

Statistics 300	– Introduction to Probability and Statistics (Course Code – 14741)
Time	– Spring 2014: Tue/Thu 7:00 p.m. to 9:05 p.m. [1/21/2014 to 5/21/2014]
Room	– L-112 (bottom floor of Library building – northeast corner)
Instructor	– Lawrence C. Larsen
Phone	– (916) 346-6324 [phone or text]
Office	– <no office on campus>
Office Hour	– After each class from 9:10 to 9:35 p.m. in Library Room L-112
E-mail:	– <a href="mailto:larsenl@crc.losrios.edu">larsenl@crc.losrios.edu</a>
Class Web Site	– <a href="http://web.crc.losrios.edu/~larsenl">http://web.crc.losrios.edu/~larsenl</a> (All letters, no numbers)

**DROPS:** Enrolled students (also wait list) will be dropped by the instructor if they miss the first class session and do not contact the instructor (phone, e-mail, or text) before the first class ends.

## PREREQUISITES

Intermediate algebra (Math 120 or Math 125) with a "C" or better. An automated system checks prerequisites taken in the Los Rios District since 2003. Show older Los Rios grade reports to the instructor, but take transcripts from outside the Los Rios Community College District to the Counseling Center (2<sup>nd</sup> floor of the Library building), and have a counselor certify that the course you took satisfies the prerequisite for this class. Please give the instructor a Los Rios transcript, an assessment test record, or approval from the counseling office by the close of the 4<sup>th</sup> class. Instructor can accept math above algebra (trigonometry, pre-calculus, etc.) if the course was taken at a college. High School AP not taken at a college must go to counseling.

## TEXTBOOK and CALCULATOR

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

Calculator: 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). Instructor will not explain any graphing calculator.

## 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

Everyone can earn an "A" in the class. Students compete 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>(One quiz will be dropped in each of the three Units)</b>
<b>Unit1 Exam</b>	<b>– 25 %</b>	<b>(on Thursday, February 27)</b>
<b>Unit2 Exam</b>	<b>– 25 %</b>	<b>(on Thursday, April 3)</b>
<b>Unit3 Exam</b>	<b>– 25 %</b>	<b>(Final Exam on Tuesday, May 21)</b>
<b>[no exams will be dropped]</b>		

Exams and quizzes are "open notes and open book." Do not plan to look everything up during an exam or quiz. Exams are challenging, and some problems will not "look like" those you have practiced, though they will involve the same principles. "Open notes and open book" means you must be well organized. You should be able to find what you need in the book or in your notes within 15 seconds.

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, but it is considered part of your notes, so you can refer to them 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>

## OTHER 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.
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 OFF in the classroom, so they do not interfere with the broadcast signal. 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 cooperate on all practice problems and "take home" quizzes, but you should try them before working with 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 for full access for the whole semester)
  - informal tutoring
  - good place to get together and work with others in the class
- MESA (Math/Engineering/Science Achievement) Center
- Instructor
  - See front page of syllabus for contact information
  - Phone
  - e-mail (text instructor to alert him if you send an e-mail)
  - Text (better than email)
- Desire2Learn (D2L) is a gateway to class resources on the web, to archived videos of class sessions, to grades for quizzes and exams. On D2L, you will find a required form to be completed and submitted before in-classroom (broadcast) participation.

### Important Dates from the CRC website.

Spring Term 2014	Start-End Dates of Terms	Last Day to Drop Class to Qualify for a Refund for Enrollment and Tuition Fee	Last Day to Drop Class Without Notation on Record	Last Day to Drop Class with a "W" Grade	Last Day to Petition for Credit/No Credit
Full Semester	1/18 – 5/21 (Last day to enroll is 2/2)	1/31	2/2	4/20	2/21

## 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 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>
1/21	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.
1/23	1-3, 1-4	1-3(odd problems 1-27); Read section 1-4 and consider the odd problems 1-27.
1/28	1-5	1-5(odd problems 1-26)
1/30	<b>Quiz 1*</b> 2-2, 2-3, 2-4, 2-5	2-2(1,2,3,4, and odd problems 5-15); 2-3(read only); 2-4(read only); Skip section 2-5.
2/4	<b>Quiz 2</b> 3-2, 3-3	3-2(1-4,5,7,9,21,33); 3-3(1-4,5,7,9,21,31,33)
2/6	<b>Quiz 3</b> 3-4, 4-2	3-4(1,2,3,4,5,7,9,13,15,17,19,21,25,29); 4-2(3,5,7,13,15,19,23,25,27,29,33,35, and try #41 if you want to)
2/11	<b>Quiz 4</b> 4-3, 4-4	4-3(1,2,5,7,9,11,15,17,19,21,23,25,27,29,31,37); 4-4(2,3,4,5,9,11,13,15,17,19,21,23,27,29,31,32)
2/13	<b>Quiz 5</b> 4-5, 4-6	4-5(1,2,3,4,5,7,9,11,13,15,19,21,23,25,29)
2/18	<b>Quiz 6</b> 4-6, 5-2	4-6(1,2,3,4,5,7,9,11,13,15,17,23,25,27,31); 5-2(1,2,3,4,5,7,9,11,15,19,21,25,29,31)
2/20	<b>Quiz 7</b> 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)
2/25	<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.
2/27	<b>Unit #1 Exam, Thursday, Feb. 27 7:00-9:05 p.m. (Room T.B.A.)</b>	Material from Chapters 1, 2, 3, 4, and 5 (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.)
* 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.		

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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>
3/4	6-2	6-2 (1,2,3,5,6,7,8, odd numbered problems 9-51)
3/6	<b>Quiz 8</b> 6-3, 6-4	6-3 (1,2,3, odd numbered problems 5-27 and 31); 6-4 (read, but no assigned problems);
3/11	6-5, 6-6, 6-7	6-5 (odd numbered problems 1-19); 6-6 (read, but no assigned problems) 6-7 (read, but no assigned problems)
3/13	<b>Quiz 10</b> 7-3, 7-4	7-3 (13,15,31,33,35); 7-4 (1,2,13,15,23,25,27)
3/18	<b>Quiz 9</b> 7-2, 7-5	7-2 (3,4,5,7,11,13,21,23,25,27,33); 7-5 (2,9,11,23)
3/20	<b>Quiz 11</b> 8-2, 8-3	8-2 (5,7,9,11,13)
3/25	<b>Quiz 12</b> 8-3, 8-4	8-3 (3,7,9,11,13,17,26) 8-4 (no problems)
3/27	<b>Quiz 13</b> 8-5, 8-6, and 8-2 for p-value method	8-5 (5,7,17,23,25) 8-6 (5,6,7,11,13,15,19)
4/1	<b>Review for 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.
4/3	<b>Unit #2 Exam</b> <b>Thursday, April 3</b> <b>7:00-9:05 p.m.</b> <b>(Room T.B.A.)</b>	Material from Chapters 6, 7, and 8 (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>
4/8	9-4	9-4 (1,11,13,15,17);
4/10	<b>Quiz 14</b> 9-2 Extra Credit Option	9-2 (1,3,5,13,17,21,25,27) Presentation of 2% extra credit option
Easter Vacation / Spring Recess: April 14 - 18		
4/22	9-3	9-3 (2, 5, 7, 9, 11 [unequal variation], 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.
4/24	<b>Quiz 15</b> 10-2	10-2 (1,2,3,4,5,7,11,13,15,27)
4/29	<b>Quiz 16</b> 10-3; 10-4	10-3 (2,9,13,15,17)
5/1	<b>Quiz 17</b> 10-4	10-4 (5,7,9,10,11,12,13,17)
5/6	11-2	11-2 (7,9,11,12,15,17)
5/8	<b>Quiz 18</b> 11-3; 11-4	11-3 (17,19,21)
5/13	<b>Quiz 19</b> 11-4 <b>Begin Review for Final Exam</b>	11-4 (6,7,13)
5/15	<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.
5/20	<b>Unit #3, Final Exam</b> <b>Tuesday, May 20</b> <b>7:45 – 9:45 p.m.</b> <b>(Room T.B.A.)</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 <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>		