

## Math 227, Statistics

West Los Angeles College    www.wlac.edu

9000 Overland Ave., Culver City, CA 90230

Section 4492, Spring 2015

Transfer: UC:CSU; Units: 4

Class meets Tuesday & Thursday evenings from 7:15–9:20 p.m. in MSA 202

**Instructor**                    Prof. Nancy Foreman  
**E-mail**                            foremann@wla.edu  
**Office hour**                    Tuesday 3:10–4:05 pm in MSB 214, or by appointment.

**Prerequisite**                    Mathematics 125 or equivalent, with a grade of 'C' or better, or appropriate placement level demonstrated through math assessment process.

**Textbook**                        *Statistics: Informed Decisions Using Data* (3rd ed.), by Michael Sullivan

**Calculator**                    A graphing calculator is a necessary aid for the course and is required. Use of calculators for statistics will be discussed in class. Supported models include all TI-83, TI-84, all Casio FX9750 and Casio FX9860; other models, provide your own manual. No cell phones, computers, or other communication or internet devices are permitted on exams.

**Course description**    This course is an introduction to probability, measures of central tendency and dispersion, descriptive and inferential statistics including sampling, estimation, hypothesis testing, analysis of variance, chi-square and test, linear correlation and regression analysis.

**Important dates**                    First class meeting: February 10  
Projected Exam Dates: Feb. 26, March 19, April 16, May 5, May 26  
Last day to drop without a “W”: Feb. 20  
Holiday, No Class: Mar. 31 (Cesar Chavez Day), April 4–April 10 (Spring Break)  
Last day to drop with a “W”: May 8  
Last regular class meeting: Thursday, May 28  
**Final Examination: Thursday, June 4, 2015 from 7:15- 9:20 p.m.**

<b>Evaluation is based on</b>	5 Exams (100 points each, lowest score dropped)	400 pts.
	In Class Worksheets	total 100 pts.
	Weekly Homework Quiz (10 pts each)	total 100 pts.
	Comprehensive Final Exam	<u>200 pts.</u>
	<b>Total</b>	<b>800 pts.</b>

<b>Grading scale</b>	720 –800 points	A
	640 –719 pts	B
	560 –639 pts	C
	480 –559 pts	D
	less than 479 pts	F

**Special circumstances** Students with disabilities or those who need accommodation for any reason must communicate with the instructor in a timely manner to ensure their needs are met. Any paperwork needed must be completed in advance. Contact Disabled Students Programs and Services located in SSB 320 (phone 310-287-4450).

**Attendance & participation policy** Students who are pre-registered in a class and miss the first meeting lose their right to a place in the class. Every enrolled student is expected to attend every class, arriving on time and staying for the full class session. Attendance will be taken during each class; if roll call is missed, the student is marked absent. Students are expected to participate in all class activities, which may include worksheets, group work, or other activities. To avoid being dropped from class, students should contact the instructor (email [foremann@wlac.edu](mailto:foremann@wlac.edu)) when they must be absent for emergency reasons. If a student is absent more hours than the number of hours the class meets per week, and there are no mitigating circumstances which may justify the absences, the student may be excluded from the class. Students are encouraged to advise their instructor by email of anticipated absences. Note: if a student decides they cannot complete the class, it is the student's responsibility to drop (withdraw) on or before May 8, 2015.

**Makeups, Late Work, Extra Help** The lowest test score, and the lowest quiz score, will be dropped. Makeup exams are given only in extraordinary conditions and are greatly discouraged. Any makeup exams administered will be given during instructor's office hour only. No makeups are possible on quizzes. Late work may be submitted on June 4 (Final Exam Night) for partial credit (up to one-half the original point score). Plan to attend every class session. If you must miss a class, email [foremann@wlac.edu](mailto:foremann@wlac.edu) in advance. For extra help, you can look for an instructional video at [www.khanacademy.com](http://www.khanacademy.com) or on YouTube. If you can't figure it out on your own, consult a tutor or use the instructor's office hour to get help. The textbook publisher maintains a free online homework site at <http://interactmath.com/home.aspx>; select our textbook from the drop down menu to work problems from the review sections for each chapter. Another resource is the instructor's message board found at <http://foreman-wlac-math.freeforums.net>.

**Etiquette & Discipline** Please respect your classmates and the instructor, and refrain from disruptive behaviors such as coming late, leaving early, wandering in and out of class, eating or drinking during class, side conversations, instant messaging, websurfing, etc. If you are in doubt, consider if your behavior is distracting or disruptive to others. If so, please stop. Let us maintain a civil atmosphere conducive to learning and thought. All college rules and regulations will be enforced; see the West Los Angeles College Catalog for more information. Student discipline rules are found at <https://www.laccd.edu/Board/Documents/BoardRules/Ch.IX-ArticleXI.pdf>

**Academic dishonesty** Cheating will not be tolerated. Maintain the highest standards of academic honesty. You may not give or receive help on tests or quizzes, and you may not turn in someone else's work as your own. If academic dishonesty is detected, a score of zero will be assigned, and the student(s) involved may be reported to the administration.

**How to pass.** Attend class, complete all homework and worksheets, stay on top of things and don't fall behind. Practice until you have mastered each new technique. We're not kidding about the 8 hours study time per week (or more, in some cases). No special talent is required, just time, thought, and attention to detail.

**Extra Credit:** Up to 20 points extra credit may be awarded for student work such as bad graph documentation, essays, or other projects.

**Instructional Methods** This course is taught using a variety of instructional methods which may include but are not limited to lecture, class discussion, small group work, in-class worksheets.

**Homework** Homework and reading are assigned for each covered section. Homework is not collected. Students who wish to pass will complete all homework in a timely fashion. The homework and reading list below is given as a guide. Assignments may be modified as circumstances dictate. The day's schedule and the projected schedule for the next class will be posted on the board along with other important information.

**How to read your statistics book** Reading is assigned for each covered section of the text. Before each class, skim over the sections that will be covered that day. Begin to familiarize yourself with the vocabulary and subject matter before class begins. After the material has been covered in class, re-read as necessary for understanding. If possible, work all homework problems before the next class begins. In any case, follow the reading procedure before each class.

## **Student Learning Outcomes**

### **Institutional SLOs**

- A.) Critical Thinking: Analyze problems by differentiating fact from opinions, using evidence, and using sound reasoning to specify multiple solutions and their consequences.
- C.) Quantitative Reasoning: Identify, analyze, and solve problems that are quantitative in nature
- F.) Technical Competence: Utilize the appropriate technology effectively for informational, academic, personal, and professional needs.

### **Program SLOs**

- 1) Apply quantitative thinking processes using basic mathematical operations to solve common academic, workplace, and family problems. (Theme: mathematical operations)
- 2) Analyze and interpret spatial and graphic data (schedules, maps, and tables, graphs) to plan and organize daily routines. (Theme: spatial and graphic data).
- 3) Use mathematical tools essential for analyzing quantitative problems and for producing solutions. (Theme: mathematical tools)
- 4) Apply advanced mathematical concepts and tools (algebra, calculus) essential in upper division academic work and/or workplace tasks. (Theme: advanced mathematical operations—algebra, calculus)
- 5) Select appropriate math strategies for solving and handling real life problems involving finance, economics, and family issues. (Theme: mathematical problem-solving)

## Course SLOs

1. Given a set of sample data, students will perform a hypothesis test and correctly interpret the result.
2. Students will use a data set to perform a simple linear regression analysis, using appropriate technology, and use the results to create and interpret the sample linear regression equation and assess its utility.
3. Students will use mathematical principles of probability and symbolic representations to interpret discrete and continuous random variables, sampling distributions and confidence intervals.

**COURSE OBJECTIVES:** Upon successful completion of this course, the student will be able to...

1. Compute the measures of Central Tendency: the mean, mode, median, as well as the quartiles and percentiles of grouped or ungrouped data.
2. Compute the measures of variations, standard deviations, variance, and range of grouped or ungrouped data.
3. Find and exhibit the probability of events and the Z-score of sample data.
4. Identify, demonstrate and apply the use of the Binomial and Normal Distribution in statistical applications.
5. Explain and use the Central Limit Theorem.
6. Make inferences of population parameters.
7. Describe and use the Chi Square distribution.
8. Describe and explain statistical estimation and test of hypotheses.
9. Test hypotheses of population parameters from sample data.
10. Discuss and write a linear model for the relationship between two variables.
11. Apply these concepts to diverse disciplines, i.e., psychology, sociology, political science.

## Homework and Reading Assignments, by book section

### Homework Set 1 Complete by Feb. 26

- Section 1.1: Read pp. 3–11, Work Exercises 1–47 odd, 55, 57, 61  
Section 1.2: Read pp. 15–20, Work Exercises 1–8, 9–21 odd  
Section 1.3: Read pp. 22–27, Work Exercises 1–5, 7–13 odd  
Section 1.4: Read pp. 30–36, Work Exercises 6–10, 11–21 odd, 25, 29, 31, 37  
Section 1.5: Read pp. 38–42, Work Exercises 4, 6, 8–12, 13–17 odd, 21, 23, 28  
Section 1.6: Read pp. 45–53, Work Exercises 1, 3, 7–9, 13, 21, 34

- Section 2.1: Read pp. 67–73, Work Exercises 3–6, 8, 13, 17, 23  
Section 2.2: Read pp. 82–93, Work Exercises 1–4, 9–13 odd, 19, 23, 25, 31, 35  
Section 2.3: Read pp. 102–105, Work Exercises 2–4, 7, 9  
Section 2.4: Read pp. 110–115, Work Exercises 1–5, 7(a), 9(ab), 11–13

- Section 3.1: Read pp. 129–137, Work Exercises 1–5, 7–13 odd, 25, 31, 37, 41  
Section 3.2: Read pp. 143–153, Work Exercises 1, 2, 4–7, 10, 11–17 odd, 21, 31  
Section 3.3: Read pp. 160–164, Work Exercises 3, 5, 11  
Section 3.4: Read pp. 167–172, Work Exercises 2, 3, 15, 15, 21, 25  
Section 3.5: Read pp. 176–180, Work Exercises 3–9 odd

**Homework Set 2** Complete by March 19

Section 4.1: Read pp. 193–201, Work Exercises 2–4, 7, 8, 9–15 odd, 23–27 odd, 37, 39

Section 4.2: Read pp. 209–217, Work Exercises 2–4, 6, 8, 9, 11, 17–23 odd

Section 4.3: Read pp. 223–232, Work Exercises 1–29 odd

Section 4.4: Read pp. 238–244, Work Exercises 2–4, 5–11 odd

Section 5.1: Read pp. 258–268, Work Exercises 1–6, 11–39 odd, 47–55 odd

Section 5.2: Read pp. 274–281, Work Exercises 1–4, 5–39 odd, 45

Section 5.3: Read pp. 286–289, Work Exercises 4–6, 7–27 odd

Section 5.4: Read pp. 292–298, Work Exercises 3–17 odd, 23–33 odd

Section 5.5: Read pp. 301–311, Work Exercises 1–25 odd, 31, 41, 43

**Homework Set 3** Complete by April 16

Section 6.1: Read pp. 331–339, Work Exercises 2–4, 7–27 odd

Section 6.2: Read pp. 343–354, Work Exercises 1–27 odd, 35, 37, 43–47 odd

Section 7.1: Read pp. 373–380, Work Exercises 1–33 odd

Section 7.2: Read pp. 385–394, Work Exercises 2, 5–43 odd

Section 7.3: Read pp. 397–401, Work Exercises 3–23 odd

Section 7.4: Read pp. 405–409, Work Exercises 1–7 odd, 11, 13

**Homework Set 4** Complete by May 5

Section 8.1: Read pp. 427–438, Work Exercises 1–23, 27

Section 8.2: Read pp. 442–448, Work Exercises 1–17 odd

Section 9.1: Read pp. 457–467, Work Exercises 1–21 odd, 25, 27, 33, 43, 45

Section 9.2: Read pp. 475–482, Work Exercises 1–19 odd

Section 9.3: Read pp. 488–493, Work Exercises 1–4, 5, 7, 11, 13, 15, 23, 27, 29, 31

**Homework Set 5** Complete by May 26

Section 10.1: Read pp. 515–521, Work Exercises 1–8, 9–37 odd

Section 10.2: Read pp. 523–535, Work Exercises 1–8, 11–25 odd

Section 10.3: Read pp. 541–547, Work Exercises 5–23 odd

Section 10.4: Read pp. 552–558, Work Exercises 1–19 odd

Section 11.1: Read pp. 583–590, Work Exercises 1, 2, 5–13 odd, 17

Section 11.2: Read pp. 595–602, Work Exercises 1–11 odd, 15

Section 11.3: Read pp. 608–614, Work Exercise 5–19 odd

**Homework Set 6** Complete by June 4

Section 12.1: Read pp. 645–651 Work Exercises 1–11 odd, 15

Section 12.2: Read pp. 656–664, Work Exercises 1, 7, 11, 13

**Proposed Class Schedule** (subject to change)

Tuesday	Thursday
<b>Feb. 10</b> Chapter 1: Data Collection	<b>Feb. 12</b> Chapter 2: Organizing Data
<b>Feb. 17</b> Sec. 3.1, 3.2: Mean & St. Deviation	<b>Feb. 19</b> Sec. 3.3, 3.4: Grouped Data, Position
<b>Feb. 24</b> Sec. 3.5: Boxplots, Review	<b>Feb. 26 Exam 1 (covers Chapters 1, 2 and 3)</b>
<b>March 3</b> Sec. 4.1, 4.2: Linear regression	<b>March 5</b> Sec. 4.3, 4.4: Diagnostics, Association
<b>March 10</b> Sec. 5.1, 5.2: Basic Probability	<b>March 12</b> Sec. 5.3, 5.4: Conditional Probability
<b>March 17</b> Sec. 5.5: Counting, Review	<b>March 19 Exam 2 (Ch. 4, 5)</b>
<b>March 24</b> Sec. 6.1, 6.2: Random Variables, Binomial Distribution	<b>March 26</b> Sec. 7.1, 7.2: Normal Distribution
<b>March 31</b> <i>Cesar Chavez Day- NO CLASS</i>	<b>April 2</b> Sec. 7.3, 7.4: Normal Distribution con't
<b>April 7</b> <i>Spring Break- NO CLASS</i>	<b>April 9</b> <i>Spring Break- NO CLASS</i>
<b>April 14</b> Review	<b>April 16 Exam 3 (Ch. 6, 7)</b>
<b>April 21</b> 8.1, 8.2: Sampling Distributions and Central Limit Theorem	<b>April 23</b> Sec. 9.1, 9.2: Confidence Intervals
<b>April 28</b> Sec. 9.3: Confidence Intervals for Proportions	<b>April 30</b> Review
<b>May 5 Exam 4 (Ch. 8, 9)</b>	<b>May 7</b> Sec. 10.1, 10.2: Hypothesis Testing
<b>May 12</b> Sec. 10.3, 10.4: Hypothesis Testing con't	<b>May 14</b> Sec. 11.1: Inference on two means (dependent)
<b>May 19</b> Sec. 11.2, 11.3: Inference on two means or two proportions	<b>May 21</b> Review
<b>May 26 Exam 5 (Ch. 10, 11)</b>	<b>May 28</b> Sec. 12.1, 12.2: Chi-square testing
<b>June 2</b> (Not a regular class day) <i>Optional Review for Final Exam</i>	<b>June 4 FINAL EXAM</b>