

Syllabus

Course Information

Course Number: STAT 459/STAT 659
Course Title: Applied Categorical Data Analysis
Sections: 500, 600, 700
Time: MWF 10:20-11:10 am
Location: BLOC 448
Credit Hours: 3

Instructor Details

Instructor: Samiran Sinha
Office: 415F Blocker Building
E-Mail: sinha@stat.tamu.edu
Stat office phone: (979) 845 3141
Office Hours: Monday and Wednesday 11:30 am -1 pm, through Zoom or in person
Q&A: Wednesday 4-5 pm, through Zoom, and the session is also recorded

Course Description

Introduction to analysis and interpretation of categorical data using ANOVA/regression analogs; includes contingency tables, log-linear models, and logistic regression; use of R statistical software

Course Prerequisites

[STAT 601](#), [STAT 641](#), or [STAT 652](#) or equivalent. Students who have taken STAT 651, but not STAT 652 or equivalent, should not enroll in STAT 659.

Special Course Designation

It is a stacked course. Undergraduate students (registered in STAT 459) will turn in one less homework than graduate students (registered in STAT 659), and there will likely be some difference in the third exam questions for the graduate and undergraduate groups.

Course Learning Outcomes

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

1. Explore categorical data using figures and summary statistics.
2. Apply a wide range of regression models to categorical data.
3. Apply statistical knowledge to analyze clinical trial data.
4. Will be able to judge the appropriateness of different methods and models.
7. Use R statistical software for computation.
8. Interpret/express/communicate the results of the statistical analysis in writing.
9. Work in a collaborative environment.

Textbook and/or Resource Materials

An Introduction to Categorical Data Analysis, Third Edition, Wiley, by Alan Agresti. The online version of the book is available through the Texas A&M library.

Software: R

Need to download R and R-studio, these are freely available at <https://cran.r-project.org/> and <https://rstudio.com/>. Course notes will be posted on CANVAS.

Grading Policy

- Letter grades will be assigned as follows: 90-100 = A, 80-89 = B, 70-79 = C, 60-69 = D, and 0-59 = F. Describe the graded items for the course.
- The course grade will be determined based on 10% Homework, 30% Exam 1, 30% Exam 2, and 30% Exam 3.

Grades for Stacked Course – Graduate students will need to submit additional homework problems. There might be some differences in the questions for exam 3 between the graduate and undergraduate groups.

Late Work Policy

Please see the make-up policy later on.

Course Schedule

A tentative course schedules

This is a tentative schedule; the materials can be covered at a faster or slower pace.

Date	Topics
Aug 21- Sept 6	Chapter 1 (Introduction to Categorical Data and Goodness of Fit)
Sept 4	Labor Day holiday
Sept 8	HW1 due
Sept 8- Sept 22	Chapter 2 (Contingency tables)
Sept 16	HW2 due
Sept 22	HW3 due
Sept 25- Oct 13	Chapter 3 (Generalized Linear Models)
Sept 29	HW4 due
Oct 3	Exam 1, covers Chapters 1, 2, and a part of Chapter 3 (Tuesday)
Oct 9	Mid-semester grades due
Oct 09- 10	Fall break
Oct 16- 27	Chapter 4 (Logistic regression with Dichotomous response)
Oct 20	HW5 is due

Oct 30- Nov 6	Chapter 5 (Building and applying logistic regression models)
Nov 1	HW6 is due
Nov 07	Exam 2, covers Chapters 3, 4, and 5 (Tuesday)
Nov 8- 15	Chapter 6 (Multicategory logit models)
Nov 8	HW7 and 8 are due
Nov 17, 20, 27	Chapter 7 (Loglinear models for contingency tables)
Nov 29, Dec 1	
Nov 21	HW9 is due
Nov 23	Reading day, no class
Nov 24, 25	Thanksgiving Holiday
Dec 01	HW 10 is due
Dec 04	Exam 3, covers Chapters 6 and 7

Tentative schedule (due date) of homework assignments

Week Homework

3	HW1 (Chapter 1)
4	HW2 (Chapter 2)
5	HW3 (Chapter 2)
6	HW4 (mainly Chapter 3)
9	HW5 (Chapter 3)
11	HW6 (Chapter 4)
12	HW7 and HW 8 (Chapters 4 and 5)
14	HW9 (Chapter 6)
15	HW10 (Chapter 7)

Optional Course Information Items

Consider adding the following additional information items to the course syllabus when appropriate.

Teaching Assistant –

Alexander Coulter, coultera@tamu.edu, Office Hours: Wednesday and Friday 1-2 pm CST.

Homework – All homework must be submitted on CANVAS in PDF format. For help regarding homework, please submit your question to the discussion board, either the TA or the instructor will respond to your question in due time. Either the TA, Mr. Alex Coulter, or the instructor, Dr. Sinha, will visit the discussion board once every day. You may also talk to the TA during his office hours.

1. Homework assignments will be available under the Assignment tab on CANVAS.
2. Homework solutions must be in a single portable document format (PDF) file. The initial page of each submitted homework should contain your TYPED name and e-mail address on the provided cover page for that homework. Students will submit the homework to the TA by the posted deadline using CANVAS.
3. Your homework solutions must be your own work, not from outside sources, and consistent with the university rules on academic integrity. I expect you to follow this policy scrupulously.

4. You may use:
 - Your textbook and notes from class.
 - R software.
 - Notes, homework, etc., from a related class.
 - References are listed on the syllabus.
 - Discussion with the instructor or grader.
 - Voluntary, mutual, and cooperative discussion with other students currently taking the class.
 - There will be an online discussion board available to facilitate this.
5. You may not use:
 - Solutions manuals (printed or electronic).
 - Solutions from previous classes or classes taught elsewhere.
 - Copying from students in this class, including expecting them to reveal their solutions in “discussion”.

Learning Resources – Course materials will be posted on CANVAS, you can access the book through the Texas A&M library, get help from the TA and the instructor, and also help each other through the CANVAS discussion board.

Exams—In the exam, if you prefer, you may write your answers by hand. But make sure that they are legible. You do not need to show me the computational code. However, you need to provide sufficient explanations and justifications about how you reach the answer. In the end, you may scan your answer into a pdf document, and then upload it to CANVAS. There are many freely available scanning apps for smartphones, you can use any one of them. **Do not take a photo of the answers sheet to create the pdf file.** A detailed exam policy is given below.

1. Exams are un-proctored, open book, note, internet.
2. Exams are available in CANVAS for a 24-hour period starting from 6 am on the day of the exam until 6 am on the next day.
3. Once you start the exam by entering the password, the time will be counted. You will get exactly **2 hours** to complete and upload the exam in CANVAS. You may submit the exam late. But late submission will be penalized as follows. 1 sec -5 minutes late: lose 50% of your earned percentage scores, 5-10 minutes late: lose 100% of your earned percentage score.
4. Do not type/print the solution, **hand write the solution. Use a pen. Do not show me your R code.**
5. You should be identified on the initial page with your PRINTED name, course, section number, and e-mail address.
6. Your exam solutions must be entirely your own work, consistent with the university rules on academic integrity.
7. Copies of old exams will be available for you to review.

Exam schedule:

Exam 1: October 03, 2023, Tuesday

Exam 2: November 07, 2023, Tuesday

Exam 3: December 04, 2023, Monday

Makeup Policy-- This policy is based on the university policy on attendance given in Student Rule 7

1. If you must miss an exam because of a university excused absence or due to illness or circumstances beyond your control, notify me (before, if feasible, otherwise within two working days after you return). If your absence is approved, I will notify you of how you may make up the missed exam.
2. If you fail to submit a homework assignment by the due date because of a university excused absence or due to illness or circumstances beyond your control, notify me in writing or by email (before, if feasible, otherwise within two working days after you return). If your absence is approved, then the missed homework will be dropped before the grade calculation.
3. TAMU Student Rule 10.6: "A temporary grade of I (incomplete) at the end of a semester or summer term indicates that the student has completed the course with the exception of final examination or a single major assignment. The instructor shall give this grade only when the deficiency is due to an approved university excused absence (see Rule 7 of TAMU Student Rules)..." This grade is not to be given because you feel that you have too much other work or study or because you think that you will not earn an acceptable grade in the course.

University Policies

This section outlines the university-level policies that must be included in each course syllabus. The TAMU Faculty Senate established the wording of these policies.

NOTE: Faculty members should not change the written statements. A faculty member may add separate paragraphs if additional information is needed.

Attendance Policy

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

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

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 reasons 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.

NOTE: Faculty associated with the main campus in College Station should use this Academic Integrity Statement and Policy. Faculty not on the main campus should use the appropriate language and location at their site.

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.

NOTE: Faculty associated with the main campus in College Station should use this Americans with Disabilities Act Policy statement. Faculty not on the main campus should use the appropriate language and location at their site.

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](#).

NOTE: Faculty associated with the main campus in College Station should use this Title IX and Statement on Limits of Liability. Faculty not on the main campus should use the appropriate language and location at their site.

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. on weekdays and 24 hours on weekends. 24-hour emergency help is also available through the National Suicide Prevention Hotline (800-273-8255) or at <https://suicidepreventionlifeline.org>.