Statistical Methods for Clinical Trials
Math 150, Fall 2010, Millikan 211
syllabus

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Text: *Regression Methods in Biostatistics*,
by Vittinghoff, Glidden, Shiboski, and McCulloch
http://www.biostat.ucsf.edu/vgsm

Exams: We will have two in-class exams and a final take-home project/exam. The in-class exams will be on Thursday 10/14/10 and Tuesday 11/23/10.

Homework: Homework will be assigned from the text at most classes. These are designed to help you keep up with the material. One homework grade will be dropped. Most homework will be done using the statistical software package R.

Projects: Towards the end of the semester, you will do a project designed around an article that you find in the medical literature (you will critically evaluate the article; instructions to follow). In lieu of a final exam, you will have a final data analysis project where you will be given data to analyze appropriately.

Labs: Throughout the course, we will have lab assignments that are more reflective and comprehensive than homework assignments. We will use R to perform the work, and your assignment should be written up as completely as possible. For most of the labs we will be using a text by Shonda Kuiper (Grinnell College)that is not yet published. For that reason, all materials will be posted on Sakai and will not be publicly available.

Participation: Along with learning statistical tools needed as a medical doctor, a substantial goal of this course is for you to become educated consumers of medical literature. We will start most class periods with a discussion on an article (typically from the newspaper) describing a medical study or a statistical issue related to the medical community. You are expected to have read the article, and you should be prepared to discuss what you read. You should also be prepared to participate in classroom discussions about the course material.

Computing: We will be using R for the homework and labs. Please make sure to complete the R tutorial available on the course website.

Grading:

15%	Homework
15%	Labs
20%	Exam 1
20%	Exam 2
5%	Literature Project
20%	Final Take-home Project
5%	Class Participation

Course Goals:

- to be able to critically evaluate the medical literature with respect to design, analysis, and interpretation of results.
- to understand the role of inherent variability and keep it in perspective when inferring results to a population.
- to critically evaluate medical results given in the mainstream media.
- to read published studies with skepticism. Some people (in all fields!) wrongly believe that all studies published in a peer review publication must be 100% accurate and/or well designed studies. In this course, you will learn the tools to recognize, interpret, and critique statistical results in medical literature.

Please feel free to stop by, email, or call if you have any questions about or difficulty with the material, the computing, the projects, or the course. Come see me as soon as possible if you find yourself struggling. This material will build on itself, so it will be much easier to catch up if the concepts get clarified earlier rather than later. If you have a documented disability and wish to discuss academic accommodations, please contact me as soon as possible.

Academic Honesty: Pomona College is an academic community, all of whose members are expected to abide by ethical standards both in their conduct and in their exercise of responsibilities toward other members of the community. The college expects students to understand and adhere to basic standards of honesty and academic integrity. These standards include, but are not limited to, the following:

1. In projects and assignments prepared independently, students never represent the ideas or the language of others as their own.
2. Students do not destroy or alter either the work of other students or the educational resources and materials of the College.
3. Students neither give nor receive assistance in examinations.
4. Students do not take unfair advantage of fellow students by representing work completed for one course as original work for another or by deliberately disregarding course rules and regulations.
5. In laboratory or research projects involving the collection of data, students accurately report data observed and do not alter these data for any reason.