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|----------------|---|
| Statistics 300 | – Introduction to Probability and Statistics (Course Code – 11497)  |
| Time           | – Summer 2014: MTuWTh 11:00 a.m. to 1:05 p.m. [6/16/2014 to 8/6/2014]   |
| Room           | – Elk Grove Center – Room EGA-115   |
| Instructor     | – Lawrence C. Larsen  |
| Phone          | – (916) 346-6324 : voice and text (please include Los Rios ID)  |
| Office         | – < no office on any campus >   |
| Office Hours   | – After each class from 1:10 to 1:30 p.m.   |
| e-mail:        | – <a href="mailto:larsenl@crc.losrios.edu">larsenl@crc.losrios.edu</a>  |
| Class Web Site | – <a href="http://web.crc.losrios.edu/~larsen/">http://web.crc.losrios.edu/~larsen/</a> (All letters, no numbers) |

## PREREQUISITES

The prerequisite for Statistics 300 is college Intermediate Algebra (Math 120 or Math 125) or higher college math class with a "C" or better. An automated system checks prerequisites before accepting enrollment requests.

## TEXTBOOK

*Essentials of Statistics*, 4<sup>th</sup> Edition by Mario F. Triola [any 4<sup>th</sup> edition format, such as paperback, e-book, loose leaf, etc. is OK].

The Texas Instruments Model TI-30X IIS or TI-30X IIB is **“required”**. This calculator is widely available for less than \$20.00 (tax included). A TI-30X will not work. If you insist on using a TI-83 or a similar calculator, you are on your own and should start a study group immediately.

## COURSE OBJECTIVES

1. Develop skills in understanding and applying basic statistical methods.
2. Develop an appreciation for the use of statistics in decision making, and an appreciation of its limitations.
3. Develop an ability to use computers and/or calculators for statistical analysis of data.

## COURSE DESCRIPTION

The course covers basic concepts, descriptive statistics, probability, random variables, probability distributions, parameter estimation, hypothesis testing, linear correlation, linear regression, contingency tables, and analysis of variance. Applications are made to business, social sciences, and natural/physical sciences.

## GRADING POLICY

Every student has the opportunity to earn an "A" in the class. Students are in competition with the material, not with each other (i.e., not graded on a "curve"). Grades are based on three exams and about 20 quizzes as follows:

|                   |               |  |
|-------------------|---------------|--|
| <b>Quizzes</b>    | <b>– 25 %</b> | <b>(Lowest quiz score is dropped in each of the three Units)</b> |
| <b>Unit1 Exam</b> | <b>– 25 %</b> | <b>(on Wednesday, July 2)</b>                                    |
| <b>Unit2 Exam</b> | <b>– 25 %</b> | <b>(on Monday, July 21)</b>                                      |
| <b>Unit3 Exam</b> | <b>– 25 %</b> | <b>(on Wednesday, August 6)</b>                                  |

**[no exams will be dropped]**

Exams and quizzes are "open notes and open book." Do not plan to look everything up during an exam or quiz. The exams are challenging, and many problems will not "look like" others that you have practiced, though they will involve the same principles. "Open notes and open book" simply means that you will need to be very well organized. If you need to find something in the book or in your notes, you should be able to locate it in 15 seconds or less.

Exercises from the book are assigned for practice in preparation for quizzes and exams. Solutions to these exercises should be collected in a spiral bound binder or in "blue books." Your work on these exercises will not be handed in or graded; it is considered part of your notes, and you can refer to these solutions during exams.

Letter grades will be determined by the following schedule:

|          |                       |
|----------|-----------------------|
| <b>A</b> | <b>-- 90 to 100 %</b> |
| <b>B</b> | <b>-- 80 to 89 %</b>  |
| <b>C</b> | <b>-- 70 to 79 %</b>  |
| <b>D</b> | <b>-- 60 to 69 %</b>  |
| <b>F</b> | <b>-- &lt; 60 %</b>   |

## POLICIES

1. Missed exams are very difficult to make up. Check the schedule and plan for all exams. Talk to the instructor well ahead of time if the schedule for an exam is a problem for you.
2. Attendance is taken every class session for every hour (new policy).
3. If you decide to drop the class, it is your responsibility to follow the prescribed procedures. If you just stop attending, you may end up with an "F" on your transcript.
4. Cell phones must be silenced in the classroom. Other noise-makers (pagers, laptops, etc.) must be quiet. Attention must be toward the class, so outside communications (texting, etc.) are not acceptable.
5. Honesty (doing your own work as assigned) is required. Students may collaborate on all practice problems and "take home" quizzes, but you should try them before accepting any help from others. The instructor will follow campus policies on academic integrity. Please take this seriously, get the benefit of doing all your own work, and expect to be caught and reported if you "cheat". To reduce temptations to cheat, exams may be copied before they are returned, and multiple versions of exams may be prepared so the answers your neighbor gets may not be the correct answers for you.

## RESOURCES

- Math Center (Enroll in  $\frac{1}{4}$  unit to get full access for whole semester)
  - informal tutoring
  - computers with special programs for statistical analysis
  - good place to get together and work with others in the class
- MESA (Math/Engineering/Science Achievement) Center
- Instructor
  - Phone or e-mail (call instructor to alert him if you send an e-mail)
  - Phone or e-mail early so we have time to handle your questions in a timely way
  - Desire2Learn (D2L) will be used to report quiz scores, exam scores, and current standing / final grades.

### Important Dates from the CRC website.

| <b>Summer<br/>2<sup>nd</sup><br/>8-week<br/>Term</b> | <b>Start-End<br/>Dates of<br/>Term</b> | <b>Last Day to Drop Class<br/>to Qualify for a Refund<br/>for Enrollment and<br/>Tuition Fee</b> | <b>Last Day to<br/>Drop Class<br/>Without<br/>Notation on<br/>Record</b> | <b>Last Day to<br/>Drop Class<br/>with a "W"<br/>Grade</b> | <b>Last Day to<br/>Petition for<br/>Pass/No Pass</b> |
|--|--|--|--|--|--|
| Full<br>Semester                                     | June 16 -<br>Aug 6                     | 06/20/2014   | 06/20/2014   | 07/24/2014   | 06/30/2014   |

## CONTACT NUMBERS

CRC Science/Math/Engineering Department (916-691-7204)

CRC Math Center (916-691-7459)

CRC Bookstore (916-691-7319)

CRC Admissions & Records (916-691-7411)

## **Student Learning Objectives (SLOs)**

### **Learning Outcomes and Objectives for Statistics 300**

*Upon completion of this course, the student will be able to:*

SLO 1: ORGANIZE, DISPLAY, DESCRIBE AND COMPARE REAL DATA SETS.

- Organize and display data appropriately by preparing tables and graphs.
- Analyze data by computing measures of central tendency, measures of dispersion, and measures of position.
- Analyze bivariate data for linear trends using the least-squares regression model and the correlation coefficient.

SLO 2: DISTINGUISH BETWEEN PROBABILITY MODELS APPROPRIATE TO DIFFERENT CHANCE EVENTS AND CALCULATE PROBABILITY ACCORDING TO THESE METHODS.

- Compute probabilities using the laws for sums, products, conditionals, and complements.
- Analyze both discrete and continuous probability distributions by considering areas under the graph of a function or a histogram.
- Use the normal and binomial probability distributions to compute probabilities.

SLO 3: APPLY INFERENTIAL STATISTICAL METHODS TO MAKE PREDICTIONS, DRAW CONCLUSIONS ABOUT HYPOTHESES, AND COMPARE POPULATIONS.

- Select the appropriate hypothesis test, perform the necessary computations and comparisons for the test, and explain the conclusion of the test.
- Test significance of correlation and make predictions based on linear trends using the least-squares regression model.
- Create and interpret confidence interval estimates for population parameters based on appropriate probability models.

*Additional Instructor Teaching Objectives (ITOs) –*

*Upon completion of this course, students will have improved their ability to:*

ITO 1: ADDRESS UNFAMILIAR ANALYTICAL SITUATIONS CALMLY AND WITH COURAGE.

ITO 2: INTERPRET THE MEANING OF ALGEBRAIC EXPRESSIONS USED IN STATISTICAL FORMULAS.

ITO 3: INCORPORATE STATISTICS INTO QUANTITATIVE AND QUALITATIVE THINKING ABOUT THE WORLD IN WHICH THEY LIVE.

**Except for the exam date, the given dates are approximate.**  
**Do problems when we have worked on the sections in class.**  
**These problem numbers relate to the 4<sup>th</sup> edition of Essentials of Statistics (Triola)**

| <b>Tentative Schedule Unit #1</b>  |   |  |
|--|---|--|
| <b>Date</b>  | <b>Chapter/Sections</b>                                     | <b>Sections in Textbook and Homework Exercises*</b>  |
| 6/16   | 1-1, 1-2  | 1-1(study the vocabulary on pages 4 and 5); Read section 1-2 and consider the odd problems 1-26.   |
| 6/17   | 1-3, 1-4  | 1-3(odd problems 1-27); Read section 1-4 and consider the odd problems 1-27.   |
| 6/18   | <b>Quiz 1</b><br>1-5, 2-2, 2-3, 2-4, 2-5                    | 1-5(odd problems 1-26); 2-2(1,2,3,4, and odd problems 5-15); 2-3(read only); 2-4(read only); Skip section 2-5.   |
| 6/19   | <b>Quiz 2</b><br>3-2, 3-3                                   | 3-2(1-4,5,7,9,21,33); 3-3(1-4,5,7,9,21,31,33)  |
| 6/23   | <b>Quiz 3</b><br>3-4, 4-2                                   | 3-4(1,2,3,4,5,7,9,13,15,17,19,21,25,29);<br>4-2(3,5,7,13,15,19,23,25, 27,29,33,35, and try #41 if you want to)   |
| 6/24   | <b>Quiz 4</b><br>4-3, 4-4                                   | 4-3(1,2,5,7,9,11,15,17,19,21,23,25,27,29,31,37);<br>4-4(2,3,4,5,9,11,13,15,17,19,21,23,27,29,31,32)  |
| 6/25   | <b>Quiz 5</b><br>4-5, 4-6                                   | 4-5(1,2,3,4,5,7,9,11,13,15,19,21,23,25,29)   |
| 6/26   | <b>Quiz 6</b><br>4-6, 5-2                                   | 4-6(1,2,3,4,5,7,9,11,13,15,17,23,25,27,31);<br>5-2(1,2,3,4,5,7,9,11,15,19,21,25,29,31)   |
| 6/30   | <b>Quiz 7</b><br>5-3, 5-4                                   | 5-3(1,2,3,5,7,9,11,13,21,23,29,31,41); 5-4(1,2,3,4,5,7,11,17)  |
| 7/1  | <b>Review for Unit #1 Exam</b>                              | Complete as many problems as you can in the Example Exam Questions for Unit1 (distributed to students and also available on WEB site) before this review session. Solutions will only be shown during class. |
| 7/2  | <b>Unit #1 Exam<br/>Wednesday, July 2<br/>(Room T.B.A.)</b> | Material from Chapters 1, 2, 3, 4, and 5<br>(Exam can be scheduled with the Assessment Testing Center from 2/25 – 2/27. Call 916-691-7528 two work days <u>before</u> the time you need.)                    |
| <p>* If necessary, the instructor may delay or delete from the schedule one or more quizzes. Homework exercises given here are only for your practice and will not be turned in to the instructor. Solutions to selected homework problems will be shown during class time, especially when students ask for solutions to particular problems. So, try the problems and ask questions.</p> |   |  |

**Except for the exam date, the given dates are approximate.  
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| <b>Tentative Schedule Unit #2</b> |   |   |
|-----------------------------------|---|---|
| <b>Date</b>                       | <b>Chapter/Sections</b>                                   | <b>Sections in Textbook and Homework Exercises*</b>   |
| 7/3                               | 6-2   | 6-2 (1,2,3,5,6,7,8, odd numbered problems 9-51)   |
| 7/7                               | <b>Quiz 8</b><br>6-3, 6-4                                 | 6-3 (1,2,3, odd numbered problems 5-27 and 31);<br>6-4 (read, but no assigned problems);  |
| 7/8                               | 6-5, 6-6, 6-7   | 6-5 (odd numbered problems 1-19);<br>6-6 (read, but no assigned problems)<br>6-7 (read, but no assigned problems)   |
| 7/9                               | <b>Quiz 10</b><br>7-3, 7-4                                | 7-3 (13,15,31,33,35);<br>7-4 (1,2,13,15,23,25,27)   |
| 7/10                              | <b>Quiz 9</b><br>7-2, 7-5                                 | 7-2 (3,4,5,7,11,13,21,23,25,27,33);<br>7-5 (2,9,11,23)  |
| 7/14                              | <b>Quiz 11</b><br>8-2, 8-3                                | 8-2 (5,7,9,11,13)   |
| 7/15                              | <b>Quiz 12</b><br>8-3, 8-4                                | 8-3 (3,7,9,11,13,17,26)<br>8-4 (no problems)  |
| 7/16                              | <b>Quiz 13</b><br>8-5, 8-6, and 8-2 for<br>p-value method | 8-5 (5,7,17,23,25)<br>8-6 (5,6,7,11,13,15,19)   |
| 7/17                              | <b>Review for<br/>Unit #2 Exam</b>                        | Complete as many problems as you can in the Example Exam Questions for Unit2 (distributed to students and also available on WEB site) before this review session.                 |
| 7/21                              | <b>Unit #2 Exam<br/>Monday, July 21<br/>(Room T.B.A.)</b> | Material from Chapters 6, 7, and 8<br>(Exam can be scheduled with the Assessment Testing Center from 4/1 – 4/3. Call 916-691-7528 two work days <u>before</u> the time you need.) |

\* If necessary, the instructor may delay or delete from the schedule one or more quizzes. Homework exercises given here are only for your practice and will not be turned in to the instructor. Solutions to selected homework problems will be shown during class time, especially when students ask for solutions to particular problems. So, try the problems and ask questions.

**Except for the exam date, the given dates are approximate.  
Do problems when we have worked on the sections in class.  
These problem numbers relate to the 4<sup>th</sup> edition of Essentials of Statistics (Triola)**

| <b>Tentative Schedule Unit #3</b>  |  |   |
|--|--|---|
| <b>Date</b>  | <b>Chapter/Sections</b>  | <b>Sections in Textbook and Homework Exercises*</b>   |
| 7/22   | 9-4, 9-3   | 9-4 (1,11,13,15,17); 9-3 (2, 5, 7, 9, 11 [unequal variation])   |
| 7/23   | <b>Quiz 14</b><br>9-3 (continued), 9-2<br>Extra Credit Option                              | 9-3 (13 and 29 [equal variation]) -- the answers in the book for #13 and #29 assume "unequal variation", so they will not be the correct answers for your work.<br>9-2 (1,3,5,13,17,21,25,27) |
| 7/24   | <b>Quiz 15</b><br>9-2 (continued), 10-2  | 9-2 (continued)<br>Presentation of 2% extra credit option<br>10-2 (1,2,3,4,5,7,11,13,15,27)   |
| 7/28   | <b>Quiz 16</b><br>10-2 (continued), 10-3   | 10-3 (2,9,13,15,17)   |
| 7/29   | <b>Quiz 17</b><br>10-3 (continued). 10-4   | 10-4 (5,7,9,10,11,12,13,17)   |
| 7/30   | <b>Quiz 18</b><br>11-2, 11-3   | 11-2 (7,9,11,12,15,17);<br>11-3 (17,19,21)  |
| 7/31   | <b>Quiz 19</b><br>11-3 (continued), 11-4   | 11-4 (6,7,13)   |
| 8/4  | Flexible period in case Unit3 material needs more time or to use for other class purposes. |   |
| 8/5  | <b>Review for Unit #3, Final Exam</b>  | Complete as many problems as you can in the Example Exam Questions for Unit3 (distributed to students and also available on WEB site) before this review session.                             |
| 8/6  | <b>Unit #3, Final Exam<br/>Wednesday, August 6</b>   | Material from Chapters 9, 10, and 11. (The Final Exam can be scheduled with the Assessment Testing Center for 5/17, 5/20, or 5/21. Call 916-691-7528 two work days before the time you need.) |
| <p>* If necessary, the instructor may delay or delete from the schedule one or more quizzes. Homework exercises given here are only for your practice and will not be turned in to the instructor. Solutions to selected homework problems will be shown during class time, especially when students ask for solutions to particular problems. So, try the problems and ask questions.</p> |  |   |