

ACHIEVE

Revisions

For

MGT450 Statistics

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Asbury College

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COURSE DESCRIPTION

An introduction to the fundamentals of the collection, analysis, and presentation of quantitative data to be used in decision-making procedures.

LEARNING OUTCOMES

The student will:

Chapter 1

1. Understand what is meant by statistics and learn the difference between descriptive statistics and inferential statistics, qualitative variable and quantitative variable, discrete variable and continuous variable.
2. Distinguish among the nominal, ordinal, interval and ratio levels of measurement.

Chapter 2

3. Learn to organize data in a frequency distribution.
4. Portray a frequency distribution in a histogram, frequency polygon and cumulative frequency polygon.
5. Present data using such graphic techniques as line charts, bar charts and pie charts.

Chapter 3

6. Calculate and learn characteristics of the arithmetic mean, median, mode, weighted mean and geometric mean.
7. Compute and interpret the range, the mean deviation, the variance and the standard deviation, and learn the characteristics, uses, advantages and disadvantages of each measure of dispersion.

Chapter 4

8. Develop and interpret a dot plot, scatter diagram and contingency tables.
9. Calculate and interpret quartiles, the interquartile range and the coefficient of variation, and use to create a box plot.

Chapter 5

10. Define the term *probability* and understand classical, empirical and subjective approaches to probability.

11. Understand the terms *experiment*, *event*, *outcome*, *permutations* and *combinations*.
12. Define the terms *conditional probability* and *joint probability*, and calculate probabilities applying rules of addition and multiplication.
13. Organize and compute probabilities using a tree diagram.

Chapter 6

14. Understand probability distribution, random variable, and calculate the mean, variance and standard deviation of a discrete probability distribution.
15. Distinguish between discrete and continuous probability and distributions.
16. Compute probabilities using the binomial probability distribution and Poisson distribution.

Chapter 7

17. Understand the difference between discrete and continuous distributions.
18. Compute the mean and the standard deviation for a uniform probability distribution.
19. Understand the normal probability distribution, calculate z values, and determine the probability that an observation will lie between two points or above or below a given value using the standard normal distribution.

Chapter 8

20. Understand a sample and methods for selecting a sample and construct a sampling distribution of the sample means.
21. Understand the central limit theorem and calculate confidence intervals for means and proportions.

Chapter 9

22. Define a *point estimate* and a *level of confidence*.
23. Construct a confidence interval for a population mean and a population proportion.
24. Determine the sample size for attribute and variable sampling.

Chapter 10

25. Understand hypothesis testing and the five-step hypothesis testing procedure and distinguish between a one-tailed and a two-tailed test of hypothesis.
26. Conduct a test of hypothesis about a population mean.
27. Conduct a test of hypothesis about a population proportion.

Chapter 13

28. Understand and interpret the terms *independent* and *dependent variable*.
29. Calculate and interpret the coefficient of correlation and the coefficient of determination.
30. Calculate the general form of the linear regression equation.

TEXTS AND MATERIALS**Text:**

Lind, Douglas A., William G. Marchal, and Samuel A. Wathen. *Basic Statistics for Business and Economics*. Sixth Edition. New York, NY: McGraw-Hill/Irwin, 2008. ISBN-10: 0-07-723096-5; ISBN-13: 978-0-07-723096-8 (Student Edition with CD-ROM).

Software:

Microsoft Office 2007 or XP. Be sure to have Excel installed. This is available at student rate from the Asbury Bookstore. It is also available on campus computers in Kinlaw Library.

Megastat for Microsoft Excel. This is on the CD-ROM that comes with the textbook. This needs to be installed before the second class. Megastat will be used during the first class session on the college computers in Kinlaw Library, where it is already installed. If a student has difficulty installing Megastat, the student must contact the instructor and/or Information Services as soon as possible.

Course Website:

Please use the course website at <http://discoverydev.asbury.edu/> regularly. All correspondence with the instructor should be done through the “To Professor” icon. As much work as possible should be submitted online. Grades and other resources will be available at the course website.

Computer:

Students must have computer access for assignments. If a student does not have a personal computer, computers are available in Kinlaw Library.

NO Calculator:

No statistical calculator is required. All coursework will be done in Excel or by hand.

STUDENT EVALUATION

Students in this accelerated course will be evaluated by the College's standard grading system. Refer to the Student Handbook or the College Catalog for further details. The criteria for determining that grade will be as follows:

1. **(30%) Completion of assigned exercises and reading** (see Student Assignments pages for exact assignments and due dates). All exercises may be completed, but the * **starred exercises** are to be turned in to the instructor. *Students do NOT have to copy the problems as part of their work.* Late assignments will be reduced by 5 points per day late and will not be accepted after one week late.
2. **(10%) Active participation in class discussion and group activities.** This includes paying attention, engaging in dialogue, avoiding distractions, etc. If a student is absent for any part of any class, the student's discussion grade will be reduced by the percentage of class missed. For example, if a student misses a whole class, the student would receive a zero for participation on that day. If a student misses 1 hour, the student's participation grade would be reduced by 25% - 4/4 points would be reduced to $\frac{3}{4}$ points.
3. **(20%) Completion of the Special Project which is due one week after the last class session.**
4. **(40%) Take Home Final.** Refer to the next section for instructions on the Take Home Final. Problems 1-10 are due at the beginning of the fifth class session; Problems 11-17 are due one week after the final class period. These should be delivered to the College, sent by e-mail or postmarked on that date. Turning in the Take Home Final late will result in a 10-point penalty in the final grade for each day late. Neither section will be accepted after 3 days late.

Attendance: Because of the intensive, progressive nature of this course, absences and tardiness cannot be made up. If a student must miss a class, the student is fully responsible for contacting the professor and making any effort necessary to catch up in the course. Absences and tardiness will adversely affect the student's grade, and any absences and tardiness beyond what is allowed in the ACHIEVE guidelines will result in automatic failure of this course.

Late Work Or Work Not Handed In: Any written exercise, the Special Project or the Take Home Final handed in after 6 p.m. on the due date will result in a reduction of the grade for that item and quite possibly the overall course. See above.

TAKE HOME FINAL

Carefully answer all questions. Be sure to answer *all parts* of each question and *show all* of your work.

**Remember, you will want to start working on these problems as you work through the chapters.

Do not wait until the end of the five weeks because these problems will take several hours of time and preparation.

Please show all work. Problems 1-10 are due at the beginning of the fifth class session; Problems 11-17 are due one week after the final class period.

Chapter 2

1. Listed are the weights of the 1998 Super Bowl Champion Denver Broncos starting lineup.

228	209	195	305	324	215
241	291	181	242	234	320
190	210	230	263	194	205
326	333	186	225	279	255

Organize the data into

- a frequency distribution and a cumulative frequency distribution by hand and by computer. Use a class interval of 30, with 180 as the lower limit of the first class (note that the computer will not do this automatically). Show your work.
- Draw a histogram for the data by computer.
- Develop a frequency polygon by computer.
- Draw a cumulative frequency polygon by computer.

Chapter 3

2. The manager of a fast-food restaurant selected several cash register receipts at random. The amounts spent by customers were \$12, \$15, \$16, \$10, and \$27. Compute by hand (show work) and by computer:
- range.
 - the mean deviation.
 - the sample variance.
 - the sample standard deviation.

3. The mean number of gallons of gasoline pumped per customer at Ray's Marathon Station is 9.5 gallons with a standard deviation of 0.75 gallons. The median number of gallons pumped is 10.0 gallons. The arithmetic mean amount of time spent by a customer in the station is 6.5 minutes with a standard deviation of 2 minutes.
 1. According to Chebyshev's theorem, what proportion (percent) of the customers spend between 3.30 minutes and 9.70 minutes at the station? (by hand)
 2. According to the Empirical Rule, what proportion of the customers pump between 8.00 gallons and 11.00 gallons? (by hand)
 3. Compute coefficient of variation for both the time spent at Ray's Marathon and the gasoline pumped. Comment on the relative dispersion of the two distributions. (by hand)

Chapter 4

4. Listed below are the selling prices (in thousands of dollars) of a sample of 19 homes sold by agents working in Franklin County, Ohio.

\$86 \$61 \$148 \$81 \$39 \$142 \$140 \$ 65 \$ 28 \$85
\$90 \$92 \$ 25 \$50 \$85 \$ 85 \$ 82 \$120 \$137

Determine the following by hand (show work) and by computer:

- a. The first quartile.
- b. The third quartile.
- c. The median.
- d. Draw a box plot for the data. What mistake does the computer make here?

Chapter 5

5. Five hundred adults over 50 years of age were classified according to whether they smoked or not, and if they smoked, were they a moderate or heavy smoker. Also, each one was asked whether he or she had ever had a heart attack. The results are given.

	Heart Attack		Total
	Yes	No	
Do not smoke	30	220	250
Moderate smoker	60	65	125
Heavy smoker	90	35	125
Totals	180	320	500

- What is the probability of selecting a person who either has had a heart attack, or who is a heavy smoker (by hand – show work)?
 - What is the probability of selecting a heavy smoker who did not have a heart attack (by hand – show work)?
6. A major corporation has branch offices in eight major cities in the United States and Canada. The company president wants to visit five of these offices. How many different trip combinations are possible (by hand – show work)?

Chapter 6

7. Eighty percent of trees planted by a woodlands conservation group survive. What is the probability that:
- 10 of the 12 trees just planted will survive (by hand – show work)?
 - at least 10 of the trees just planted will survive (by hand – show work)?

8. The number of connections on the Internet during any two-minute period is given by the following distribution:

Number of Times	Proportion
0	0.1
1	0.2
2	0.1
3	0.4
4	0.2

Construct a table using the same headings as the table on the top of page 171 in your text (by hand).

- Determine the mean number of times a connection is made during a two-minute period (by hand – show work).
- Determine the standard deviation of the number of connections made during a two-minute period (by hand – show work).

Chapter 7

9. A cola-dispensing machine is set to dispense a mean of 2.02 liters into a bottle labeled 2 liters. Actual quantities dispensed vary and the amounts are normally distributed with a standard deviation of 0.015 liters. Do all of the following by hand – show work.
- What is the probability a bottle will contain between 2.02 and 2.04 liters?
 - What is the probability a bottle will contain between 2.00 and 2.03 liters?
 - What is the probability a bottle will contain less than 2 liters?
 - How much cola is dispensed in the largest 4% of the drinks?
10. A new drug has been developed that is found to relieve nasal congestion in 90 percent of those with the condition. The new drug is administered to 300 patients with this condition. What is the probability that more than 265 patients will be relieved of the nasal congestion? (by hand – show work)

Chapter 8

11. The real estate company of Kulhman and Associates has five sales people. Listed below is the number of homes sold last month by each of the five associates. Bruce Kulhman, the owner, wants to estimate the population mean number of homes sold based on samples of three.

Associate	Number of Homes Sold
A. Sue Klaus	6
B. John Bardo	2
C. Jean Cannon	5
D. A.J. Kemper	9
E. Carol Ford	3

- If samples of size 3 are selected, how many different samples are possible (by hand – show work)?
 - List the various samples and compute the mean of each (by hand – show work).
 - Develop a sampling distribution of the means (by hand or by computer).
 - Draw graphs to compare the variability of the sampling distribution of the mean with that of the population (by computer). Discuss.
12. A sample of 64 cans of Planters Peanuts has a mean of 48 ounces and a standard deviation of 0.48 ounces. What is the probability of finding a sample with a mean of 47.88 ounces or less from the population?

Chapter 9

13. A state meat inspector in Iowa has been given the assignment of estimating the mean net weight of packages of ground chuck labeled "3 pounds." Of course, he realizes that the weights cannot be precisely 3 pounds. A sample of 36 packages reveals the mean weight to be 3.01 pounds, with a standard deviation of 0.03 pounds.
- What is the estimated population mean (by hand and by computer)?
 - Determine a 95 percent confidence interval for the population mean (by hand and by computer).

14. A large bank believes that one-third of its checking customers have used at least one of the bank's other services during the past year. How large a sample is required to estimate the actual proportion within a range of a plus and minus 0.04? Use the 98% level of confidence (by hand).

Chapter 10

15. The mean construction time for a standard two-car garage by Arrowhead Construction Company is 3.5 days. The time for the construction process follows the normal distribution. The construction process is modified through the use of "precut and assembled roof trusses" rather than onsite construction of roof rafters. This should shorten the construction time. A sample of 15 garages had a mean time of 3.40 days with a standard deviation of 0.8 days. Does use of the "precut and assembled roof trusses" decrease the construction time? Follow the five-step hypothesis testing procedure using the 0.05 significance level. Do by hand and show all work, including all steps.
16. The producer of a TV special expected about 40% of the viewing audience to watch a rerun of a 1965 Beatles Concert. A sample of 200 homes revealed 60 to be watching the concert. At the 0.10 significance level, does the evidence suggest that less than 40% were watching? Use the usual hypothesis testing format. What is the p -value? Do by hand and show all work, including all steps.

Chapter 13

17. A major oil company is studying the relationship between the daily traffic count and the number of gallons of gasoline pumped at company stations. A sample of eight company owned stations is selected and the following information obtained.

Location	Total Gallons of Gas Pumped	Traffic Count of Vehicles
West St.	120	4
Willoughby St.	180	6
Mallard Rd.	140	5
Pheasant Rd.	150	5
I-75	210	8
Kinzua Blvd.	100	3
Front St.	90	3
Indiana Ave.	80	2

- Develop a scatter diagram with the amount of gasoline pumped as the dependent variable (by computer).
- Compute the coefficient of correlation (by hand and by computer).
- Compute the coefficient of determination (by hand and by computer).
- Interpret the meaning of the coefficient of determination.
- Test to determine whether the correlation in the population is zero, versus the alternate hypothesis that the correlation is greater than zero. Use the 0.05 significance level (by hand).

LETTER TO STUDENTS

Please don't allow preconceived attitudes toward statistics to overcome your understanding and enjoyment of this course. Take the class one week at a time. Read the material and do all assigned problems and you will succeed.

Be assured that the mathematics is not especially difficult. Understanding and interpreting the statistics is more involved. The key to understanding all the information is learning the vocabulary and what it means as a statistic. Be mindful of all of the symbols and what each represents.

1. There are a great number of assigned problems. **Only those with stars must be handed in for a grade.** Some of you may need to work all of the problems; others may only need to do a few.
2. There is a CD-ROM with your text that has much information. There is a PowerPoint presentation of goals for each chapter. These are closely aligned with the Learning Outcomes for this statistics course.
3. The practice quizzes for each chapter are multiple choice and problems. For the multiple choice, you may grade the quiz; the problems are provided with answers but no solutions.
4. Those of you who have Excel on your computers may wish to use MegaStat to do some of the problems. MegaStat is installed when you install your CD if you have Excel on your computer. There is a file on the CD explaining how to use MegaStat.
5. You **DO NOT** need a statistics calculator for this course. If you are interested in purchasing one, the TI-83 Plus or the TI-84 are recommended.
6. Those of you who want to do the assigned problems from the Dataset Exercises will need to use Excel MegaStat. These data sets are found printed in Appendix A at the end of the book and are also included on the CD-ROM.
7. These data sets present the student with real-world applications of statistics and with more complex applications of the concepts.
8. The Special Project should be fun and is not particularly difficult. It is due one week after the last night of class and relies heavily on material throughout the entire course.
9. Don't forget to begin work on the Take Home Final as you study through the chapters. The material will be fresh in your mind and you won't be overloaded at the end of Week Five.

Again, relax and enjoy the class. You will soon be able to interpret all kinds of statistics. You will even know what it means when a poll is taken and statistics are given with a % error.

LOGISTICS CHART

Hour	Week 1	Week 2	Week 3	Week 4	Week 5
1	<p>Introduction to the Course</p> <p>What Is Statistics?</p> <p>Types of Statistics, Types of Variables, Levels of Measurement</p>	<p>Answer Questions from Week One Assignments</p> <p>Measures of Dispersion, Empirical Rule</p>	<p>Answer Questions from Week Two Assignments</p> <p>Contingency Tables, Tree Diagrams, Principles of Counting</p>	<p>Answer Questions from Week Three Assignments</p> <p>Finding Area under the Normal Curve, Normal Approximation to the Binomial</p>	<p>Answer Questions from Week Four Assignments</p> <p>What Is Hypothesis Testing? Five-Step Procedure for Testing a Hypothesis, One-Tailed and Two-Tailed Tests of Significance</p>
2	<p>Frequency Distributions, Histogram, Frequency Polygon</p>	<p>Dot Plots; Quartiles, Deciles and Percentiles; Box Plots; Skewness</p> <p>Break</p>	<p>What Is a Probability Distribution? Random Variables; Mean, Variance and Standard Deviation of a Probability Distribution</p>	<p>Sampling Methods, Sampling Error</p> <p>Break</p>	<p>Testing for a Population Mean, Small and Large Samples</p> <p>Break</p>
3	<p>Break</p> <p>Cumulative Frequency Distributions, Line Graphs, Bar Charts, Pie Charts</p>	<p>What Is Probability? Classical Probability, Empirical Probability, Subjective Probability</p>	<p>Break</p> <p>Binomial Probability Distribution, Poisson Probability Distributions</p>	<p>Using the Sampling Distribution of the Sample Mean, the Central Limit Theorem</p>	<p>Tests Concerning Proportions, Testing for a Population Mean: Small Sample</p>
4	<p>(continued)</p> <p>Mean, Median, Mode and Geometric Mean</p>	<p>Rules of Addition, Rules of Multiplication</p>	<p>Normal Probability Distributions, Standard Normal Distribution, Empirical Rule</p>	<p>Point Estimates and Confidence Intervals, Confidence Interval for a Proportion, Choosing an Appropriate Sample Size</p>	<p>What Is a Correlation Analysis? Coefficient of Correlation, Coefficient of Determination, Regression Analysis</p> <p>Course Evaluation</p>

STUDENT ASSIGNMENTS

*** Starred exercises are problems that should be handed in for a homework grade. Bring two copies to class – one to turn in at the beginning of class, one to use to take notes as the assignment is reviewed.**

Throughout these assignments – do by hand (show work) and then do by computer wherever possible. Dataset exercises only need to be done by computer if possible. Graphs only need to be done by computer unless otherwise noted.

Week One – DUE at Beginning of Week 2

Read Lind, Marchal and Wathen, Chapters 1, 2, and pages 57-73 of Chapter 3. Prepare written responses to the following exercises:

Chapter 1 (pp. 1-19)

1. Complete Self-Review 1-1 and 1-2.
2. Complete Exercises 1 and 3* (p. 14); 5*, 6*, 7*, 8* and 12* (pp. 16-17).
3. Complete Dataset Exercise 16* (p. 19).

Chapter 2 (pp. 21-43)

1. Complete Self-Review 2-2, 2-3, 2-4, 2-5, and 2-6.
2. Complete Exercises 5* and 6* (pp. 28-29); 8*, 9, 10*, 11, 12*, 14* (pp. 35-36); 15*, 16*, and 17* (pp. 41-42), 21 (p. 46), 31, 38*, and 42* (pp. 49-52).
3. Complete Dataset Exercise 48* (p. 53).

Chapter 3 (pp. 57-73)

1. Complete Self-Review 3-1, 3-2, 3-3, 3-4 and 3-5.
2. Complete Exercises 1, 3, 5 and 8* (p. 62); 14* and 16* (p. 64); 17 and 20* (p. 67); 28*, 30*, and 34* (p. 73).

Week Two - DUE at Beginning of Week 3

Read Lind, Marchal and Wathen, pages 73-93 of Chapter 3, all of Chapter 4, and pages 125-143 of Chapter 5. Prepare written responses to the following exercises:

Chapter 3 (pp. 73-93)

1. Complete Self-Review 3-6, 3-7, 3-8 and 3-9.
2. Complete Exercises 35, 36*, and 40* (pp. 77-78); 45 (p. 81); 51 and 52* (p. 84); 53, 55*, and 56* (p. 86).
3. Complete Dataset Exercise 78* (p. 93).

Chapter 4 (pp. 95-123)

1. Complete Self-Review 4-1, 4-2, 4-3, 4-4 and 4-5. Use direct formula to compute standard deviation.
2. Complete Exercises 5 and 6* (p. 102); 9 and 10* (pp. 105-106); 13 and 14* (p. 110—parts a and b); 30*, 31 and 34* (pp. 119-120).
3. Complete Dataset Exercise 38* (p. 121—part a).

Chapter 5 (pp. 125-134)

1. Complete Self-Review 5-1, 5-2, 5-3, 5-4.
2. Complete Exercises 1, 3, 4*, 5, 6*, 7, 8*, and 9 (pp. 133-134), 11, 12*, 13, 14*, 15, 17, 19, 20*, and 21 (pp. 139-140); 60* (pp. 157-158).
3. Complete Dataset Exercise 80* (p. 160).

Week Three - DUE at Beginning of Week 4

Read Lind, Marchal and Wathen, pages 140-161 of Chapter 5, all of Chapter 6, and pages 196-208 of Chapter 7. Prepare written responses to the following exercises:

Chapter 5 (pp. 140-161)

1. Complete Self-Review 5-5, 5-7, 5-8, 5-9 and 5-10.
2. Complete Exercises 23, 24*, 25, 27, 28*, 29 and 31 (p. 147-148); 32*–40* all (pp. 153-154); 67, 68*, 72*, and 75* (pp. 158-159).

Chapter 6 (pp. 164-173)

1. Complete Self-Review 6-1 and 6-2.
2. Complete Exercises 1, 3, 5 and 6* (pp. 171-172).

Chapter 6 (pp. 173-194)

1. Complete Self-Review 6-3, 6-4 and 6-5.
2. Complete Exercises 9, 11, 12*, 13, 14*, 15, 17 (p. 180); 19, 20*, 21, and 22* (pp. 182-183); 25, 27, 28*, 29, and 30* (p. 188); 33*, 38* and 46* (pp. 190-191).
3. Complete Dataset Exercise 58 (p. 193).

Chapter 7 (pp. 196-208)

1. Complete Self-Review 7-1, 7-2 and 7-3.
2. Complete Exercises 6* (p. 201), 7, 9, 10*, 11, and 12* (p. 208).

Week Four - DUE at Beginning of Week 5 along with Problems 1-10 of the Final Exam

Read Lind, Marchal and Wathen, pages 208-222 of Chapter 7, all of Chapter 8, and pages 257-276 and 279-289 of Chapter 9. Prepare written responses to the following exercises:

Chapter 7 (pp. 208-222)

1. Complete Self-Review 7-4, 7-5 and 7-6.
2. Complete Exercises 15, 16* (p. 212); 17, 18*, 19, 20*, and 21 (p. 215); 23, 25, 26*, 27, and 30* (pp. 217-218); 36*, 37, 38*, 49, 50*, and 51* (pp. 219-221).
3. Complete Dataset Exercise 54* (p. 222).

Chapter 8 (pp. 224-231)

1. Complete Self-Review 8-1 and 8-2.
2. Complete Exercise 2* (p. 231).

Chapter 8 (pp. 233-255)

1. Complete Self-Review 8-3, 8-4 and 8-5.
2. Complete Exercises 5, 6*, 9, and 10* (p. 237-238); 11 (pp. 244-245); 15, 16*, 17, and 18* (p. 248); 23*, 26*, 27, and 28* (pp. 250-251).
3. Complete Dataset Exercise 48 (p. 254).

Chapter 9 (pp. 257-276 and 279-289)

1. Complete Self-Review 9-1, 9-2, 9-3 and 9-5.
2. Complete Exercises 1, 2*, 3, 5, 6* (p. 265-266); 9, 11, 12*, 13, and 14* (p. 273); 15, 17, and 18* (p. 276); 23 and 26* (p. 282); 33, 34*, 40*, 41, 46*, and 47 (pp. 283-285).
3. Complete Dataset Exercise 68* (p. 287-288).

Week Five - DUE one week after last class along with Problems 11-17 of the Final Exam and the Special Project

Read Lind, Marchal and Wathen, Chapter 10 and pages 390-410 of Chapter 13.
Prepare written responses to the following exercises:

Chapter 10 (pp. 291-324)

Be sure that you study and understand this information. Create a chart listing the five steps of a hypothesis testing to follow as you work the problems.

Chapter 10 (pp. 291-306)

1. Complete Self-Review 10-1 and 10-2.
2. Complete Exercises 1, 2*, 3, 5, 6*, 7 (pp. 305-306).

Chapter 10 (pp. 306-324)

1. Complete Self-Review 10-3, 10-4 and 10-5.
2. Complete Exercises 9, 11, 12*, 13, and 14* (p. 311); 15, 16*, 17, 18*, 19, and 20* (pp. 313-314); 22*, 24* and 26* (pp. 317-318); 28*, 38* and 56* (pp. 319-323).
3. Complete Dataset Exercise 62* (p. 324).

Chapter 13 (pp. 390-410)

1. Complete Self-Review 13-1, 13-2 and 13-3.
2. Complete Exercises 1, 2*, 3, and 4* (p. 399); 7, 9, 10*, and 12* (p. 402); 13 and 18* (pp. 409-410).

SPECIAL PROJECT

Refer to the Wage data off of the CD which came with the textbook. This dataset includes information on the annual wages for a sample of 100 workers. Also included are variables relating to the industry, years of education, and gender for each worker. The key to understanding the variables is located in one of the appendices in the back of the textbook.

Use any of the statistical techniques from this course to prepare a report for the Fabrication Company's Human Resources department. This should be created either as a document in MS Word or MS Powerpoint. It should include statistics, tables, graphs, and written explanations of the statistics. Do NOT show the work behind each answer in this project – as this work would not be shown in a formal presentation for a company – but the results should be shown.

Use all 100 employees. Do NOT take a smaller sample.

The Director of Human Resources has specifically requested that all of the following issues be addressed in the report:

1. How much are the workers of the Fabrication Company getting paid? Give a nice overview of their wages.
2. Are their wages significantly related to anything? Like years of education? Industry? Gender?
3. The company's goal is that all employees will earn a decent salary. Is the mean annual wage greater than \$30,000?
4. Give an overview of how long employees have been with the company. Have most of the employees been with the company for at least 15 years?
5. Give an overview of the gender and ages of the employees. Are there more men than women? Is the workforce younger, that is, is their mean age less than 40 years?
6. How many of the employees are in the union? Is it greater than 15%?
7. Address any other issues that the Human Resources Department might find interesting and important.

Check out the questions for this data set at the end of the chapters covered in this course. This will assist in determining which statistical tests to use for which of the above questions.

Pay attention to presentation style, clarity, grammar, spelling, etc. These are a significantly part of the grade. Remember this should be written in layman’s terms – so that people who do not know statistics understand what is being discussed.

This is due one week after the last day of class – at the same time as the final exam. Material from all five class sections is needed to complete this assignment.

Grading Rubric

	F	D	C	B	A	
Overview of Wages	0	1-3.5	3.51-6.0	6.1-8.5	8.6-10	
Correlations with Wages	0	1-3.5	3.51-6.0	6.1-8.5	8.6-10	
Wages > \$30K?	0	1-3.5	3.51-6.0	6.1-8.5	8.6-10	
Overview of Longevity	0	1-2	2.5 - 3	3.5 - 4	4.5 - 5	
At least 15 years?	0	1-3.5	3.51-6.0	6.1-8.5	8.6-10	
Overview of Age, Gender	0	1-3.5	3.51-6.0	6.1-8.5	8.6-10	
Age < 40 years	0	1-3.5	3.51-6.0	6.1-8.5	8.6-10	
Overview of Union; > 15%?	0	1-3.5	3.51-6.0	6.1-8.5	8.6-10	
Other Issues?	0	1-2	2.5 - 3	3.5 - 4	4.5 - 5	
Appropriate use of graphs/tables	0	1-7	7.1 - 12	12.1- 17	17.1-20	
Grammar, Spelling	0	1-3.5	3.51-6.0	6.1-8.5	8.6-10	
Professionalism of the Presentation	0	1-7	7.1 - 12	12.1- 17	17.1-20	