

Instructor:**J. D. Petrucci**

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1 Overview of the Course

MA 2611 is the first of a two course sequence on probability, statistics and data analysis. The course will cover almost all of Chapters 1–5 of the text.

2 Textbook and Course Materials

The text is Petrucci, Nandram and Chen, **Applied Statistics for Engineers and Scientists**, 1999, Prentice Hall.

Course materials, including the lecture notes I use in class, homework solutions, and previous tests and their solutions, will be found online at http://math.wpi.edu/Course_Materials/MA2611E02/main.html.

3 Computation

Most of the computation for the course can be done by hand, if you wish. However, modern statistical analyses are almost always done by computer. I am not requiring any particular set of computational tools, but here are some choices you might consider.

- **A Statistics Package** is specialized software dedicated exclusively or largely to statistical methods. If you have access to such software (and by virtue of having registered for this course, you all do, at least on campus), this is the best tool for the job. Generally, such packages will implement the widest range of methodology, have the most sophisticated data-handling capabilities, and use the most efficient and stable algorithms. If you are going to be doing substantial or sophisticated statistical analyses, a statistical package is the way to go. Some options:

- o **SAS** is the house software for statistics courses at WPI: we use it in our undergraduate courses and in courses for our statistics master's program. It is comprehensive and powerful. It is also not as intuitive as some other statistics packages. A PC version, which is not supported in any special way by the Mathematical Sciences Department, is available on the Novell network. The version we support for our courses is found on the unix system. That support consists of (1) Supplying assistance with configuring and learning the software, (2) Maintaining data libraries online, (3) Writing and maintaining a library of SAS Macros (programs written in the SAS programming language). With our macro library, SAS has all capabilities you will need for the course.

Directions for how to configure SAS at WPI, as well as a tutorial on using SAS/INSIGHT (the interactive point-and-click data analysis component of SAS), and SAS/EIS (the interface to the SAS macro library) can be found at

http://www.math.wpi.edu/Course_Materials/SAS/sas01_intro.html

General information on how to use SAS to perform analyses in the text is found in the text supplement **Doing It with SAS**.

SAS is available for purchase by individuals, and runs on a wide variety of platforms, but it is prohibitively expensive (or was, last I checked).

For those interested in learning SAS, I will hold a startup and tutorial on the first night of class, May 30.

- o **JMP-IN** is a student version of JMP, a SAS product that is similar to SAS/INSIGHT. Personally, I do not find JMP-IN intuitively easy to use, but there are people who disagree with me. JMP-IN is available for MACs and PCs and is reasonably priced at around \$60-\$70 (last time I checked). It has most of the capabilities you will need for the course, and comes with readable documentation. While I am not an expert, I have used JMP-IN, and can offer help with its use.
- o **MINITAB** started as an easy-to-learn teaching package, and even though it has become quite powerful, it has retained that ease of use. The student version is also reasonably priced, also has most of the capabilities you will need for the course, and also comes with readable documentation. General information on how to use MINITAB to perform analyses in the text is found in the text supplement **Doing It with MINITAB**. While I am not an expert, I have used MINITAB, and can offer help with its use.
- **Spreadsheets** Many students use spreadsheets, such as Microsoft **Excel**, for statistical work. Though I have little direct knowledge of the statistical capabilities of Excel, I have read some disturbing reviews of the accuracy (or rather the lack of same) of its statistical computations. Should you use a spreadsheet, I can offer you no support, and I urge you to carefully check the answers you get.
- **Calculators**. Some calculators commonly used in high schools (such as the TI-83) have surprisingly sophisticated statistical capabilities, which will be useful in this course. I have elaborated on some of these capabilities in a small document found at the course web site.

4 Performance Measures

Two performance measures are used in the course.

4.1 Homework

Homework is assigned for your benefit and practice. You are to use it as a yardstick against which to measure your understanding. You may discuss it with other class members as a check on your understanding. Note that this does not mean copying it from another class member. If you have difficulty doing the homework, seek help from the TA or the instructor. It is your responsibility to see that you understand the principles and ideas behind the homework exercises. Homework will count 15% of the term grade.

4.2 Tests

There will be two open book, open note tests, based on the chapters you have completed. The first, a 50 minute test on Chapters 1–3, is scheduled for June 27 and will count 25% of the term grade. The second, a comprehensive 100 minute exam on Chapters 1–5, is scheduled for July 18 and will count 50% of the term grade.

4.3 Labs

Because TA help is not available during summers, I usually don't conduct the usual labs done during the regular academic year. This summer, however, I will be testing three new web-based labs versions

of labs 4.1, 4.2, and 4.3. To do so, I will have half of you do the SAS-based version of these labs and the other half the web-based versions. When you have finished, you will be required to answer questions about your experience with the labs and about the subject matter. Participation in the lab testing will count 10% of the term grade.

5 Late Assignments

Unless different arrangements have been made with me ahead of time, late homework assignments will receive a grade of 0.

6 Makeups

Makeup exams will be given only in the event of serious illness or other extraordinary circumstances.