

*Department of Humanities, Sciences,
Social Sciences and Health Sciences
(310) 825-7093
Quarter: Winter 2011*

Introduction to Statistical Reasoning

Statistics XL 10

Reg# W2926

Units: 5

Instructor: Mine Cetinkaya

Email: mine@stat.ucla.edu

Office: MS 8141

Office Hours: Mondays 4:30 pm – 5:30 pm and by appointment (except Jan 17 and Feb 21 due to university holidays, those weeks Tuesdays 5:00pm – 6:00pm)

Website: <http://uclaextension.blackboard.com> (For all course materials)

Dates: January 11 – March 22

Days/Time: Tuesdays 6:45pm – 10:00pm

Classroom: 2258A Franz Hall

Course Description:

Introduction to statistical thinking and understanding, including strengths and limitations of basic experimental designs, graphical and numerical summaries of data, regression as a descriptive tool and statistical inference.

Goals & Learning Objectives:

The overall goal of this class is to introduce you to the discipline of statistics as a science of understanding and analyzing data and not as a branch of mathematics. This class is designed to provide you with the tools you need for solving real world problems using statistics and a better understanding of the process of scientific research and statistical inference.

We plan to achieve this goal by introducing you to the relevant statistical knowledge, having you engage in problem solving, application, analysis, and synthesis of statistical information through homework, labs, quizzes and exams.

Major topics discussed:

- Principles of experimental design and causal inference
- Observational studies and non-causal inference
- The basics of exploratory data analysis: description, summary and display
- The Normal distribution
- Bivariate correlation and causality
- The basics of probability, the mathematical foundation of chance processes
- Central Limit Theorem and sampling distributions
- Statistical inference: confidence intervals and hypothesis testing

Required Text:

Intro Stats by De Veaux, R. D., Velleman, P.F., and Bock D.E. Addison Wesley, 3rd Edition, 2008, ISBN-10: 0-321-50045-8, ISBN-13: 978-0-32-150045-8

All other course materials will be posted on Blackboard and/or handed out in class.

Calculator:

You are required to have a calculator (nothing fancy but should be able to do square root) and to bring it to every lecture and discussion, quizzes and exams. We will not be providing calculators and you will **not** be allowed to borrow one from another student during an exam.

Lectures:

We will have one lecture a week, Tuesdays from 6:45 pm to 10:00 pm. We will aim to take one 15-minute break from 8:15 pm to 8:30 pm. Since we only meet once a week, missing one class means you would be missing roughly 10% of the material we will be covering throughout the quarter. In order to be able to keep up with the pace of the course and not fall behind you must attend the lectures. Attendance makes up 5% of your grade. To get full credit for attendance you must **not miss more than one lecture** and be an active participant during class (ask and answer questions). Moreover, there will be one question on your final that will be identical to an example question we work through in one of the lectures.

Homework and Lab:

There are four homework assignments and one lab assignment to be completed throughout the quarter. The objective of these assignments is to help you develop a more in-depth understanding of the material covered in the lectures. The assignments are due **at the beginning** of the lectures specified in the course outline below. Your homework must be stapled, legible and contain your name. Homework assignments and lab will be posted on Blackboard. **Lowest homework grade will be dropped.**

Note that some of the problems have answers in the back of the textbook, so you should use those to check your work as you go. However you must show your work - full credit will not be given to answers that do not show work.

Quizzes:

There are a total of four quizzes throughout the quarter. Quizzes will be held **at the beginning** of the lectures specified in the course outline below. You will not be given additional time if you are late to class, so please make sure to show up on time. Note that there is a quiz the third week of class.

Materials covered on each quiz will be announced during the lecture in the previous week. All quiz grading issues must be discussed with me no later than one week after the quizzes are returned. No regrades for the quizzes will be offered after the final exam. **No make up quizzes** will be given. **Lowest quiz grade will be dropped.**

Exams:

The **midterm is on October 27, 2010** and will be a 1 hour and 30 minute exam (from 8:30 pm – 10:00 pm). Before the midterm we will use the first half of the class for review. The **final is on March 22, 2011** and will be a 3-hour (from 6:45 pm – 9:45 pm) cumulative exam but will focus on material from the second half of the class.

Note that exam dates cannot be changed and **no make up exams** will be given. If you cannot take the final exam on the specified date you should drop this class.

You must bring a calculator to the exams (no cell phones, iPods, etc.) and you are also allowed to bring one sheet of notes (“cheat sheet”). This sheet must be no larger than 8 ½” × 11” and must be prepared by you (no photocopies). You may use both sides of the sheet.

Office Hours & Email:

Office hours are scheduled on Mondays from 4:30 pm to 5:30 pm. During weeks 2 and 7 office hours will be held on Tuesdays from 5:00 pm to 6:00 pm (due to university holidays on Mondays). Extra office hours will be announced for midterm and final weeks.

During office hours I can help clear up any concepts from lectures, help with homework problems and lab as well as with exam prep. If you need help with the homework, you should come to office hours with specific questions after you have attempted the assigned problems on your own.

You should check your email at least once a week, as I will be emailing weekly updates about the class. You should also check Blackboard regularly for announcements, assignments, and slides.

Grading:

Course grades will be based on the following:

Attendance	5%	Quizzes	20%
Homework	10%	Midterm	25%
Lab	5%	Final Exam	35%

Grades in this class will be roughly curved under the following criteria.

30% A's	30% C's
30% B's	10% D's-F's

This means that your raw course score will be calculated and then grades will be assigned using a cumulative distribution function. If the class as a whole performs above expectations, a larger portion of A's and B's can be appropriated. **All grades are final when filed by the instructor on the Final Grade Report.**

Policies:

1. Late homework/lab will not be accepted – late means 5 minutes after class started.
 - If you turn in your homework between 6:50 pm – 7:20 pm, you will lose 3 points (out of 10).
 - If you turn in your homework between 7:20 pm – 10:00 pm, you will lose 5 points.
 - No homework will be accepted after the end of class.

If you cannot make it to class the day an assignment is due, please email me to make arrangements to drop it off earlier. There will be **no make up assignments**.

2. There will be no make up quizzes, midterm, or final.
3. Any instances of academic dishonesty will be taken very seriously. At a minimum you will lose all points for that particular assignment. Additionally, there may be penalties to your final class grade along with being reported to the Dean's Office. Please review the Student Guide to Academic Integrity at <http://www.deanofstudents.ucla.edu/StudentGuide.pdf>.

UCLA Extension Contact for this Course: Linda Polin (LPolin@unex.ucla.edu)

Final refund date: January 25, 2011

Viewing your final grade at the end of the quarter:

If you have provided an email address to UCLA Extension when you registered for this class, you can view your grade online using the instructions below.

1. Go to www.uclaextension.edu and click on My Extension, which is above.
2. Click on Need a Password.
3. Click on the drop box where it says "select", choose Social Security Number and enter your social security number (no dashes). Also enter your last name in the box below (where it says Last Name).
4. Click on Submit, and an email will be sent to your email address on record.
5. When you get the email go back to the log in screen on the My Extension website.
6. Click on the drop box where it says "select", choose Social Security Number and enter your social security number (no dashes) again and also enter the password you were just emailed. Do not copy and paste the password, you must enter it manually.
7. Now you can create a username and change your password. Once you do this, click Submit. You will now enter the student website. If you click on My Extension, you will be brought to your profile and your course information.

If you have not provided an email address to UCLA Extension when you registered for this class, you can view your grades in person at Student Services, Suite 214, 10995 Le Conte Avenue, Los Angeles, CA 90024-1333 or by calling the Records Office at (310) 794-7361.

Accommodations:

If you need any accommodations for a disability, please contact the UCLA Extension Disabled Student Services at: (310) 825-7851 or via e-mail access@uclaextension.edu.

Course Outline

Week	Date	Lecture Topic	Readings	Quizzes and Assignment Due Dates
1	1/11	Producing data and experimental design	Chapters 12, 13	
2	1/18	Data and graphs, categorical and numerical variables	Chapters 2 - 5	
3	1/25	The Normal model	Chapter 6	Quiz 1 HW 1 due
4	2/1	Exploring relationships and linear models	Chapters 7, 8	
5	2/8	Randomness, simulations, probability	Chapters 14, 15	Quiz 2 HW 2 due
6	2/15	Review (6:45pm – 8:15pm)		
		Midterm (8:30pm – 10:00pm)		
7	2/22	Randomization testing, Central Limit Theorem	Chapter 18	Lab assigned
8	3/1	Inference for proportions	Chapters 19, 20	Quiz 3 HW 3 due
9	3/8	Inference for proportions and means	Chapters 22, 23	
10	3/15	Catch-up / Review		Quiz 4 HW 4 and lab due
11	3/22	Final Exam (6:45pm – 9:45pm)		

It is estimated students will spend approximately 5 hours outside class each week completing class assignments, readings and studying for exams.

Course Syllabus Subject to Update by the Instructor.