AMS 7-01 Statistics for the Biological Environmental, and Health Sciences Spring 2017

Instructor: Immanuel Williams
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Course Description: This course provides an introduction to probability and statistics with an emphasis on applications to the natural and social sciences. You will learn to do various calculations, but the principal goal is understanding the concepts and learning to interpret the (numerical) results. Please see the lecture schedule that follows for a more detailed list of topics.

Lectures: Tuesday and Thursday, 08:00-9:35 am, Jack Baskin Auditorium 101

Text(s): *Biostatistics for the Biological and Health Sciences*, M. M. Triola and M. F. Triola, Pearson 2nd Edition (2017) or 1st Edition (2006).

Discussion Sections: TAs will work through additional examples and answer questions about the assigned homework. **Sections are mandatory**. All the quizzes and exams will be passed back in your enrolled section.

Discussion	Time	Location
DIS 02A	M 4-5:05 PM	PhysSciences 140
DIS 02B	Tu 1:30-2:35 PM	PhysSciences 140
DIS 02C	W 8-9:05 AM	PhysSciences 140
DIS 02D	W 1:20 -2:25 PM	Engineer 2 194
DIS 02E	F 12:00-1:05 PM	Engineer 2 194

Teaching Assistants

Name	Email	Hours	Location
Raquel Barata	rbarata@ucsc.edu	M 3-4pm & 5-6pm	BE 312 C/D
Matthew Heiner	mheiner@ucsc.edu	T/Th 10-11am	BE 312 C/D
Sisi Song	ssong13@ucsc.edu	M 2-3pm & F 3-4pm	M E2 480 F BE 312C/D

Computer Labs: Enrollment in **AMS 7L** is a co-requisite. Material will be linked, but administratively 7L is a separate course and you will receive a separate grade for 7L. This lab is on-line. Please see the web page for your lab sections. All questions, especially administrative ones, about AMS 7L should be answered by Lab Instructors. The Lab instructors are: Georgi Svetoslavov Dinolov (gdinolov@soe.ucsc.edu) and Chelsea Loomis Lofland (clofland@soe.ucsc.edu).

Reading: The material in this course may go quickly. It is expected that you will stay up to date in reading the relevant sections of the text. The tentative schedule is at the end of this document

and it will be also available online. The reading material for each class is listed there.

Grading Policy and Exams Information:

- **Quizzes (25%):** There will be four (4) quizzes based on the homework, as indicated on the schedule. They will be held on *April 13*, *April 25*, *May 18* and *May 30*. Many questions will be selected homework problems with the numbers changed. The quizzes are closed book, but you should bring a calculator. You must show all work (where applicable) for full credit. Your lowest quiz score will be dropped when computing your quiz average, and this is meant to account for nearly all reasons you might have to miss class, including illness. There will be no make-up for quizzes, no exceptions.
- **Midterm (30%):** There will be one in-class midterm on *May 4*, The midterm will cover material from chapters 1-7. Be sure to bring a calculator. You must show all work for full credit.
- **Final (40%):** The final exam will be on *June 13* as designated by the registrar, from 8:00 am to 11:00 am. Be sure to bring a calculator. The date of the final will not be changed. The final will be a comprehensive exam, covering all chapters discussed in class.
- **Discussion Attendance (5%)**
- **Additional information about quizzes and exams:** You will need a calculator for all the exams and quizzes. It is important that the calculator has a square root key and logarithms, in addition to the usual arithmetic operations. All the exams and quizzes are closed book. Only for the midterm and the final (not for the quizzes) you may bring one single 8 $\frac{1}{2}$in by 11in piece of paper with notes on both sides. This piece of paper should have your name and will be collected with your exam. You are not allowed to include solutions to any of the homework problems in this piece of paper. You must show all your work (when applicable) in the quizzes and exams to get full credit.

Tentative Course Outline (NEW BOOK):
The weekly coverage might change as it depends on the progress of the class. However, you must keep up with the reading assignments.

Dates	**Book Sections**	**Topics**
April 4	1.1-1.3	Intro to the Course. Why Study Statistics? Data Types, experiments
April 6	2.1-2.4 & 3.1	Looking at Data, Measures of Central Tendency
April 11	3.2-3.3 & 4.1	Measures of Dispersion, Definition of Probability
April 13	4.2-4.4	Addition & Multiplication Rules, Risks and Odds **(Quiz 1)**
April 18	5.2-5.3	Discrete Distributions - Binomial and Poisson
April 20	6.1-6.5	Normal Distribution, Sampling Distribution, CLT
April 25	6.6	Normal Approx. to Binomial **(Quiz 2)**
April 27	7.1-7.2	Confidence Intervals for Proportions & Means
May 2	-	Review
May 4	-	**MIDTERM EXAM**
May 9	8.1	Hypothesis Testing
May 11	8.2-8.3	Testing Claims for Proportions & Means
May 16	9.1-9.2	Two-Sample Hypothesis Testing
May 18	9.3	More on 2-Sample Tests Comparing Proportions & Means **(Quiz 3)**
May 23	10.1-10.2	Correlation & Regression
May 25	10.3	More on Regression
May 30	10.4	Multiple Regression **(QUIZ 4)**
June 1	11.1-11.2	Contingency Tables & Chi-Square Tests
June 6	12.1-12.2	Analysis of Variance
June 8	-	Review (Catch Up)
June 12	-	Review
June 13	-	**FINAL EXAM** (8:00 am to 11:00 am)