STA 401/501 - Probability
Fall 2010

Instructor: Dr. Byran Smucker
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Office Phone: 513.529.0955

Class: MWF 2:15pm-3:05pm in UPH 127
Website: Blackboard
Office Hours: M 3:15-4:14; W 1-2; F 9-10
or by appointment (please don’t hesitate)

Required Textbook

Course Description
Development of probability theory with emphasis on how probability relates to statistical inference. Topics include review of probability basics, counting rules, Bayes Theorem, discrete and continuous distributions, expectation and variance of random variables and functions of random variables, moment generating functions, joint distributions, distributions of functions of random variables, sampling distributions and the Central Limit Theorem. We also will give an introduction to estimation, including maximum likelihood estimation. Prerequisite: STA 261, 301, or 368 or equivalent. Pre- or Corequisite Calculus II.

Homework
Almost-weekly homework assignments will constitute a significant portion of the course grade. In each assignment, there will be one challenging problem which is mandatory for students in STA 501 and extra credit for those in STA 401. The lowest homework assignment score will be dropped. I encourage you to work together, but the work you turn in must be your own. If it is evident that a homework is identical to another paper—or nearly so—a score of 0 may be awarded for that assignment to all involved persons (even if yours was the paper copied). Homework assignments should be turned in at the beginning of class on the day they are due. Any assignment turned in later than the first 10 minutes of class will be given a 50% grade reduction. Each day after the due date will result in an additional 10% reduction. An exception to this reduction policy will be considered for legitimate circumstances that are presented to me (via e-mail or in person) before the due date.

Exams
Exams will be in-class and closed-book, but a page of relevant formulae will be provided. No calculators will be allowed or necessary. There will be two midterms (50 minutes each) and a final. If extenuating circumstances require you to miss an exam, let me know at least a week in advance and we will work something out.

Extra Credit
Throughout the semester, there will be up to fifteen (but more likely 5-10) in-class or take-home assignments that will be extra credit (worth one homework in total). The in-class tasks will be designed to give you practice writing proofs in an exam-like setting, without the pressure of an
exam. The take-home assignments may include probability problems from the news or popular culture.

**Grading**
Your final grade will be comprised of the following elements:

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Component</th>
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<tbody>
<tr>
<td>35%</td>
<td>Homework</td>
</tr>
<tr>
<td>20%</td>
<td>Exam 1</td>
</tr>
<tr>
<td>20%</td>
<td>Exam 2</td>
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<tr>
<td>25%</td>
<td>Final exam</td>
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</tbody>
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Letter grades (percentages reflect the minimum requirement for a particular letter grade):

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Grade</th>
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<tbody>
<tr>
<td>93%</td>
<td>A</td>
</tr>
<tr>
<td>90%</td>
<td>A-</td>
</tr>
<tr>
<td>87%</td>
<td>B+</td>
</tr>
<tr>
<td>83%</td>
<td>B</td>
</tr>
<tr>
<td>&lt;60%</td>
<td>F</td>
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I reserve the right to lower these thresholds, but will not raise them.

**Important Dates**
- No Classes: Labor Day (Monday, September 6); Thanksgiving Break (November 24-28, Wednesday-Sunday)
- Academic Deadlines: September 13 is last day to drop without a grade; October 29 is the last day to withdraw from the course with ‘W’
- Final Exam: Monday, December 13 from 12:30-2:30 in UPH 127

**Academic Integrity**
All Miami University policies concerning academic integrity apply to this course. See [www.muohio.edu/integrity/index.cfm](http://www.muohio.edu/integrity/index.cfm) for details.

**Disabilities**
If you have a disability, please see me and I will be glad to make any necessary accommodations. For more information, see the Office of Disability Resources ([www.units.muohio.edu/oeeo/odr/](http://www.units.muohio.edu/oeeo/odr/)) and/or Learning Disability Services ([www.units.muohio.edu/saf/1rn/RLC1LD.html](http://www.units.muohio.edu/saf/1rn/RLC1LD.html)).

**Diversity and Discrimination**
Respecting each person in the class is important. Please see [www.miami.muohio.edu/documents_and_policies/diversity_statement/](http://www.miami.muohio.edu/documents_and_policies/diversity_statement/) and [www.miami.muohio.edu/documents_and_policies/nondiscrimination.cfm](http://www.miami.muohio.edu/documents_and_policies/nondiscrimination.cfm).