IMPORTANT: This syllabus form should be submitted to OAA (gsbs_academic_affairs@uth.tmc.edu) a week before the start of each semester.

NOTE to STUDENTS: If you need any accommodations related to attending/enrolling in this course, please contact one of the Graduate School's 504 Coordinators, Cheryl Spitzenberger or Natalie Sirisaengtaksin. We ask that you notify GSBS in advance (preferably at least 3 days before the start of the semester) so we can make appropriate arrangements.

Term and Year: **Fall 2022** Course Number and Course Title: **GS01 1233: GLM and Categorical Data Analysis** Credit Hours: **3 hours** Meeting Location: **Rice University Campus** Building/Room#: **MXF (Maxfield Hall) 251** **WebEx/Zoom Link:** **https://riceuniversity.zoom.us/j/93759943038?pwd=UG9rMk5tOHdHL0lsZDVPcVNVU1VPUT09**	Program Required Course: **Yes** Approval Code: **No** **(If yes,** the Course Director or the Course Designee will provide the approval code.) **Audit Permitted: Yes** Classes Begin: **August 22, 2022** Classes End: **December 2, 2022** Final Exam Week: **Dec. 2, 2022**

Class Meeting Schedule

Day	Time
Monday	**1:00-1:50 p.m.**
Wednesday	**1:00-1:50 p.m.**
Friday	**1:00-1:50 p.m.**

Course Director	**Instructor/s** (Use additional page as needed)
Name and Degree: **Yisheng Li, PhD** Title: **Professor** Department: **Biostatistics** Institution: **MDACC** Email Address: ysli@mdanderson.org Contact Number: **714-563-4267** **Course Co-Director/s:** Name and Degree: **Ziyi Li, PhD** Title: **Assistant Professor** Department: **Biostatistics** Institution: **MDACC** Email Address: ZLi16@mdanderson.org Contact Number: **713-745-1146**	1. **Yisheng Li, PhD** Institution: UT MD Anderson Cancer Center Email Address: ysli@mdanderson.org 2. **Ziyi Li, PhD** Institution: UT MD Anderson Cancer Center Email Address: ZLi16@mdanderson.org

NOTE: Office hours: Monday 2:30-3:30pm except September 5 (Labor Day) and October 10 (Rice University Midterm Recess).

Teaching Assistant:

Jingyan (Janet) Fu
jf81@rice.du

Course Description:

This is an advanced graduate-level statistical course. Students need to have taken undergraduate-level mathematical statistics and statistical inference courses. Students are also expected to have taken an undergraduate-level linear regression course.

Textbook/Supplemental Reading Materials

- (Main textbook) Categorical Data Analysis, 3rd edition (2013), by Alan Agresti, John Wiley & Sons, Inc.
- (Supp) Generalized Linear Models, 2nd edition (1989), by McCullagh P & Nelder JA, Chapman & Hall/CRC.
- (Supp) Models for Discrete Longitudinal Data (2005), by Molenberghs G and Verbeke G, Springer.

Course Objective/s:

Upon successful completion of this course, students will be able to:

1) analyze categorical response data using appropriate descriptive statistics;
2) describe and make inference on relationships between categorical data; and
3) make inference on relationships between categorical response data and continuous and/or categorical explanatory variables.

***Specific Learning Objectives*:**

1. General approaches to summarizing and making inference for categorical response data.
2. Making inference for two-way contingency tables.
3. Regression models for categorical response data including binary, count, ordinal and nominal data.
4. Regression models for longitudinal categorical data.

Student responsibilities and expectations:

Students enrolled in this course will be expected to perform the following activities each week:

1. Attend the lectures, and participate in in-class discussions as needed
2. Complete homework assignments in time
3. Prepare and take two mid-term exams given in the first half of the course (taught by Dr. Yisheng Li), and prepare and take a final exam given at the end of the second half of the course (taught by Dr. Ziyi Li)

Cheating or engaging in unethical behavior during examinations (midterm and final) will be grounds for dismissal from the course without credit and further GSBS disciplinary action.

Grading System: Letter Grade (A-F)

Student Assessment and Grading Criteria : *(May include the following:)*

Percentage	Description
Homework (50 %)	**6(20%) or 3(30%) HW assignments by each instructor**
Quiz (%)	
Presentation (%)	
Midterm Exams (30 %)	**Two in-class closed-book exams given on 9/16, 10/12**
Final Exam (15 %)	**In-class closed-book exam given on 12/2**
Workshop or Breakout-Session (%)	
Participation and/or Attendance (5 %)	**Class participation in the 2nd half of the course**

CLASS SCHEDULE – Fall 2022

Date	Duration (Hour(s) taught by lecturer)	Lecture Topic	Lecturer/s
Aug. 22-Sept. 7	7	Introduction & inference of category response data	Dr. Yisheng Li
Sept. 9-Sept. 19	5	Description of contingency tables	Dr. Yisheng Li
Sept. 21-Oct. 5	7	Inference for two-way contingency tables	Dr. Yisheng Li
Oct. 7-Oct. 12	2	Introduction of generalized linear models	Dr. Yisheng Li
Oct. 14-Oct. 21	4	Regression model for binary data	Dr. Ziyi Li
Oct. 24-Oct. 31	4	Regression model for count data	Dr. Ziyi Li
Nov. 2-Nov. 9	4	Regression model for ordinal and nominal data	Dr. Ziyi Li
Nov. 11-Nov. 18	4	Extension of regression models for categorical data	Dr. Ziyi Li
Nov. 21-Dec. 2	4	Regression models for longitudinal categorical data	Dr. Ziyi Li

YL/jal