

# Amherst College – Fall 2011

## Math 130 Syllabus (Section 1)

Class:           Lecture:       Mon, Wed     1:00 pm – 1:50 pm   SMUD 205  
                  Lab:           Tue            1:00 pm – 3:00 pm   SMUD 014

Instructor:    Jeff Stratton

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Office Hours: Seeley Mudd 301 (David Armacost's office)  
                  Mon, Wed 1-2, or by appointment  
                  I am also available Mon-Thurs mornings in my office at UMASS (Lederle Graduate  
                  Research Tower, 1342).

Course website: We will use CMS in this course. Important course materials and announcements  
                  will be posted, so you should plan to access the website regularly.

### Course Materials:

Textbook:     De Veaux, Velleman and Bock. INTRO STATS, 3<sup>rd</sup> edition. Pearson  
                  Addison Wesley 2009. Available at Amherst Books.

Calculator:    You'll need some kind of calculator. However, many calculators will work  
                  just fine, even ones that don't graph. It would be good to have one that is  
                  capable of calculating the standard deviation of a data set. In general, this  
                  class will focus on interpretation and conclusions rather than computation.

Software:     We will be using R and Rcmdr (R Commander) for our statistical data  
                  analysis. It is a free program! Instructions for how to install the software  
                  are available on the course website if you want to install it on your machine.  
                  You are encouraged to use R/Rcmdr for all homeworks, lab works, and  
                  projects as appropriate. We will be learning how to use this program in lab,  
                  and I will help with commands whenever asked. For exams, you will need to  
                  know how to read the output, but will not do any implementation yourself.

Classroom Etiquette: My goal is to have a classroom atmosphere that allows the class to learn the material without distractions. The following behaviors will help achieve this:

- Please turn off your cell phones before coming to class.
- Please do not leave class early unless you have to. If you plan to leave early, sit near the door so as to disturb as few people as possible.
- Please arrive in class on time.
- Please do not disrupt others during class.

Learning Disabilities: Students with learning disabilities should let me know so that any necessary accommodations can be made.

Grading Scheme: The grading scheme will be as follows:

Homework:	90 pts (~13% of the grade)
Group Project:	50 pts (~ 8% of the grade)
Lab Work:	50 pts (~ 8% of the grade)
Midterm 1:	100 pts (~16% of the grade)
Midterm 2:	100 pts (~16% of the grade)
Midterm 3:	100 pts (~16% of the grade)
<u>Final:</u>	<u>150 pts (~23% of the grade)</u>
Total:	640 pts

Initially, I plan to follow a fairly standard grading scheme (90% - A, 80% - B, 70% - C, 60% - D, < 60% - F). However, these may be curved based on how the final point tallies are distributed. This curve will never decrease your score. I may also adjust your score based on your track record for punctuality and effort, and will be happy to provide my reasoning for all decisions. Grades will be available on CMS throughout the class.

Grading Elements: Your grades will be based on four elements:

Homework: This is the BEST way to practice the skills needed to succeed in this class. Textbook readings will be assigned so you can read before class on the relevant material (see Schedule below). Problem sets will be assigned that will be (most likely) a mix of book and written problems and will be due once a week at the **START** of class on the due date. Additional homework details are given below.

- Please turn in your homework **stapled** together. Homework must be complete, **legible**, and include **all** supporting work. You do NOT need to rewrite the problems on your homework solutions.
- There will be ten homework assignments worth 10 points each. The lowest score will be dropped.
- I encourage you to work together. However, know the difference between collaborating and copying. You should write up your own responses separately..

Tests: There will be three midterm exams and a cumulative final exam. The midterms will be held in class on **March 2<sup>nd</sup>**, **April 6<sup>th</sup>**, and **May 2<sup>nd</sup>**. The final exam will be comprehensive, and will be scheduled later by the Registrar. Calculators and a single (one-

sided) page of notes are permitted for the midterm. For the final you may have a two-sided page of notes (or two one-sided pages) as well as a calculator. Alternative arrangements should be made **in advance** if you have conflicts. Please contact me as soon as possible should an emergency arise that prevents you from taking a test.

Lab Work: On Thursdays, we will meet for class in the computer lab. We have access to the computers, and will often use them. The purpose of these labs is to practice using computers to analyze data, or to reinforce or clarify a topic from the lecture. Labs each day will usually have a group activity that the class will do together. Then, there will be one or two activities for you to do on your own or with one or two other people. At the end, there will be a **short set of questions** for you to do to turn in to me. These will be worth 5 points. They may be turned in at the next class if you need more time. The last few lab sessions will be devoted to working on the group project.

Group Project: Near the end of the semester, the last lab meetings in the course will also be used for group project work which is designed to give you a better understanding of the statistical processes you learn about in class. You should expect to commit sufficient time outside of the lab meetings to completing the project. For the project, you will work in groups of 3-4 and each group will submit ONE written report on the due date. All group members will receive the same grade. More details will be provided right after the first midterm.

Attendance: I don't take formal attendance. This is a small class. I notice who comes and who doesn't. Being consistently late or absent never helps your learning and final grade. I encourage you to participate in class: answer my questions or ask me questions. Chances are, someone else has the same question!

Tips for Success: This class will be very fast-paced. We'll be covering roughly one chapter per lecture. It will be very important to stay caught up. If you find that you are having difficulty, consider coming to see me.

**Do not wait to get help!**

Statement of Intellectual Responsibility:

- **For exams** – your work must be entirely your own. No talking, passing notes, etc. You will have access to your calculators and a single-sided page of notes as listed above (two-sided for final). The primary purpose for that is to avoid forcing you to memorize formulas.
- **For homework** – the work you turn in must be your own. If you work with fellow students, you cannot copy a solution from another student. Instead, they may explain the problem to you or show you their work, but you need to write your own solution to turn in.
- **For lab work and short questions** - the written document you turn in must be entirely your own, though you may work in groups to generate the appropriate output/analysis/graphs.
- **For the project** – the group work should be equally shared and credit for the presentation and final report given to all group members.

## Tentative Schedule

(Revised 9/6/2011)

This is a TENTATIVE schedule and is subject to change. Check CMS often for possible updates.

<b>Week of</b>	<b>Chapters</b>	<b>Topics and Important Notes</b>
Sept 6	1-6	Introduction
Sept 12	1-6	Graphs and Descriptive Statistics
Sept 19	11-13	Standardization and Design
Sept 26	14-16	Probability (skip: 16 – Correlation and Covariance)
Oct 3	17-18	Probability and Sampling Distributions (skip: 17 – Geometric and Poisson Models)
Oct 10	19	Confidence Intervals ( <b>No class on Monday</b> ) <b>First Midterm: Oct 11th</b>
Oct 24	20	Introduction to Hypothesis Testing
Oct 31	21-23	More on Hypothesis Testing, Testing/CI for 2 Proportions, Testing/CI for 1 Mean
Nov 7	24-25	Testing/CI for 2 Means, Testing/CI for Paired Mean <b>Project Proposals Due Nov 9th</b>
Nov 14	28	ANOVA (chapter on book CD) <b>Second Midterm: Nov 15th</b>
Nov 21	----	<b>Thanksgiving Break: No Class!</b>
Nov 28	7-10	Scatterplots, Correlation, Regression Basics (read: 9 – Extrapolation, 9 – Lurking Variables and Causation, 10 – Straight to the Point, 10 – Goals of Re-expression (optional))
Dec 5	27	Regression Inference
Dec 12	26	Chi-square Tests <b>Projects Due: December 14<sup>th</sup> by 5 p.m.</b>
		Final Exam: TBA once scheduled by Registrar. The final exam is cumulative.