Ansari Business 209
TR 5:30-6:45PM
3 credits

Instructor: Ilya Zaliapin  Office: Ansari Business Bldg., Room 609
Office hours: TR 11:00-noon + 4:00-5:00PM + by appointment
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Course web page: http://unr.edu/homepage/zal/STAT653_Fall07.htm

Intro: Discrete data are routinely collected in social, geophysical, behavioral, biomedical, biological and agricultural sciences as well as in public health, marketing, education, and industrial quality control. The statistical inference for discrete data involves special methods and approaches that differ (sometimes significantly) from those for continuous random variables. In this class, we will overview real-life examples, classical and modern statistical techniques, and numerical methods aimed at answering the main question: How to make a sound and efficient inference if our observations are discrete? A professional statistical package \( \text{\LaTeX} \) will be used to apply the concepts discussed in the class to real data sets.

There is no required textbook for this class.

Optional reading (these books are used for class material):

Tentative list of topics (may change as class proceeds):
- Discrete distributions
- Basic inference for discrete and categorical responses
- Contingency tables
- Generalized linear models, Log-linear models
- Logistic regression
- Hamming distance approach
- Historical remarks

Statistical Lab is an integral part of the course. You will be given regular take-home assignments that require application of selected statistical techniques using the package \( \text{\LaTeX} \). The results should be presented in a form of illustrated reports (we will discuss the report writing in the class). The previous knowledge of \( \text{\LaTeX} \) is not required (but definitely will make the class easier). \( \text{\LaTeX} \) is a free software and it is very similar to S-plus. The \( \text{\LaTeX} \)-portal with downloads, manuals, FAQs, and much more is located at: http://www.r-project.org/. You are encouraged to discuss the Lab assignments and can do them in groups, but your reports have to be written individually and demonstrate that you are able to perform the presented analysis independently. You may use any other statistical package if you like, but all instructions and discussions in the class will refer only to \( \text{\LaTeX} \).

Midterms: There will be two midterms. The dates will be announced in advance.

Final project: The project will consist of comprehensive theoretical and practical statistical analysis of a data set of your choice; it will result in a project report and a short presentation
that will be delivered at the end of the semester to the class. The project should demonstrate that you are (i) well familiar with essential concepts, methods, and techniques studied in the class; (ii) able to use package R for analysis and report preparation; (iii) ready to present your findings to a professional audience.

You will need to discuss the final project proposal with instructor and get an approval of your proposed project by September 20, 2007. The proposal should include the suggested data set, questions to be asked, theoretical and computational methods to be applied.

A detailed discussion of how to successfully complete the final project will follow in the class.

Home works will be given weekly, but they are not graded and intended solely for midterm preparation. You are encouraged to discuss HW assignments between each other and with instructor during office hours.

Quizzes: There might be occasional pop quizzes intended to help us in choosing the right course pace. You will not lower your grade by failing at quizzes, but you can improve your grade by doing them right. Quizzes contribute to approximately 2% of your overall performance, and may be crucial when evaluating borderline performance.

Final meeting (presentations): Tuesday, December 18, 2007, 4:30-6:30PM

Grading policy: Your letter grade for the course will be based on Statistical Lab reports (20% altogether), two midterms (20% each), and a final project (40%).

Prerequisites: none.

Important dates:

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<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>September 6, 2007</td>
<td>Final date to drop a class with 100% refund</td>
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<tr>
<td>October 19, 2007</td>
<td>Final date to drop a class and receive “W”</td>
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The Department of Mathematics and Statistics supports providing equal access for students with disabilities. Any student needing accommodations for a specific disability is encouraged to meet with instructor or any Department representative at your earliest convenience to ensure timely and appropriate accommodations.