

University of California
Department of Applied Mathematics and Statistics
Baskin School of Engineering
Winter 2003

Engineering 7: Biostatistics

- **Lectures:** Tu-Th 4-5.45pm, in Steven Acad 150.
- **Instructor:** Raquel Prado, Baskin Engineering 149; 459-1488; raquel@ams.
- **Office Hours:** Tu-Th 11.30-12.30pm, in BE 149.
- **Discussion Sections:** To be arranged. The content of the course will be presented in 3 weekly meetings: the two lectures plus a one hour discussion section. There will be 4 sections each week. You will be responsible for attending one of such sections.
- **TAs:**
 - Shufeng Liu; BE-137; sfliu@ams. Office hours: TBA.
 - Chris Wong; BE-137; chrislw@ams. Office hours: TBA.

Website

<http://www.soe.ucsc.edu/classes/engr007/Winter03/>

Course Description

The main goal of this course is to present standard statistical techniques for analyzing data from the life sciences. Examples taken from these fields will be presented. Topics include: descriptive statistics, concepts of basic probability and conditional probability, Bayes theorem, binomial and normal probability distributions, estimation and hypothesis testing, ANOVA, correlation and linear regression.

The lectures are used to present basic ideas. The required textbook (see below) is really good. It presents the ideas in a very clear way, however, most of the examples and applications are from the health sciences. I will follow the textbook ideas very closely and I will cover quite a few examples taken from fields like biology, environmental sciences and other areas. It is the students' responsibility to keep informed and current in regard to day-to-day coverage.

I will use slides in most lectures. The slides for a particular lecture will be available online the day before the lecture. It will be your responsibility to obtain the material before each lecture.

A tentative week-by-week plan of the course is attached.

Slides, homework assignments and handouts will be available online at

<http://www.soe.ucsc.edu/classes/engr007/Winter03/schedule03.html>

Texts

- **Required:** Principles of Biostatistics (2nd Edition), by Marcello Pagani and Kimberlee Gauvreau, 2000. Duxbury.
- **Recommended:** An Introduction to Statistical Methods and Data Analysis (5th edition), by R. Lyman Ott and Michael Longnecker, 2001. Duxbury.
- **Recommended:** Fundamentals of Biostatistics (5th edition), by Bernard Rosner, 2000. Duxbury.

Homework

- There will be **5** homework assignments in this course.
- Homework will be assigned at lectures, or online, usually one week prior to its due date. All of the homework assignments will be graded, and solutions will be made available online. Graded homework will usually be returned one week after the due date.
- The assignments will count towards your final grade (30%), and hence you must submit your own homework solution.
- **LATE HOMEWORK WILL NOT BE ACCEPTED FOR ANY REASON.** To compensate for emergencies or bad luck **your lowest homework score will be dropped from the grade computation.**
- Submit homework on 8.5 by 11 or 8.5 by 14 paper only. Do not submit homework on pages ripped from spiral books.
- Make sure your **name** is **clearly** printed on all pages you turn in.
- Use **staples** or paper clips to hold together submissions of more than one page.
- Write **legibly** and **coherently**. Manuscripts that are unintelligible in either content or handwriting are not likely to be looked on favorably.

Exams

- **Midterm:** There will be one in-class midterm exam (25%). Date: 02/11/03 in Steven Acad 150. Although it is VERY unlikely, the date of the midterm exam may be changed and in such case you will be notified at least two weeks prior to the new date or 02/11/03, whatever comes first.
- **Final Exam:** The final will be a cumulative exam (30%). Date: Wednesday 03/19/03 from 4-7pm in Steven Acad 150. **The date of the final exam will not be changed.**
- The only excuses for missing the midterm or the final (this does not apply to homework assignments and/or quizzes) are a serious illness or a major family crisis. You must proof in the form of an official document. If you miss an exam and do not have a valid excuse you will receive a ZERO for that exam.

- **Quizzes:** There will be 3 short in-class quizzes (15%). The dates will be announced at lectures and online at least one week in advance. **There will be NO MAKE-UP QUIZZES**, however, **your lowest quiz score will be dropped at the end** to allow for any (yes, any) event that might prevent you from taking a particular quiz. If you miss a quiz you will receive ZERO for that quiz.
- **You will need a calculator** for the 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.

Grading policy

- Your final grade will be based on 30% homework, 15% quizzes, 25% midterm and 30% final.
- Any dispute arising in grading of the homework and exams should be submitted in writing. This letter should clearly state the question(s) where you think there has been a grading error and what you think the error is. Note that upon resubmission the entire exam or homework may be regraded and not just the disrupted question.
- There is a one-week time limit for submission of disputes for exams, quizzes and homework assignments. The one-week limit starts from the day the homework/exam has been returned in class. If you are not present in class is your responsibility to collect them.