STATISTICS 202 - Probability

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Office: 10:50 – 11:50 MWF 9:00 – 11:00 TH 2:00-3:00 MW (Also by appointment)


COURSE OBJECTIVES

Probability is a branch of mathematics that has many applications. The main focus of this course will be to learn the concepts and techniques associated with probability. Through various assignments and examples, the use of probability as a method for analyzing data will be demonstrated. Several specific probability models (i.e. probability distributions) will be studied during this course, some of which are discrete models and others which are continuous models. During the examination of the continuous models, we will see a part of probability which is a direct application of the calculus you have studied previously.

The main goals for this course are to:

1. Learn the basic mathematical knowledge and techniques needed to solve problems involving probability.
2. Recognize questions which probability topics can help to provide solutions.
3. Understand the role of probability in statistical inference.
4. Gain an increased understanding of the difference between discrete mathematical models and continuous mathematical models.
5. Gain an increased appreciation of certain calculus topics by seeing how calculus is used in a specific application.

COURSE TOPICS (Not necessarily in the order given!)

1. Graphical and numerical descriptions of data
2. Basic probability theory
3. Discrete Random Variables and Probability Distributions
4. Continuous Random Variables and Probability Distributions
5. Mathematical Expectation (also know as “Expected Value”)
6. Multivariate Probability Distributions
7. “Special topic”: using simulations and probability to make a decision (This will be “woven” through the entire course via class activities.)

Attendance Policy

Attendance in all classes is important and is expected. You are responsible for all classes missed. If you have a good (and well-documented) reason for missing class, please see me; otherwise, please do not come to me to get "caught up."
Homework Exercises
On most days (hopefully!) you will be assigned homework exercises to work on and to hand in at the next class meeting. Your work will graded partly on the basis of completeness and partly on the basis of correctness. It is important that you see me during office hours, if you have questions about any of these assigned problems or the related text material. There will also be a few “special” assignments for which you may be given more time to complete the work.

Grading Policy
The grade in this course will be based on three tests, "hand-in" assignments, and a comprehensive final as described:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>3 in-class tests</td>
<td>57%</td>
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<tr>
<td>Co-curricular requirement (3 talks)</td>
<td>5%</td>
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<tr>
<td>Hand-in Assignments</td>
<td>19%</td>
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<tr>
<td>Final Exam</td>
<td>19%</td>
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Grading scale (Percent of total)

<table>
<thead>
<tr>
<th>Grade Range</th>
<th>A</th>
<th>B+</th>
<th>C+</th>
<th>D+</th>
<th>F</th>
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<tbody>
<tr>
<td>92-100</td>
<td>88-89</td>
<td>78-79</td>
<td>68-69</td>
<td>Below 60</td>
<td>F</td>
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<tr>
<td>90-91</td>
<td>82-87</td>
<td>72-77</td>
<td>62-67</td>
<td>D</td>
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<td></td>
<td>80-81</td>
<td>70-71</td>
<td>60-61</td>
<td>D</td>
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Test schedule
- Test #1: Friday, February 5
- Test #2: Wednesday, March 10
- Test #3: Wednesday, April 7
- FINAL: Monday, April 26, 8:30 to 11:30

MAKE-UP TESTS
As a general policy, make-up tests will not be given unless a well-documented reason is given. If you do miss a test, be sure to see me.

LATE HOMEWORK
This is an undefined term! Homework assignments are due at the beginning of class on the due date. If you anticipate a problem, you certainly may hand the assignment in early!

ACADEMIC INTEGRITY
Absolute academic integrity is expected of all students at all times; the details of this policy are given in the brochure, “Academic integrity at Roanoke College.” In particular you are expected to do your own work on all tests and on all hand-in assignments.

CALCULATOR/TECHNOLOGY POLICY
You certainly are encouraged to use your calculator to help with any work done in this course. During tests, however, you may not, under any circumstances, share a calculator with another student. Also, during tests all cell phones and other communication devices must be shut off and out of sight.