

Math 331. Introductory Statistics

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The purpose of MA331 is to understand the essential ideas and reasoning of applied statistics (data analysis, data production, inference). The course is also designed to familiarize the students with statistical software needed for the analysis of data.

Required material

- (a) The textbook: *"Introduction to the practice of Statistics"*, by D. Moore, G. McCabe and B. Craig, 6th edition, WH Freeman and Co, 2005, ISBN: 1429216220, ISBN-13: 978-1429216227.
- (b) Software textbook: *"Introductory Statistics with R"*, by Peter Dalgaard, Springer Verlag, 2004, ISBN: 03879-5475-9.
- (c) A scientific calculator (graphing calculator is ok but not necessary), a laptop is preferred with R installed.
- (d) Access to elearn.
- (e) A stapler.

Computing

We will use R statistical software in this class. R resembles MATLAB in its approach, however it is designed specifically for statistical analysis. Data sets, and other information will be available at the course Web site. See the *IntroR.pdf* file on the website for a basic introduction and getting started with R. The second textbook provides great help with R functions. If you encounter problems with R code, you may email questions to me. Please attach your programs with the e-mail.

Note about use of EXCEL: An important goal of this class is to prepare the students to use statistical methods appropriately in a later course in their major field. Because we would not recommend the use of Excel for this purpose, we do not use it in MA331. Excel is very useful for a variety of basic purposes including the preparation of data sets for statistical analysis. However, there are some serious deficiencies in this software. For more details about the deficiencies in Excel, see <http://www.stat.uiowa.edu/~jcryer/JSMTalk2001.pdf>

Attendance

You are expected to attend each class and to participate in the discussion. In general, students who attend class regularly perform much better than those who come only occasionally. This professor reserves the option of giving pop quizzes, so you are taking a risk of losing additional points in addition to missing important information.

Grades

The final grade will be determined as follows:	Assignments	30%
	Project 1	10%
	Midterm examination	20%
	Final presentation	10%
	Final paper and finalized project	30%
	Total	100%

You should assume that the letter-grade cutoffs for this course are the typical 90-100 for an A, 80-89 for a B, etc.

Assignments

Homework will be collected according to the posted schedule. The assignments will be posted on the course website. The assignment will be graded in part for completeness and in part a few (not all) of the problems will be graded for correctness. Late homework will not be accepted. Turning in homework early to my mailbox in the mathematical sciences department office (Kidde Bldg.) no later than 1 hour before class starts on the day the assignment is due, is acceptable. You are encouraged to discuss the homework assignments with other students, but *you must write up your work independently*. You are expected to turn in complete solutions. This means SHOW YOUR WORK. One-line answers with no work attached may receive no credit depending on the problem. Please see the file on the website entitled "Collaboration and Group Work." Homework is rarely excused. If you must miss class due to a job interview or university-sponsored activity, you must turn in your assignment in advance to receive credit. One HW score will be dropped at the end of the semester. If you have an excused HW, this is the one which will be dropped.

Projects

As part of the requirements for completion of this class students will have to demonstrate the ability of using and applying material learned in class to real problems. Note that there are no examinations listed for the class.

The first part of the Project has a deadline around the middle of the semester and the second part will be due around the end of the semester (the exact dates to be announced later). A more formal description of the Project will be posted on the course website.

The projects are worked in groups and the students are required to contact me if one or more members of the group are not putting the work needed for completion of the project.

During the last week of the semester each group will showcase the work and the results obtained during a 15 min presentation. The suggestions received during the presentation from the instructor (me) and the fellow students are to be addressed in the final project write-up.

During the finals week the students will turn in the final project in the form of a regular scientific article. Please note that 30% of the grade is

attributed to this project. The best projects will be published on a webpage dedicated to this purpose. You may browse past year projects at the address:
<http://www.math.stevens.edu/~ifloresc/Teaching/studentResearch.html>