Course Description

This graduate level course introduces the basic concepts and rules in probability theory that are important for statistical inference. If time permits, we will cover topics such as probability spaces, random variables, discrete, continuous and mixed probability distributions, moment generating functions, multivariate distributions, conditional probability, conditional expectation and laws of large numbers.

Intended Learning Outcomes

- To appreciate the values of probability theory in statistical inference
- To develop an understanding of concepts and rules in probability that are important for statistics
- To develop logical and abstract thinking as applied to statistical reasoning
- To develop statistical and probabilistic problem solving skills
- To prepare for careers, including entry into graduate programs that require statistical knowledge

Student Assessment

The course evaluations include attendance, 8 assignments, two midterms and a final exam. The dates for the assignments and exams will be announced during classes or on the blackboard. Part of the attendance will be determined by short quizzes (or pop quizzes).

The distribution of the possible points are as follows.

<table>
<thead>
<tr>
<th>Elements</th>
<th>% of final grade</th>
<th>Possible points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignments</td>
<td>20%</td>
<td>100</td>
</tr>
<tr>
<td>Attendance</td>
<td>10%</td>
<td>50</td>
</tr>
<tr>
<td>Midterm 1</td>
<td>20%</td>
<td>100</td>
</tr>
<tr>
<td>Midterm 2</td>
<td>20%</td>
<td>100</td>
</tr>
<tr>
<td>Final exam</td>
<td>30%</td>
<td>150</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>500</strong></td>
</tr>
</tbody>
</table>

The minimum points needed for each grade category are:

<table>
<thead>
<tr>
<th>Points</th>
<th>450</th>
<th>425</th>
<th>400</th>
<th>375</th>
<th>350</th>
<th>325</th>
<th>300</th>
<th>275</th>
<th>250</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>A</td>
<td>A-</td>
<td>B+</td>
<td>B</td>
<td>B-</td>
<td>C</td>
<td>C+</td>
<td>C</td>
<td>C-</td>
<td>D</td>
</tr>
</tbody>
</table>

*Note: STAT 570 has an additional grade category of C- based on the NIU grading system.*

Course Resources
1. Text book

2. Reference for rigorous proof (if interested)

**Course Policies**
Generally students are expected to attend the lectures, as the covered materials may not be chosen straightly from the text book. In the case of an absence, please be advised that the student assumes the responsibility for anything that (s)he fails to receive from the lecture.

For the courtesy of others, please mute your cell phone and avoid disturbing the class with other behaviors. No electronic device or cheat paper will be allowed in the closed book exams. Students are expected to work on the exams independently. Violation of the rules will be handled according to NIU policies.

Late assignments are subject to a late penalty of 10% of your score for each day the assignment is late for. The acceptance of a make-up exam will be determined based on each individual case, if there is a legitimate reason such as a medical emergency. Under such a situation, please contact the instructor as soon as possible. The acceptance of a late assignment or make-up exam will be determined based on each individual case. Proof of the event needs to be provided. A make-up exam is intended to be similar in terms of difficulty, but the instructor could not guarantee the student would have the same perspective.

**Americans with Disabilities Statement**
Northern Illinois University is committed to providing an accessible educational environment in collaboration with the Disability Resource Center (DRC). Any student requiring an academic accommodation due to a disability should let his or her faculty member know as soon as possible. Students who need academic accommodations based on the impact of a disability will be encouraged to contact the DRC if they have not done so already. The DRC is located on the 4th floor of the Health Services Building, and can be reached at 815-753-1303 (V) or drc@niu.edu.

**Academic Integrity Statement**
NIU's updated policies on Academic Integrity, Attendance and Accommodations for Students with Disabilities are now available in a pdf document at http://www.niu.edu/stat/courses/pdfs/Accessibility_Statement.pdf.

**Proposed Course Schedule**
DuSable Hall 340, MWF 11:00-11:50am.

**Note:** The syllabus may be further modified in ways that may facilitate student learning.