

Mathematics 107 - Introduction to Probability and Statistics
Spring, 1997 - Mrs. Susan Riner

Text: Elementary Statistics, 6th ed. Mario F. Triola [Optional: Solutions Book]

Materials: Calculator* and Math 107 Notebook

Course Content: Visual displays of data, measures of central tendency and of variability, classification of data, counting, probability, Chebyshev's Theorem, normal distribution, binomial distribution, Central Limit Theorem, hypergeometric distribution, Confidence Intervals, Hypothesis testing (means, proportions, variances), Simple linear Regression and correlation, Analysis of Variance (one way), Contingency Tables, nonparametric tests (Wilcoxon Rank-Sum and Kruskal-Wallis Tests).

Goals: At the end of this course students should be able to: categorize a data set; work various simple probability problems; understand the role of functions in statistics; describe major misuses of statistics, recognize several distributions and characterize them; analyze interval data for which statistical tests involving means, proportions, medians, rankings, and variances are the parameters; interpret relationships in bivariate data; know the difference between parametric and nonparametric statistics in relation to inherent assumptions of the general statistical model; recognize the limitations of statistics; understand the role of statistics in analyzing data and in inference; use a computer and/or a calculator to find measures of central tendency, measures of variability, basic test statistics; interpret statistical findings in relation to the situation from which the data was drawn, describe the experimental nature of mathematical statistics, draw inferences using the vocabulary of statistics.

Grading: Grades will be determined by student performance on three tests; problem sets; top six quiz grades; and a comprehensive final exam:

3 tests @ 100	300	In general,	
3 home projects @ 100	300	A, A-:	900 points and above
4 quizzes @ 25	100	B+, B, B-:	800 - 899 points
2 experiments @ 50	100	C+, C, C-:	700 - 799 points
1 final	<u>200</u>	D+, D:	600 - 699 points
	1000 points	F:	below 600 points

Each test will have a minimum of 100 points and will be given on the following Fridays at 2:15 in Seney Hall: February 21, April 4, April 25. Tests should take around 75 minutes. Quiz dates are given on the attached homework assignment sheet. Each quiz has a potential minimum of 25 points. The best four quizzes are used to help determine your grade, however you must be present to gain quiz points. Quizzes should take from 15 to 30 minutes. Each experiment has a minimum potential of 50 points. Experiments are assigned when you arrive on the designated Fridays. Example

* The calculator needs to include: mean, standard deviation, permutations, combinations, correlation and regression. [TI-82, TI-83, TI-85, Sharp EL506G as examples.]

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experiments are provided in the notebook for this course. The best two experiments are used to help determine your grade, however you must be present to gain points. Each project is assigned at least one week prior to the due date. **No project will be accepted after the due date and time.** Your final exam will include material selected from the entire course. The final exam will be given at the time designated on the final exam schedule.

You may use your formula sheets and calculator for each test, quiz, experiment, project and the final exam. Room assignments are as follows: Seney 208 (10:00 MWF), Seney 209 (9:00 MWF), Seney 215 (9:30 TTh), Seney 310 (11:00 TTh), Seney 322 (12:30 TTh)..

Homework: The textbook homework problems will not be collected but are to benefit you. Review problems are included in the notebook for this course. You will need to stay current with the assignments.

To do well in this course, the average student will need to study about 3 hours outside of class for every class meeting or around 6 hours per week. Preparing projects and studying for quizzes and tests will take additional time.

Attendance: You are expected to attend all classes since you are responsible for work covered in class. An inordinate amount of absences will be handled in accordance with school policies.

You are expected to take tests at the scheduled times. Any conflicts or problems will be handled on an individual basis. If the excuse is considered legitimate by your instructor, arrangements will be made to take a test prior to the testing time. Since one quiz grade and one experiment grade are dropped, there is no provision for making up quizzes. Experiments involve group work that can not be made up. You must be present in order to take quizzes or to get credit for experiments.

Tutors: Student tutors are scheduled for a limited amount of time per week, in the evenings, in the Gregory Study room. If you have difficulty with homework problems, you may want to discuss these problems with tutors. A listing of tutors for mathematics courses, with times and places, may be found posted outside the mathematics offices after the first week of classes.

Office Hours: Check with your instructor. Offices are located on the first floor of Seney Hall.

HONOR CODE: THE HONOR CODE OF OXFORD COLLEGE APPLIES TO ALL WORK SUBMITTED FOR CREDIT POINTS TOWARD YOUR GRADE. ALL SUCH WORK WILL BE PLEDGED TO BE YOURS AND YOURS ALONE. YOU PLEDGE THAT WITH YOUR SIGNATURE.

Topics and Homework Assignments
Segment 1 - for Test 1

1/14 (Tu) or 1/15 (W) Introduction to Statistics

Section 1-2, p. 11: 1-18, 19, 21

Section 1-3, p. 15: 1-20 odd

Section 1-4, p. 22: 1-12, 13, 15

1/16 (Th) or 1/17 (F) Descriptive Statistics

Section 2-2, p. 42: 1-11 odd, 17, 19

Section 2-3, p. 51: 1, 3, 7, 11, 15

Section 2-4, p. 66: 1-11 odd, 17, 19, 29

1/20 (M) King Holiday

1/21 (Tu) or 1/22 (W) Descriptive Statistics

Section 2-5, p. 85: 1, 3, 7, 17, 19, 21, 23, 25

Section 2-6, p. 99: 19, 33,

Section 2-7, p. 109: 1, 3, 5

1/23 (Th) or 1/24 (F) Review

Notes for Descriptive pages 3 and 4 in notebook

Chp. 1, p. 29: 1, 5

Chp. 2, p. 114: 1, 3, 5, 6, 7, 11, 13, 15

Project 1 assigned

1/27 (M) or 1/28 (Tu) Fundamentals and Counting

Section 3-2, p. 130: 1-23 odd, 25

Section 3-6, p. 170: 1-39 odd, 41, 43

1/29 (W) or 1/30 (Th) Laws of Probability

Section 3-3, p. 139: 1, 5, 7, 9, 11

Section 3-4, p. 152: 1-27 odd, 29-32, 33, 37

Chp. 3, p. 176: 1-19 odd

Notes for Counting and Probability pages 5 and 6

1/31 (F) Experiment 1 at 2:15 in assigned rooms

Project 1 due

2/3 (M) or 2/4 (Tu) Review

Finish previous homework

Segment II - for Test 2

2/24 (M) or 2/25 (Tu) Confidence Intervals (Chapter 6)
Section 6-2, p. 302: 1-21 (odd)

2/26 (W) or 2/27 (Th) Hypothesis Testing-Means (Sections 7.1, 7.2)
Section 6.3, p. 311: 1-25 (odd)
Chapter 6, p. 331: 1, 5, 7, 9, 11, 13,
Section 7.2, p. 348: 1-11 (odd)

2/28 (F) Experiment 2 at 2:15 in assigned rooms

3/3 (M) or 3/4 (Tu) Hypothesis Testing-Means (Sections 7.3, 7.4)
Section 7-3, p. 363: 1-21 (odd)
Section 7-4, p. 374: 1-27 (odd)

3/5 (W) or 3/6 (Th) Hypothesis Testing - Proportions and Variances (Sections 7.5, 7.6)

Section 7-5, p. 383: 1-17 (odd)
Section 7-6, p. 393: 1-17 (odd)
Chapter 7, p. 399: 1, 3, 5, 9, 11, 13, 15, 19

3/7 (F) Quiz 3 at 2:15 in assigned rooms

Spring Break March 10-14

3/17 (M) or 3/18 (Tu) Review
Notes for Inference 1 pages 10, 11, 12, and 13

3/19 (W) or 3/20 (Th) Inferences from Two Samples (Sections 8.2, 8.3)
Section 8.2, p. 416: 1, 3, 5, 7, 11, 13
Section 8.3, p. 425: 1, 5, 9, 11, 15

3/21 (F) Quiz 4 at 2:15 in assigned rooms

3/24 (M) or 3/25 (Tu) Inferences from Two Samples (Sections 8.4, 8.5)
Section 8.4, p. 432: 1-15 (odd)
Section 8.5, p. 448: 1, 5, 7, 9

3/26 (W) or 3/27 (Th) Inference from Two Samples (Section 8.6)
Section 8.6, p. 461: 1-11 odd

3/28 Good Friday, no test, quiz, or experiment

Segment III - for Test 3

4/7 (M) or 4/8 (Tu) Correlation (Sections 9.1, 9.2)

Section 9.2, p. 487: 1-11 (odd)

4/9 (W) or 4/10 (Th) Simple Regression (Sections 9.3, 9.4)

Section 9.3, p. 504: 1-11 (odd)

Section 9.4, p. 514: 1, 3, 9a, 11a

Chapter 9, p. 528: 1, 3, 5

Project 2 due

4/11 (F) Experiment 3 at 2:15 in assigned rooms

4/14 (M) or 4/15 (Tu) ANOVA (Section 11/3)

Section 11.3, p. 597: 1-15 (odd)

Chapter 11, p. 614: 1, 2, 3, 4

Notes on Additional Parametric Models pages 17, 18, 19, and 20

4/16 (W) or 4/17 (Th) Contingency Tables (Section 10.2, 10, 3)

Section 10.2, p. 547: 1-15 (odd)

Section 10.3, p. 562: 1-15 (odd)

Chapter 10, p. 568: 1-7 (odd)

4/18 (F) Quiz 5 at 2:15 in assigned rooms

4/21 (M) or 4/22 (Tu) Wilcoxon Test and Kruskal-Wallis Test (Section 13.4 and 13.5)

Section 13.4, p. 679: 1-11 (odd)

Section 13.5, p. 688: 1-11 (odd)

Project 3 given

4/23 (W) or 4/24 (Th) Review

Chapter 13, p. 718: 9, 13, 17, 21

Notes for Nonparametric Models pages 21, 22, and 23

Test 3 on Friday, April 25 at 2:15 in assigned rooms.

4/28 (M) or 4/29 (Tu) Last Class Day

Project 3 due

Read History in Notebook pages 36-44