



STA 4504/5503 (Class number 21259/21285)

Fall 2019

Categorical Data Analysis

MWF 08:30-09:20 in FLG 210

Instructor: Demetris Athienitis

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Course Website: [e-Learning](#)

Course Notes: Available [online](#). Notes do deviate from textbook and you are responsible for material as taught in the notes.

Course Communication:

- Discussion forum in e-Learning.
- Office hours (posted under “Pages” in e-Learning).
- E-mail for questions regarding course policies. (Ensure that **STA 4504** or **5503** is in the subject line. Failure to do so may result in a non-response.)

Required Text(s): *An Introduction to Categorical Data Analysis*, 3rd Edition

Author(s): A. Agresti

ISBN-13: 9781119405269

Course Description: This course requires as a prerequisite a grasp of basic statistical methods including linear models such as regression and ANOVA. Course content includes description and inference for binomial and multinomial observations using proportions and odds ratios; multi-way 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; loglinear models.

Prerequisite(s): STA 3024 or STA 3032 or STA 4210 or STA 4322

Credit Hours: 3

Software: You will need a computer for the homework assignments and practise. The main software used in class will be R. For more help and resources visit <http://www.stat.ufl.edu/~athienit/software.html>

Course Goals and Objectives:

1. Apply statistical tools to make inference about a single binomial proportion or two sample proportions.
2. Understand and explain the properties of different measures of association by estimating various forms of measures of association from retrospective, cross-sectional and prospective studies.
3. Analyze three-way tables.
4. Understand the fundamental importance of the logistic model.
5. Appreciate the strengths and limitations of matched sample designs.

Course Policies

The instructor reserves the right to update any parts of this syllabus as necessary. Students will promptly be notified of any changes.

Demeanor

All members of the class are expected to follow rules of common courtesy in all classroom discussions, email messages, threaded discussion and chats. Please refer to [expected class netiquette](#) online and during class.

Electronic devices

During class time, only laptops and tablets are allowed. Cell phones, smartphones, and phablets are not permissible unless otherwise specified by the instructor. A student found using said device or permissible device used for non-classroom related activities during class time will be asked to leave the classroom which may result in missing any remaining assignments administered during class time.

Assignments

- 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 involved parties will be penalized according to the UF Honor Code** receiving a 0 on the assignment and an incident report filed. Discussion amongst students is encouraged, but when in doubt, direct your questions to the instructor.
- **No late assignments will be accepted under any circumstances.**

- Students are expected to show and explain how the answers were obtained.
- All electronically **submitted work must be in pdf format** or a standard file format such as doc, jpeg, etc.

Homework/Quizzes

There will be homework assigned on a regular basis as *suggested homework* (not to be turned in) containing data analysis problems and/or book exercises. Suggested homework will be posted under “Assignments”.

A *timed* quiz assignment based on the topics covered in class (and loosely based on the suggested homework) will be administered the day of the suggested homework deadline as either

- In-class (closed notes).
- Online (Only 1 attempt. It is highly encouraged to use a **reliable device** with a **reliable wired ethernet internet connection**. As soon as work is submitted a grade of 0 will show up as a placeholder until the assignment is graded.)

but which format will not be announced prior. For the best preparation students are encouraged to complete the full suggested homework set by the deadline posted on the suggested homework, indicating when you should ready to take the quiz. Solutions to suggested homework will not be posted, but solutions to the quizzes will be.

Exams

There will be three (3) **in-class** exams that may comprise of multiple choice questions ($\approx 20\%$) and some open-ended questions ($\approx 80\%$). Exams will emphasise more on conceptual questions while HW/Quizzes will be more computational (not always).

Allowed material:

- Provided formula sheet. Sheet will be provided ahead of time with practise set.
- Scientific/Graphing Calculator. No cell phones.

Important dates:

Exam #1 September 27, at 08:30
 Exam #2 November 1 , at 08:30
 Exam #3 December 12, at 12:30

Grading

Grade distribution:

Exams 1, 2 and 3	75% (15% lowest, 25% second best, 35% best)
Homework/Quizzes	25% (lowest 2 are dropped, conditional on 12 total quizzes)
Extra Credit	0-1% (discussion forum and classroom participation)

Letter grade assignment:

B+	84 to < 88	A	91 to 100	A-	88 to < 91
C+	74 to < 77	B	80 to < 84	B-	77 to < 80
D+	64 to < 67	C	70 to < 74	C-	67 to < 70
E	< 55	D	60 to < 64	D-	55 to < 60

To view the result of the letter grades to your GPA please visit the [UF Grade and Grading Policies](#). **Final grades shown on Canvas are not accurate because they do not account for the conditional weighing of exams and quizzes.**

Final grade **will not be rounded up** and can be calculated with exams as a % (out of 100) and quizzes out of 10 points

$$\begin{aligned} \text{Final} = & 0.15(\text{worst exam}) + 0.25(\text{second best exam}) + 0.30(\text{best exam}) \\ & + 0.25(100) \left(\frac{\sum \# \text{ total quizzes} - \sum \# \text{ drops lowest}}{10(\# \text{ of quizzes} - \# \text{ of drops})} \right) \\ & (+\text{Extra}) \end{aligned}$$

Make-up

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-ups need to be scheduled within a week from the assignment deadline. Student is responsible for scheduling.
- 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](#)

Addressing Issues

Technical difficulties

Please contact the UF Help desk via e-Learning “Help” tab or [UF IT Service Portal](#). Any requests for make-ups due to technical issues must be accompanied with appropriate documentation/proof including screenshots and communication with the help desk. You **MUST** contact your instructor within 24 hours of the technical difficulty if you wish to request a make-up.

Grievances/Commendations

Should you have any grievances or commendations with your experience in this course you can always address them

- to the instructor at athienit@ufl.edu, or
- the [Department of Statistics](#).

For issues that are not satisfactorily resolved at the department level or which seem to be broader than one department, students are referred to [Student Complaints On-Campus](#) or [On-Line Students Complaints](#)

UF and CLAS Policies

Dropping, Withdrawing and Incomplete

Dropping and Withdraw

For late course drops and course withdrawals please visit

<https://catalog.ufl.edu/UGRD/academic-regulations/dropping-courses-withdrawals/>

Incomplete

An incomplete grade may be assigned at the discretion of the instructor as an interim grade for a course in which the student has completed a major portion of the course with a passing grade, been unable to complete course requirements before the end of the term because of extenuating circumstances, and obtained agreement from the instructor and arranged for resolution of the incomplete grade in the next term. Instructors are not required to assign incomplete grades. For complete details please visit [CLAS incomplete grade policies and forms](#).

Accommodating Students with Disabilities

Students requesting accommodation for disabilities must first register with the [Dean of Students Office](#). The Dean of Students 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.

Academic Misconduct

Students are held accountable to the [UF Honor Code](#).

Evaluations

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three 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://evaluations.ufl.edu/results/>.

Tentative Course Outline

Chapter	Content	Textbook
1	Introduction	1.1-1.4.2
2	Contingency Tables	2.1-2.4, 2.6-2.7
3	Generalized Linear Models	3.1-3.5
Exam 1		
4	Logistic Regression	4.1-4.4
5	Building and Applying Logistic Regression	5.1-5.3
6	Multicategory Logit Models	6.1-6.2
Exam 2		
8	Models for Matched Pairs	8.1, 8.5
9	Modeling Correlated, Clustered Responses	9.1-9.2
10	Random Effects: GLMM	10.1-10.2
7	Loglinear Models for Contingency Tables	7.1-7.4
Exam 3		