

MATH 109 - Elementary Probability and Statistics

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Course Description: This course is intended to introduce students to the basic concepts of study design, data collection, data analysis and statistical inference. Topics include an overview of observational and experimental study designs, graphical and numerical descriptive statistics, probability distributions for simple experiments and random variables, sampling distributions, confidence intervals and hypothesis testing for the mean and proportion in the one sample case. The emphasis is on developing statistical reasoning skills and concepts; computational skill is secondary.

Text: *Statistics, 4th edition*, by Freedman, Pisani, & Purves

Grading:

There will be three tests during the semester. Tentative test dates: 2/15, 3/28, & 4/18. You are expected to take each test at the scheduled time. **Makeup exams** will be provided if you can not come to the class because of documented illnesses, emergencies, and University duties etc. **The final exam will be given on Tuesday, May 6, 9am – 12 noon during the math block exam time. All Math 109 students will take essentially the same exam at the same time, therefore, the date and time of the exam are not negotiable.**

Quizzes may be unannounced when given, but mainly will be given on Fridays when announced. Quizzes can not be made up. Homework will be assigned however not collected. Learning mathematics requires practice. It is well-advised to practice by doing the homework.

Points:

300 tests, 100 quizzes, 100 group projects and 200 final
= 700 points

Grade Scale: Grading will be on a 10 percentage point scale with approximately 2-3 pts reserved for a (+) or a (-) grade.

You will be expected to read and study the reading assignment and make your best attempt to work the given exercises prior to the next class meeting. There will be concepts discussed in the reading assignment that we may not cover in class. My goal in class is to provide you with a basic introduction to the material so that you will be able to read and understand the textbook.

Attendance: You are expected to be **present, on time and prepared** for each scheduled class meeting. You are expected to **remain for the entire class. You should not leave the room once class has started unless it is an emergency.** If you miss a class, it is your responsibility to contact a classmate to find out what we discussed and to get caught up with the class before our next class meeting. **Group Assignments:** Periodically, we will work on in-class projects and practice problems in groups during class. **You must be present to receive credit for the assignment.**

Calculators and Computers: You will need to bring a calculator daily to class. Any calculator below TI-92 is acceptable. If you forget to bring your calculator to a quiz or exam, you are out of luck---**sharing is not allowed.** I will communicate with you regularly through your WFU e-mail account. You should check your WFU e-mail account regularly or arrange forwarding to an account that you do check regularly.

Academic Needs: It is the responsibility of any student with a disability who requests a reasonable accommodation to contact Learning Assistance Center (758-5939) for further assistance, if you haven't already done so.

Honor Policy: All work turned in for a grade in this course is expected to be your work and yours alone. All information presented by you concerning your performance is expected to be true. Any suspected violations of the Wake Forest University Honor Code that come to my attention will be reported to the Honor Council.

University emergencies: The requirements stated on this syllabus may be revised if classes are cancelled for an extended period of time due to emergency or illness.

Dr. Cotwright's suggested assignments for MTH 109; *Statistics, 4th edition*, by Freedman, Pisani, & Purves.

Please note that these assignments may be changed based on time constraints.

Homework list:

Note that these dates are subject to change (although I expect to be able to stick to this schedule).

<p>Chapter 1: no homework</p> <p>Chapter 11: do: A4,7, B1, D3, E1 hand in: p.198 #3,5 due Friday 10/5</p> <p>Chapter 20: do: A1,2,5, B1,3 C1,3 hand in: p.371 #2,3,6,12 due Monday 11/12</p> <p>Chapter 2: do: A1, 3, 5, 13, 15 hand in: p.24 #1,2,4,9 due Friday 9/14</p> <p>Chapter 12: do: A1,2, B1 hand in: p.214 #3,4 due Friday 10/12</p> <p>Chapter 21: do: A1,2,4-6, B2, C4, D1 hand in: p.392 #5-8,12 due Monday 11/12</p> <p>Chapter 3: do: A4,7, D1, E1 hand in: p.50 #1,4a,b,c,10,11 due Friday 9/14</p> <p>Chapter 13: do: A1-5, B1-3, C2-4, D1-3,5,8 hand in: p.234 #2,5,7,9,10 due Friday 10/12</p> <p>Chapter 23: do: A3-5,10, B1,2,5,7, D1 hand in: p.425 #1,2,8,12 due Monday 11/19</p> <p>Chapter 4: do: A1,3,6, B1,2,5, C1, D1,6, E2,8 hand in: p.74 #2,3,6,7,9 due Friday 9/21</p> <p>Chapter 14: do: A1,2, B1-5, C1-3, D3,4,7 hand in: p.252 # 1,3,6,9 due Wednesday 10/17</p>	<p>Chapter 24: do: A1,3, B2,5, C2,7,8 hand in: p.455 #1,3,6 due Monday 11/19</p> <p>Chapter 5: do: A1, B1,3, C1,2, D4, E1,3 hand in: p.94 #4,5,7,9,11 due Friday 9/21</p> <p>Chapter 15: do: A1,3,4 hand in: p.261 #2-4,11 due Wednesday 10/17</p> <p>Chapter 25: do: - Hand in: p. 470 #3,4,5 due Monday 11/26</p> <p>Chapter 6: do: - hand in: p.104 #3,4 due Friday 9/28</p> <p>Chapter 16: do: A1,2,4, B3,4, C1-3 hand in: p.285 #1,6,8 due Monday 10/29</p> <p>Chapter 26: do: A1,2,3, B1,2, C1,3, D1-4, E1,2,7, F2,4,6 hand in: p.496 #3,4,8,10 (#10 note: box SD = 40) due Monday 11/26</p> <p>Chapter 8: do: A6, B1,2,3,6, C2,3, D2 hand in: p.134 #1,5,10,11,12 due Friday 9/28</p> <p>Chapter 17: do: A1,2,6, B2,3, C2,5,6, D1,2, E1,3,6 hand in: p.304 #1,4,6,8,9,12 due Monday 10/29</p> <p>Chapter 27: do: A2,3, B1,6,7,9, C1, D2 hand in: p.518 #2-4,8,10 due Friday 11/30</p> <p>Chapter 9: do: A2,9, B1,3, C4, D2, E3 hand in: p.153 #2,3,8,12 due Friday 9/28</p> <p>Chapter 18: do: A1,4,6, B1-3,5, C2,6 hand in: p.327 #3,5,6,10 due Friday 11/2</p> <p>Chapter 28: do: A1,2,4,5,7, B3, C3 hand in: p.541 #3,7-9 due Friday 12/7</p> <p>Chapter 10: do: A1,2,4, B3, C1,2,</p>
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	D1 hand in: p.176 #1,3,4,5 due Friday 10/5 Chapter 19: do: A1,4,6,8,11,12 hand in: p.351 #5,9,11 due Friday 11/2 Chapter 29: do: A2, B1,5-9, C1,4, D1,2, E3,4 hand in: p.563 #1,4,7,9,11 due Wednesday 12/12
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The tentative schedule is as follows:

Week Topic Readings

- 1 Introduction to class, controlled experiments, observational studies Ch 1, 2
- 2 Sample surveys, histogram Ch 19, 3
- 3 Average, standard deviation, normal approximation Ch 4, 5
- 4 Correlation, regression Ch 8, 9
- 5 More regression, midterm review Ch 10
- 6 RMS error for regression, regression line Ch 11, 12
- 7 Law of averages, expected value, standard error Ch 16, 17
- 8 Normal approximation, chance errors in sampling Ch 18, 20
- 9 Accuracy of percentages and averages Ch 21, 23
- 10 Hypothesis tests Ch 26, 27
- 11 More hypothesis tests Ch 29