MATH 6998

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*University of New Orleans*

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MATH 6998
Theory and Application of Categorical Data

Instructor: Dr. Linxiong Li
Classroom: Math 238
Class time: 1:30-3pm, Monday and Wednesday
Office Hours: Tuesday, Thursday 1:00-2:30
Office: Math238
Phone: 504-280-6254
Email: lli1@uno.edu


Coverage: This course will focus on both theory and application of generalized linear models with discrete data and will include the following topics:
I. Introduction to categorical data: Sections 1.1 – 1.4
II. Contingency tables: Sections 2.1 – 2.7
III. Linear models: Sections 3.1 – 3.5
IV. Logistic regression: Chapters 4, 5, 6
V. Loglinear models: Sections 7.1-7.5
Some further sections may also be added to this list.

Course prerequisites: Math 4311 or 6311. Also, since the course material requires heavy statistical computation, prior knowledge about statistical package SAS or SPSS is strongly recommended, although not required.

Grading: There will be homework, two midterm exams and a final exam. See the Tentative Schedule below for exam dates. In addition, there will be a project and presentation. The homework carries a
total of 15% of the final grade, each midterm exam carries 20%, the final exam carries 35%, and the project and presentation carries 10%. The overall grading scale is

A: 85+;   B: 75-84;   C: 65-74;   D: 55-64;   F: < 55.

Note: In general, no make-up exams will be given. The final exam is cumulative.

Student learning outcomes: By the end of the semester, you should be able to know the basic theory of generalized linear models, various categorical data structures, and different methods for estimation and testing; you also should be able to use the logistic and loglinear regression models to analyze data and draw conclusions. In addition, since the use of statistical packages such as SAS or SPSS or R is essential in practice, you should be able to efficiently use the package in your data analysis by the completion of the course. The optimal goal of the course is that once you are given a data set you can use the learned materials to analyze the data, make recommendations/suggestions, and present your conclusions at the professional level.

More information and expectation: Homework will be assigned for each chapter and will be collected and graded. SAS examples will be provided for every chapter. You are also expected to turn in all assignments on time; penalties will be given for late assignments.

Computer labs: Statistical package SAS is available in rooms 105, 107, 110, 200, and 320 of the math building. Room 317 is open 24/7, and the other labs are 8:30am –4:30 pm.

Student conduct: The University of New Orleans (UNO) is a multicultural community composed of diverse students, faculty and staff. UNO will not tolerate discrimination or harassment of any person or group of persons based on race, color, religion, sex, disability, national origin, age, sexual orientation, marital or veteran status or any other status protected by law. Each member of the university is held accountable to this standard, which is strongly reflected in this code.

Academic integrity: Academic integrity is fundamental to the process of learning and evaluating academic performance. Academic dishonesty will not be tolerated. Academic dishonesty includes, but is not limited to, the following: cheating, plagiarism, tampering with academic records and examinations, falsifying identity, and being an accessory to acts of academic dishonesty. Refer to the Student Code of Conduct for further information. The Code is available online at http://www.studentaffairs.uno.edu.
Accommodations for Students with Disabilities:

It is University policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities that may affect their ability to participate in course activities or to meet course requirements. Students with disabilities should contact the Office of Disability Services as well as their instructors to discuss their individual needs for accommodations. For more information, please go to http://www.ods.uno.edu.

Attendance: Not applicable

Tentative schedule:

<table>
<thead>
<tr>
<th>WEEK OF</th>
<th>SECTIONS</th>
<th>OBJECTIVE</th>
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<tbody>
<tr>
<td>Aug. 12</td>
<td>1.1—1.4</td>
<td>Basic concepts, definitions for categorical data</td>
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<tr>
<td>Aug. 17, 24</td>
<td>2.1—2.7</td>
<td>Structure, independence tests of contingency tables</td>
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<tr>
<td>Aug. 31, Sept. 7</td>
<td>3.1—3.5</td>
<td>Knowing various GLMs for various data</td>
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<td></td>
<td></td>
<td>Midterm Exam 1</td>
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<tr>
<td>Sept. 14, 21</td>
<td>4.1—4.5</td>
<td>Learning how to apply logistic linear models for binary data</td>
</tr>
<tr>
<td>Sept. 28, Oct 5, 12</td>
<td>5.1—5.5</td>
<td>Learning how to build logistic linear models for binary data</td>
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<tr>
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<td></td>
<td>Midterm Exam 2</td>
</tr>
<tr>
<td>Oct 19, 26</td>
<td>6.1—6.4</td>
<td>Learning how to build logistic linear models for multicategory nominal or ordinal data</td>
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<tr>
<td>Nov 2, 9</td>
<td>7.1—7.3</td>
<td>Learning loglinear models for 2- and 3-way tables</td>
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<tr>
<td>Nov 16, 23</td>
<td></td>
<td>Project and presentation</td>
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<tr>
<td>Dec 1</td>
<td></td>
<td>Final Exam</td>
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Important Dates*

Last day to adjust schedule w/out fee...................... 08/18/2015
Semester Classes Begin...................................... 08/19/2015
Last day to adjust schedule w/fee, or withdraw with 100% refund...................... 08/25/2015
Last day to apply for December commencement.... 09/25/2015
Final day to drop a course or resign ...................... 10/14/2015
Mid-semester examinations ......................... 10/05-10/09/2015
Final examinations .................................. 12/07-12/11/2015
Commencement.............................................. 12/18/2015

*Note: check Registrar's website for Saturday and A/B sessions, and for items not listed here: http://www.registrar.uno.edu

Fall Semester Holidays

Labor Day .......................................................... 09/07/2015
Mid-semester break ...................................... 10/15-10/16/2015
Thanksgiving .............................................. 11/26-11/27/2015

Withdrawal Policy – Undergraduate only

Students are responsible for initiating action to resign from the University (withdraw from all courses) or from a course on or before dates indicated in the current Important dates calendar. Students who fail to resign by the published final date for such action will be retained on the class rolls even though they may be absent for the remainder of the semester and be graded as if they were in attendance. Failure to attend classes does not constitute a resignation. Check the dates on the Registrar’s website, http://www.registrar.uno.edu. Please consult The Bulletin for charges associated with dropping and adding courses.

Incomplete Policy – Undergraduate only

The grade of I means incomplete and is given for work of passing quality but which, because of circumstances beyond the student’s control, is not complete. The issuance of the grade of I is at the discretion of the faculty member teaching the course. For all graduate and undergraduate students, a grade of I becomes a grade of F if it is not converted before the deadline for adding courses for credit (as printed in the Important Dates Calendar) of the next regular semester including summer semester.

Repeat Policy

When a student is permitted to repeat a course for credit, the last grade earned shall be the one which determines course acceptability for degree credit. A student who has earned a C or better in a course may not repeat that course unless, (1) the catalog description indicates that the course may be repeated for credit, or (2) the student’s Dean gives prior approval for documented extenuating circumstances.

Academic Dishonesty Policy


Safety Awareness Facts and Education

Title IX makes it clear that violence and harassment based on sex and gender is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, etc. If you or someone you know has been harassed or assaulted, you can find the appropriate resources here: http://www.uno.edu/student-affairs-enrollment-management/

UNO Counseling Services and UNO Cares
UNO offers care and support for students in any type of distress. Counseling Services assist students in addressing mental health concerns through assessment, short-term counseling, and career testing and counseling. Find out more at http://www.uno.edu/counseling-services/. First-year students often have unique concerns, and UNO Cares is designed to address those students succeed. Contact UNO Cares through http://www.uno.edu/fye/uno-cares.aspx.

Emergency Procedures

Sign up for emergency notifications via text and/or email at E2Campus Notification: http://www.uno.edu/ehso/emergency-communications/index.aspx. All emergency and safety procedures are explained at the Emergency Health and Safety Office: http://www.uno.edu/ehso/.

Diversity at UNO

As the most diverse public university in the state, UNO maintains a Diversity Affairs division to support the university’s efforts towards creating an environment of healthy respect, tolerance, and appreciation for the people from all walks of life, and the expression of intellectual point of view and personal lifestyle. The Office of Diversity Affairs promotes these values through a wide range of programming and activities. http://diversity.uno.edu/index.cfm

Learning and Support Services

Help is within reach in the form of learning support services, including tutoring in writing and math and other supplemental instruction. Visit the Learning Resource Center in LA 334, or learn more at http://www.uno.edu/lrc/.

Affirmative Action and Equal Opportunity

UNO is an equal opportunity employer. The Human Resource Management department has more information on UNO’s compliance with federal and state regulations regarding EEOC in its Policies and Resources website: http://www.uno.edu/human-resource-management/policies.aspx