

Math 140: Introductory Statistics

Spring 2013

Instructor : Maria R. D'Orsogna

Lectures : Mon-Wed 5:00 - 6:40pm in Chaparral Hall 5122

Office hours : Mon and Wed 2:00-3:00 pm in Santa Susana Hall 123 and by appointment

Contact : dorsogna@csun.edu or (818) 617 - 2703

Textbook : Statistics, 2nd edition, Wiley, Watkins-Schaffer-Cobb

Course description:

Whether aware of it or not, we come into contact with data, its collection, analysis and interpretation every day of our lives. Indeed, we are constantly bombarded by data. Referendum polls and results, imports and exports of goods, domestic manufacturing, median salaries, stock prices, the California drought, budget crisis and unemployment rates, are just a few examples of data coming to us from many different sources. Randomly collecting data will not tell us much however. We also need effective use of data, so that important features can be extracted, meaningful conclusions drawn, and trends presented. It is also important to plan data collection properly, knowing what questions we want to answer, designing experiments or surveys in the right way.

Statistics is the science that studies how all this is done. In this class we will learn how to explore and display data, how to design experiments, how to tie subsample results to larger scale conclusions. We will also learn basic concepts of probability. The very first statistical study is assumed to be the 'Natural and Political Observations upon the Bill of Mortality' in 1663, by John Graunt. At the time people were interested in planning policies in relation to demographic and economic trends. Today, after more than three centuries, the advent of modern computers has allowed us to perform more and more sophisticated and automated analysis of data, and to visualize our results interactively. Statistics can be fun. Whatever your career you will end up pursuing, statistics will be a useful tool. It is relevant in the sciences, in business, in government work, as well as in your daily life.

Evaluation:

Your grade will be based on three midterms (20 % of your grade) and a final cumulative exam (40 % of your grade). A grade of F will be given to those who do not show up for the final exam. No make-up exams will be given, except for extreme extreme circumstances. The midterms will be on February 20th, March 20th and April 17th. The final exam is on May 15th 2013 in this same classroom from 5:30 pm to 7:30pm. Since this is a large class, it is absolutely critical to behave in a disciplined manner. Talking during lectures, entering the classroom late, leaving the classroom early, all disrupt the class significantly, and will not be allowed.

Homework:

Expect a lot of homework: math is like going to the gym, you will gain muscles only if you keep practicing and practicing. It would be great if you wanted to work out even more problems than what assigned to you, and just to become better. You will be asked to perform all your homework on a separate notebook which will be collected on the last day of class and used to determine borderline grades. Almost all test material will be taken straight from your homework, so if you are confident doing the homework, chances are you will perform well on the tests. You will need a simple scientific calculator for the course. Copying is not allowed. Please write out clearly, as it will make everyone's life easier. Any student caught violating academic honesty rules will be removed from the class.

Topics Covered:

Introduction to data exploration and inference, Sections 1.1,1.2

Distributions, types and graphical representations, Sections 2.1, 2.2

Measures of center and spread, Sections 2.3, 2.4

The Normal distribution, Section 2.5

Surveys and experiments, Sections 4.1, 4.3

Randomization, Section 4.2

Sampling distributions of sample mean and sample proportion, Sections 7.1, 7.2, 7.3

Probability, conditional probability, independent events, Sections 5.1, 5.2, 5.3, 5.4, 5.5

Inference for proportions, Sections 8.1, 8.2, 8.4

Inference for means, Sections 9.1, 9.2, 9.3, 9.4

Relationships between two quantitative variables, Sections 3.1, 3.2, 3.3