellectual Property Management and Commercialization. Students are not allowed to post or share any materials created by a faculty member unless given permission by that faculty member. This includes but is not limited to homework assignments, homework solutions, exams, exam solutions, lecture notes and any other supplemental materials. Any violation of this copyright policy could result in disciplinary actions as described in Student Rule 20.2: Procedures in Scholastic Dishonesty Cases and Student Rule 20.1.2.3.1

Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise. Unauthorized materials may include anything or anyone that gives a student assistance and has not been specifically approved in advance by the instructor. Texas A&M complies fully with the Digital Millennium Copyright Act (“DMCA”). Users of the Texas A&M network found to have engaged in repeated infringement of copyright are subject to termination of their network access and may be reported to the appropriate Dean or Human Resources officer for disciplinary action. Please see TAMU’s Copyright Infringement Policies and Sanctions Notification for additional information.

Americans with Disabilities Act (ADA) Policy: Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact Disability Resources in the Student Services Building or at (979) 845-1637 or visit disability.tamu.edu. Disabilities may include, but are not limited to attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability related needs with Disability Resources and their instructors as soon as possible.

Title IX and Statement on Limits to Confidentiality: Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit gender-based discrimination and sexual harassment, including sexual assault, sexual exploitation, domestic violence, dating violence, and stalking.

With the exception of some medical and mental health providers, all university employees (including full and part-time faculty, staff, paid graduate assistants, student workers, etc.) are Mandatory Reporters and must report to the Title IX Office if the employee experiences, observes, or becomes aware of an incident that meets the following conditions (see University Rule 08.01.01.M1):

- The incident is reasonably believed to be discrimination or harassment.
- The incident is alleged to have been committed by or against a person who, at the time of the incident, was (1) a student enrolled at the University or (2) an employee of the University.

Mandatory Reporters must file a report regardless of how the information comes to their attention – including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Although Mandatory Reporters must file a report, in most instances, you will be able to control how the report is handled, including whether or not to pursue a formal investigation. The University’s goal is to make sure you are aware of the range of options available to you and to ensure access to the resources you need.

Students wishing to discuss concerns in a confidential setting are encouraged to make an appointment with Counseling and Psychological Services (CAPS).

Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the University’s Title IX webpage.

Statement on Mental Health and Wellness: Texas A&M University recognizes that mental health and wellness are critical factors that influence a student’s academic success and overall wellbeing. Students are encouraged to engage in proper self-care by utilizing the resources and services available from Counseling & Psychological Services (CAPS). Students who need someone to talk to can call the TAMU Helpline (979-845-2700) from 4:00 p.m. to 8:00 a.m. weekdays and 24 hours on weekends. 24-hour emergency help is also available through the National Suicide Prevention Hotline (800-273-8255) or at suicidepreventionlifeline.org.

COVID: To help protect Aggieland and stop the spread of COVID-19, Texas A&M University urges students to be vaccinated and to wear masks in classrooms and all other academic facilities on campus, including labs. Doing so exemplifies the Aggie Core Values of respect, leadership, integrity, and selfless service by putting community concerns above individual preferences. COVID-19 vaccines and masking — regardless of vaccination status — have been shown to be safe and effective at reducing spread to others, infection, hospitalization, and death.