Syllabus
Stat 6231: Contingency Table Analysis (Categorical Data Analysis)
Where: TOMP 303
Time: Monday 06:10PM – 8:40 PM, 08/29/16 - 12/12/16
Office Hour: Monday 8:40-9:40PM, @ TOMP 303
or by appointment Monday 5:00-6:00PM, TBD @TOMP

Instructor: Yuanzhang Li, Yuanzhang.li@yahoo.com (daily check) yli201301@gwu.edu (occasionally check)

Course Description:
The purpose of this course is to provide a broad overview of the statistical procedures for analyzing categorical data. Topics to be covered include inference for contingency tables, generalized linear models with emphasis on logistic regression and loglinear models, and on models for clustered/repeated measures. Any changes will be announced in the class.

Goals of Course
- Not necessarily remember how to write out all formulae.
- Know method assumptions
- Know how to use them for the data analyses
- Know when to use methods.
- Know limitations of methods
- Know relationships among methods.
- Know where to find information.
- Know some theory.
- Know how explain the results
- Know how to use SAS to perform suitable analyses

Course Structure:
The class consists of one 2.5 hours lecture per week.
Your grade is based on homework, one midterm and the final exam.

Textbook: The required text for the course is Categorical Data Analysis, 3rd Ed. by Alan Agresti, 2013.

Other Books:

Stokes M.E., Davis C.S., Koch, G.G. Categorical Data Analysis, Using the SAS System, 2nd Ed.

Software:
Most examples will be illustrated using SAS. Some homework problems will require the use of computer programs. Students are free to use the software of their preference.

Code of Academic Integrity:
All examinations, papers, and other graded work products and assignments are to be completed in conformance with The George Washington University Code of Academic Integrity. It states: “Academic dishonesty is defined as cheating of any kind, including misrepresenting one’s own work, taking credit for the work of others without crediting them and without appropriate authorization, and the fabrication of information.” For the remainder of the code, see: http://www.gwu.edu/integrity/code.html

Prerequisite:
Background in linear models, estimation, and testing theory. Stat 6201, 6202.

Homework and Projects:
Total 6 homework will be assigned in the lecture every other week, except for the midterm and Final exams period. Your homework will be collected two weeks later.

Midterm:
One closed–book midterm examinations will be given on October 17th. If the midterm is missed, you will receive zero credit for that part of the grade. No make-up midterm will be given. In exceptional circumstances (e.g. well-documented medical problems), a missed midterm will not be counted when computing your course grade.

Final Exam: The final examination will be given on December 14. The date might be changed if necessary. The final exam will cover all materials for the whole semester, with more weight on the chapters uncovered in the midterm exam.

In the event that you are going to miss an examination, you must notify me prior to the examination. There will be no make-up final.

Course Grading:
Your final letter grade will be based on a total score computed as follows:
Homework 40%
Midterms 30%
Final 30%

A grade of INCOMPLETE will ONLY be given to a student who is passing the course and cannot complete the course due to illness or other (documented) circumstances beyond their control.

Class Policy:
Late work will not be accepted. Except for medical cases (with proper documentation) there will be no make-ups. If you miss an exam or miss a deadline you get zero credit for that part. For university policies on teaching see http://www.gwu.edu/academic/Teaching/main.htm.

Student Services: If you experience difficulty in this course for any reason, please consult with me. If you have a disability and require accommodations, please notify me with a letter from DSS so that we can make arrangements.
University Policy on Religious Holidays

1. Students should notify faculty during the first week of the semester of their intention to be absent from class on their day(s) of religious observance.

2. Faculty should extend to these students the courtesy of absence without penalty on such occasions, including permission to make up examinations.

3. Faculty who intend to observe a religious holiday should arrange at the beginning of the semester to reschedule missed classes or to make other provisions for their course-related activities.

Support for Students Outside the Classroom

**Disability Support Services (DSS)**

Any student who may need an accommodation based on the potential impact of a disability should contact the Disability Support Services office at 202-994-8250 in the Rome Hall, Suite 102, to establish eligibility and to coordinate reasonable accommodations. For additional information please refer to: gwired.gwu.edu/dss/

**Mental Health Services 202-994-5300**

The University's Mental Health Services offers 24/7 assistance and referral to address students' personal, social, career, and study skills problems. Services for students include: crisis and emergency mental health consultations confidential assessment, counseling services (individual and small group), and referrals. counselingcenter.gwu.edu/

**DISABILITY SUPPORT SERVICES (DSS):**

Any student who may need an accommodation based on the potential impact of a disability should contact the Disability Support Services office at 202-994-8250 in the Marvin Center, Suite 242, to establish eligibility and to coordinate reasonable accommodations.

For additional information please refer to: http://gwired.gwu.edu/dss/

**UNIVERSITY COUNSELING CENTER (UCC):**

The University Counseling Center (UCC, 202-994-5300, http://gwired.gwu.edu/counsel/CounselingServices/AcademicSupportServices) offers 24/7 assistance and referral to address students’ personal, social, career, and study skills problems. Services for students include: i) crisis and emergency mental health consultations, ii) confidential assessment, counseling services (individual and small group), and referrals.

**SECURITY:**
In the case of an emergency, if at all possible, the class should shelter in place. If the building that the class is in is affected, follow the evacuation procedures for the building. After evacuation, seek shelter at a predetermined rendezvous location.

Other: Please turn your cell phone ringer off. No eating in the classroom.

Schedule (May Adjust, if needed)

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<th>Lecture</th>
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<th>Chapter&amp;Section</th>
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<tr>
<td>8/29/2016</td>
<td>1</td>
<td>Introduction : A brief history of categorical data analysis</td>
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<td>9/12/2016</td>
<td>2</td>
<td>Two Way-Contingency Table, Measures of association for 2x2 tables</td>
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<td>9/19/2016</td>
<td>3</td>
<td>IXJ Table decomposition, Loglinear model</td>
<td>3.3-3.5, 8.1</td>
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<td>9/26/2016</td>
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<td>Inference for contingency table</td>
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<td>10/3/2016</td>
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<td>Generalized Linear Model</td>
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<td>10/10/2016</td>
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<td>Logistic regression</td>
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<td>10/17/2016</td>
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<td>Midterm Exam</td>
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<td>10/24/2016</td>
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<td>Fall Break</td>
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<td>10/31/2016</td>
<td>7</td>
<td>Applying logistic regression</td>
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<td>11/7/2016</td>
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<td>Three way and High way contingency table, loglinear Model</td>
<td>8.2, 8.3</td>
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<td>11/14/2016</td>
<td>9</td>
<td>Log-linear model continue</td>
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<td>11/21/2016</td>
<td>10</td>
<td>Logistic regression for multinomial response/</td>
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<td>11/28/2016</td>
<td>11</td>
<td>Model for matched pairs</td>
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<td>12/5/2016</td>
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<td>Repeated categorical data</td>
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<td>12/12/2016</td>
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<td>Transitional model: Markov Chain</td>
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<td>12/14/2016</td>
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<td>Final Exam</td>
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