STA4504 - Categorical Data Analysis (3 Credits)
Fall 2025 Syllabus

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Course objective

STA4504 will cover a wide range of analysis techniques used when dealing with categorical data. Course content includes description and inference for binomial and multinomial observations using proportions and odds ratios; multiway contingency tables; generalized linear models for discrete data; logistic regression for binary responses; multi-category logit models for nominal and ordinal responses; inference for matched pairs and correlated clustered data; and log-linear models.

Course topics

Major topics include contingency tables, generalized linear models, logistic regression, multinomial logistic regression, models for matched pairs, correlated/clustered responses, generalized linear mixed models, and log-linear models for contingency tables. Another major focus of the course will be implementing the aforementioned models and methods in R.

Required Course Materials

Textbook: An Introduction to Categorical Data Analysis, 3rd Edition, Author(s): A. Agresti ISBN-13: 9781119405269.

Scientific or Graphing Calculator: You will need a calculator capable of basic arithmetic operations and taking square roots will be needed for in-class exams. Internet-enabled electronic devices, such as cell phones or tablets, cannot be used as calculators during exams.
Web-enabled device: You will need some type of web-enabled device such as a laptop, smartphone, or tablet to use in-class to access Canvas as needed.

Materials and Supplies Fee: N/A

Course Resources

The Canvas, https://elearning.ufl.edu/, course website will be used extensively throughout the semester to post notes and make course announcements. You must log on using your gatorlink username and password and access the course webpages from there. Important information about the course will be posted here including this syllabus, announcements, lectures, assignments and your

grades throughout the semester and computer output to supplement the examples done in class.

Course Assignments

Your final course grade will be based on a combination of assessment types including homework/computer assignment and exams.

Homework/Computer Assignments:

Six homework /computer assignments will be assigned during the semester. The objective of these assignments is to help you develop a more in-depth understanding of the material and help you prepare for the exams. Therefore, doing the homework promptly and carefully is necessary for success in this course. Homework assignments in this course:

- Give you an opportunity to practice using formulas and interpreting results of various analyses.
- Give you feedback on what you understand and on what areas need more review.
- Help you apply concepts from class in situations requiring more intense computation and analysis.

The computer/homework assignments will vary in length and content. Some assignments will involve analyzing data sets and submitting a written summary of your analysis. Others will mainly involve solving exercises like those in the textbook.

Students are expected to work independently, unless otherwise specified in writing. Offering and accepting solutions from others is an act of plagiarism, which is a serious offense, and all parties involved will be penalized according to the UF Student Honor and Conduct Code.
Discussion amongst students is encouraged, but when in doubt, direct your questions to the instructor.

Tentative dates for Homework/Computer Assignments:

HW/CA	Posted date	Due Date
HW/CA 1	Sept 29	Oct 5
HW/CA 2	Sept 12	Sept 19
HW/CA 3	Sept 26	Oct 3
HW/CA 4	Oct 6	Oct 13
HW/CA 5	Oct 27	Nov 3
HW/CA 6	Nov 14	Nov 21

Exams:

There will be three in-class exams which will contain multiple choice and short answer open- ended items and one take-home exam. For in-class exams, students must bring: their student ID number, picture ID, a calculator, and pencils. In case of conflict or illness, if a student is unable to take an exam at the scheduled time, they must get in touch with the instructor prior to the exam time for any arrangements to be made for a makeup. Each case will be reviewed individually. Valid and detailed documentation is a prerequisite under such extenuating circumstances. A grade of zero is the minimum punishment of any type of dishonesty on an exam.

You may be provided with a packet of formulas and statistical tables to be used on the in-class exams, if needed. A copy of this packet will be available on Canvas so that you will know what information will be provided to you on each exam.

Tentative dates for Exams:

Exam 1	Monday Sept 22	In class	1.1-1.4, 2.1- 2.4, 2.6 – 2.7
Exam 2	Monday Oct 20	In class	3.1 -3.4 and log linear models
Exam 3	Posted: Fri Nov 7 Due: Wed Nov 12	Take-Home	4.1 – 4.4, 5.1 – 5.2, 6.1 - 6.2
Exam 4	Wednesday Dec 3	In class	8.1 & 8.5 , correlated data and additional methods

Grading Scheme:	
Exams #1-#3 (3@ 20% each)	60%
Exam 4	10%
Computer/Homework Assignments (6@5% each)	30%

A 90% to 100%	C+ 74% to 76%
A- 87% to 89%	C 70% to 64%
B+ 84% to 86%	D 60% to 63%
B 80% to 83%	E 59% and below
B- 77% to 79%	(No C-, D+ or D- given)

Your final overall numeric score is rounded to the nearest integer. So, for example, if your average is 76.4 your grade will be 76. If your grade is 76.5, your grade will be 77.

Course Policies

Grading Policies:
*Requirements for class attendance and make-up exams, assignments, and other work in this course as well as policies regarding absences, religious holidays, illness, and student athletes are consistent with UF Attendance Policies.

Additional make-up policy requirements:

- Every effort should be made to complete the assignment/exam during the open period. Only extreme situations will warrant a makeup. Contact the instructor prior to the exam - as soon as you realize you will be unable to take the assignment/exam at the scheduled time. Each case will be reviewed individually. Valid and detailed documentation is a prerequisite for scheduling a makeup under such extenuating circumstances.
- If you have an emergency on the day of the assignment/exam, the instructor must be contacted by midnight of the day of the assignment/exam.
- Make-up exams will be scheduled within a week from the assignment deadline. Student is responsible for attending scheduled make-up.
- Additional Note: Being on vacation or booking a trip prior to the completion of the semester is not a valid reason to request a makeup. Please reference the most recent Academic Calendar, https://catalog.ufl.edu/UGRD/dates-deadlines/pdfs/.

*If you have a disability that requires academic accommodation, contact the Disability Resource Center (DRC). The DRC will provide documentation to the students who must then provide this documentation to the instructor when requesting information. You must submit this documentation prior to submitting any assignments for which you are requesting accommodation.

* Incompletes 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. Information on Medical Withdrawal can be found at https://umatter.ufl.edu/ . Information on how to Drop a class can be found in UF's Academic Catalog https://catalog.ufl.edu/ and https://catalog.ufl.edu/UGRD/academic- regulations/dropping-courses-withdrawals/

*There is no "extra credit" or forgiven grades – you are responsible for all your work done (or left undone).

*If you have a question concerning a graded assignment, you should notify me within seven days after a graded assignment is posted to schedule a meeting.

Honor Code:

You are required to abide by the University of Florida Student Honor Code. Any violation of the academic integrity expected of you will result in a minimum academic sanction of **a failing grade on the assignment or assessment.** Any alleged violations of the Student Honor Code will result in a referral to Student Conduct and Conflict Resolution. Please review the Student Honor Code and Student Conduct Code at sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/
The Honor Code will be strictly enforced for all exams.

Classroom Behavior:
During class students should silence their cellular phones and refrain from eating, drinking, reading newspapers, doing homework, listening to music, excessive talking and all other behaviors that are distracting and disrespectful to the instructor and their fellow students.

Privacy Policy:
Student records are confidential. Only information designated "UF directory information" may be released without your written consent. This applies to parents or anyone else who contacts me about your grades.

Faculty Course 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. Students will be notified when the evaluation period opens and instructions given on how to access them.

Other University Services

U Matter, We Care: Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other

helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

***Sexual Assault Recovery Services (SARS): Student Health Center, 392-1161**
***University Police Department, 392-1111 (or 9-1-1 for emergencies), http://www.police.ufl.edu**

***Student Health Care Center:** Call 352-392-1161 for 24/7 information to help you find the care you need or visit the Student Health Care Center website.

***GatorWell Health Promotion Services:** For prevention services focused on optimal wellbeing, including Wellness Coaching for Academic Success, visit the GatorWell website or call 352-273-4450.

Academic Resources

E-learning technical support: Contact the UF Computing Help Desk at 352-392-4357 or via e-mail at helpdesk@ufl.edu.

Writing Studio: 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints On-Campus: Visit the Student Honor Code and Student Conduct Code webpage for more information.

Schedule (subject to change if needed)			
Lecture	**Dates**	**Sections**	**Topics**
Lecture 1	Aug 22	1.1 – 1. 2	Introduction to Categorical Data Analysis Probability Distributions for Categorical Data
	Aug 25	1.2	Probability Distributions for Categorical Data
	Aug 27	1.3 -1.4	Inference for a proportion: Likelihood Function and MLE
	Aug 29	1.3 -1.4	Inference for Discrete Data: Wald Likelihood and Score Test
Lecture 2	Sept 3	2.1- 2.2	Analyzing Contingency Tables
	Sept 5	2.2 - 2.3	Analyzing Contingency Tables Odds Ratio
	Sept 8	2.3	Odds Ratio
	Sept 10	2.4	Chi-Squared Tests of Independence
Lecture 3	Sept 12	2.6	Fisher's Exact Test
	Sept 15	2.7	Association in Three-way tables
	Sept 17	2.7	Association in Three-way tables
	Sept 19		**Review**
	Sept 22		**Exam 1**

Lecture 4	Sept 24	3.1- 3.2	Components of a Generalized Linear Model (GLM) GLMs for Binary Data
	Sept 26	3.2 – 3.3	GLMs for Binary Data GLMs for count-valued response regression
	Sept 29	3.3	GLMs for count-valued response regression
Lecture 5	Oct 1	3.3	Addressing overdispersion in GLMs
	Oct 3	3.4	Inference with GLMs and Model Checking
	Oct 6	3.4	Inference with GLMs and Model Checking
Lecture 6	Oct 8		Log-linear Models
	Oct 10		Log-linear Models
	Oct 13		**Review**
	Oct 15		**Exam 2**
Lecture 7	Oct 20	4.1 - 4.4	Logistic regression
	Oct 22	4.2	Statistical Inference for Logistic Regression
	Oct 24	4.3	Logistic Regression with Categorical Predictors
	Oct 27	4.4	Multiple Logistic Regression
Lecture 8	Oct 29	5.1	Model Selection
	Oct 31	5.2	Model Checking
Lecture 9	Nov 3 - 7	6.1	Baseline-Category Logit Models for Nominal Responses
	Nov 5	6.1	Baseline-Category Logit Models for Nominal Responses
	Nov 7	6.2	Baseline-Category Logit Models for Ordinal Responses
	Posted: Nov 7 Due:Nov12		**Take Home Exam 3**
Lecture 10	Nov 10	8.1	Binary Matched Pairs McNemar test
	Nov 12	8.1 & 8.5	Binary Matched Pairs McNemar test Rater Agreement
	Nov 14	8.5	Rater Agreement
Lecture 11	Nov 17		Overview of Correlated Data and Additional Methods
	Nov 19		
	Nov 21		
	Dec 1		**Review**
	Dec 3		**Exam 4**

This course complies with all UF policies. For information on those policies and for a list of campus resources, please see this page: https://go.ufl.edu/syllabuspolicies.