Syllabus for ACMS 20340 Statistics for Life Sciences — Spring 2011

Note: This information is as accurate as possible, but it is subject to change. In particular, you are responsible for all changes made in class or through email.

General Arrangements

Instructor: John Engbers, 219 Hayes-Healy, `jengbers@nd.edu`. Feel free to email me anytime.

Office hours: Wednesday 4-5, Thursday 3:45-5, or by appointment.

Lectures: Class meets on MWF from 1:55-2:45 in DeBartolo Hall 125.

Text: *Introduction to Probability & Statistics*. Mendenhall, Beaver, and Beaver, 13th Edition.

Course Website: All information can be found on http://www.nd.edu/∼jengbers/acms20340s11/.

Feedback: I've set up an anonymous feedback form on the course website that you may use to contact me about the course anonymously.

About the course

Official description: An introduction to the principles of statistical inference following a brief introduction to probability theory. This course does not count as a science or mathematics elective for mathematics majors. NOTE: Students may not take both BIOS 40411 and MATH 20340. Not open to students who have taken MATH 30540.

Course Content: Roughly chapters 4-10 of the textbook.

Objectives: At the end of the semester, you will be able to:

- calculate probabilities of events and how they change as given information changes;
- use some of the most commonly occurring probability distributions to model situations that occur in the process of experimentation;
- obtain sample statistics, such as the sample mean and sample variance, from a data set;
- approximate the distribution of the sample mean using the central limit theorem;
- estimate unknown parameters from a data set using both point and interval estimators; and
- test the plausibility of a statistical hypothesis in the presence of a data set.

Course work

Exams: There will be 3 in-class midterm exams (tentatively scheduled for: Friday, February 11; Wednesday, March 9; Wednesday, April 20) and a final exam on Tuesday, May 10 from 4:15-6:15PM. Specific exam policies (such as format, sections to be covered, etc.) will be announced closer to the exam time. Each midterm exam is worth 100 out of the 600 total points, and the final is worth 150 out of 600 points. If you cannot attend an exam, please let me know as soon as possible so we can resolve it. A note from a university official must also accompany a request for a make-up exam.

Homework: Homework will be assigned and due approximately once per week. Assignments will usually involve some reading and some problems, possibly on an area not yet covered in lectures. Presented assignments should be neat and legible; the grader reserves the right to leave ungraded any assignment that is disorganized, untidy, or incoherent. After your lowest score is dropped, you assignments count (equally weighted) for 100 out of 600 points of your final grade. **No late assignments will be accepted.** It is permissible (and encouraged) to discuss the assignments with your colleagues; but the writing of each assignment must be done on your own. I have set up a homework discussion forum on concourse to help you discuss the problems together.

Hands-on project: You will do a small project in groups of size 1, 2, or 3 that will involve collecting, analyzing, and interpreting data related to an issue of your choice. This will count for 50 out of the 600 points of your final grade. I will explain more details about this project a few weeks into the semester.

Final grade: A 90% average will earn you a grade in the A range; an 80% average the B range; and a 65% average the C range.

Grading disputes: If you have any issue with the grading of your weekly assignments or with your midterm exams, you must let me know (in writing; email is fine) within seven days of receiving the work back; otherwise I can't promise that I will consider the issue.

Conduct

Honor code: You have all taken the Honor Code pledge, to not participate in or tolerate academic dishonesty. For this course, that means that although you may (and should) discuss assignments with your colleagues, you must write the final version of each of your assignments on your own; if you use any external sources to assist you (such as other textbooks, computer programs, etc.), you should cite them clearly; your work on mid-semester exams and the final exam should be your own; and you will adhere to all announced exam policies.

Attendance: Regular attendance is important. You will be responsible for all the material presented in class, whether or not it is in the book.

Class conduct: The lecture room should be a place where you should feel free to engage in lively discussion about the course topic; don't be shy! But non-course related interruptions should be kept to a minimum. In particular, you should turn off or switch to silent all cell phones, etc., before the start of class. If for some good reason you need to have your phone on during class, please mention it to me in advance.