

Syllabus, Econ 371

Spring 2009

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URL course home page: <http://www.people.virginia.edu/~rwm3n/e371.htm>

Required Textbooks.

This course covers introductory probability and statistics, including elementary distribution theory, hypothesis testing, confidence intervals, and an introduction to regression and multiple regression. The text is Anderson, Sweeny and Williams, *Statistics for Business and Economics*, Ninth Edition. The 10th edition was recently released, but without any substantial changes from the 9th edition. In an attempt to save you some money, I decided to stick with the 9th edition. There is another text that will serve as a reference for the exercises to be done on the computer: The *Minitab Handbook*: Fifth Edition, by Ryan, Joiner, and Cryer.

Software.

Minitab is the software package we will use for statistical calculations. Release 15 of this software is available in all the University labs. Moreover, the University now has a site licence that will permit students to install Minitab on their personal computers. (Note: there is a Macintosh version but it is somewhat out of date.) You can get details and instructions by going to this web page and clicking on *Minitab*.

<https://www.web.virginia.edu/rescomp/SoftwareInfo.asp>

Office Hours.

My office hours will be on Wednesday, 1:00 - 3:00, and by appointment. There are will be a TA: Matthew Goldman, whose email address is mrg9x@virginia.edu. I will post information about his office hours once I have had an opportunity to meet with him.

Grading.

Briefly,

3 Quizzes @ 12% each -- 36%

Computer Homework -- 20%

Comprehensive Final Exam -- 44%

There will be two sorts of homework. There will be paper and pencil problems, which you are expected to do, but which will not be collected and graded. You should do these and check your own answers. Brief answers to many of these questions are in the back of the text. Answers to the additional xerox questions can be downloaded from the course web page. The solutions

manual for Anderson, Sweeny, and Williams has been converted to pdf files and posted on the web page, making it easy for you to get access to detailed answers. These paper and pencil homework questions will prepare you for quizzes and the final exam.

There will be three quizzes, given during recitations, each of which will count as 12% of your grade. You will be allowed to use a calculator on the quizzes and the final exam, but *only* a basic one. The most advanced calculator I will permit you to use is a bottom-of-the-line scientific calculator such as the Texas Instruments TI30Xa, which is widely available for a little over \$10. A simple calculator which adds, subtracts, multiplies, divides and takes square roots would actually be sufficient. *If you do not have a basic calculator, you should get one before the first quiz.* You can find simple calculators, such as the Texas Instruments TI-503SV, for about \$4.00 at Amazon.com or at any office supply store. I mention these particular calculators as concrete examples – other models are perfectly acceptable provided their capabilities do not exceed that of the TI30Xa.

There will also be computer assignments, which *will* be turned in. These computer problems will count for 20% of the grade.

There will be several of these homework assignments over the course of the semester, and you must keep up. As an incentive for you to keep up *generally speaking, no late homework assignments will be accepted.* However, to make this less harsh, I will drop the first homework you fail to turn in from the homework grade. If you turn in all your homework, I will drop the one on which you receive the lowest (percentage) grade.

There will also be a comprehensive final, which will count for 44% of the grade.

Homework Policy.

Homework is Pledged. When doing the homework, you are permitted to use the text, your class notes, and any handouts provided in class. If there exist written answers to these questions provided by instructors in previous years, such as might be found in fraternity files, you are not permitted to consult these answers in doing homework turned in for a grade. Neither are you allowed to copy one another's homework answers. This means you are not allowed to work together in groups, when the purpose of the group is to subdivide the assignment, with each person solving some of the questions and being provided with the answers to the remaining questions by others in the group. Each individual is expected to individually work each problem he or she submits for a grade. Each individual is expected to individually do each of the computer assignments (*no sharing of disks or output files*). However, you may ask one another for advice on how to do these problems - or ask the TA or myself for guidance - provided that you sit down and work the problem through on your own once you've gotten help. If you've received help, you should say in your pledge who helped you and what sort of help they provided.

Words of Advice

I know that for many of you time management often resembles triage. There are two portions of this course many students assume are of marginal importance, only to discover that they are not: The additional questions (part of the paper and pencil exercises) and the recitations. The additional questions are somewhat harder than the end of chapter exercises and there will be a number of exam questions at a comparable level of difficulty, so neglecting to practice on the additional questions is a recipe for embarrassing yourself on the exams. The recitations are going to be the place where you see examples worked out on the board. While examples will be done during lecture, there is too much material to be covered for me to do as many examples as most people need to see. This is particularly true from chapter 5 onwards, where the material begins to get more difficult. So this task has been delegated to the TA. Typically, I highlight a handful of the most difficult (and most relevant) homework questions for the TA to work out in detail during the recitation. If the material is at all challenging to you, you will benefit by seeing these examples worked out.

The Final Exam

The final exam will be given in CMN G120 on Saturday, 2 May, 9:00 - 12:00

Academic Honesty

Academic Honesty is a course requirement. In a recent referendum, the student body voted down a proposal that would have made academic dishonesty ipso facto serious under the honor system. This creates some ambiguity about what types of academic dishonesty are prohibited under the honor system as "serious" and what types are not. Just so there is no misunderstanding about my policy, I consider academic honesty a course requirement. If I come across compelling evidence of an intentional act of misconduct in this area, I reserve the right to fail a student whatever the outcome of possible honor proceedings. Some specific acts that can result in your failing the course are (a) handing in homework for a grade that is not your own (see the discussion above); (b) cheating on the quizzes or final exam.

Getting Started With Minitab at UVA

Minitab 15 is available in the public labs on grounds and can be downloaded and installed on your PC. (MAC, all we have for you is an obsolete version.)

To begin, you will need the CD ROM packaged inside the back cover of Anderson, Sweeny, and Williams. (If you bought a used copy of the book and it is lacking the CD, let me know, and I can copy the files to your home directory)

You will probably find it convenient to copy the data sets from the CD ROM to your home directory or a USB thumb drive. The CD is inconvenient to carry and many people lose their CDs by forgetting and leaving them behind in the computer. Insert the CD ROM into your computer; click on My Computer, and locate the icon for the CD. Open the CD, and you will discover two data folders: one consisting of Excel files and one consisting of Minitab files. Open the folder containing the Minitab files, select all the folders contained there, copy them, and paste them into your home directory (or whatever). Then return the CD ROM to the back of the book, where it will be safely stored should you need it again.

You will also need a few data sets to do the xerox problems. Begin by creating a directory in your home directory (or wherever) named "xerox." To do this, click on My Computer, drill down to your home directory, then select FILE > NEW > FOLDER. When prompted, tell Windows you want to name the new folder "xerox."

Start your web browser and go to the course home page at <http://www.people.virginia.edu/~rwm3n/e371.htm>

Under the heading "Data sets" you will find a hyperlink that can be used to download the necessary data. Following the instructions on the web page, unzip the files into your newly created folder.

It is time to start Minitab. Assuming you are in a computer lab, click on START, then on PROGRAMS, then on STATISTICAL, then on MINITAB, and then (again) on MINITAB. Minitab should start. Once Minitab has begun, you will see two windows, a *session window* on top, and a *data window* below. You can type commands in the session window, or you can operate the program by clicking on the menu bar at the top of the screen.¹ You can enter data in the data window, as you would into a spreadsheet; if you retrieve a data file, the data appear in the data window.

Minitab saves and retrieves two kinds of files: worksheet files and project files. A worksheet is just a data set, and worksheet files have file names of the form filename.mtw, where "mtw" stands for MiniTab Worksheet. The Anderson, Sweeny, and Williams data sets provided with the book are worksheet files. Project files are created when you save the analysis you have done in

¹If you want to type commands in the session window instead of clicking on the menus, you must have an MTB> prompt. If the prompt does not appear in the session window, it is because it has been disabled. Enable it by clicking on EDITOR > ENABLE COMMANDS.

Minitab. When you quit Minitab you are asked whether you want to save your work, and if you say yes, the data in the data window(s), the complete text in the session and history windows, and copies of each graph you have created will all be saved to a project file. Project files have names of the form filename.mtp, where "mtp" stands for MiniTab Project. If you click on FILE, you will see the menu commands to save and retrieve worksheets and projects. You will also see a command called "Project Description." To keep track of your own work, you might want to write a brief description of what is being saved - something like "the first half of the homework for chapter 9." You can do that by clicking on Project Description and entering the appropriate information. One nice feature of projects is that if you are working on Minitab homework, and want to take a break, you can save your work in a project. When you return you simply open the project and resume where you left off. Don't forget to save your work in your home directory or on a USB drive — NOT on the hard drive — because if someone performs an auto-logon on your lab computer, your work will be erased!

As a simple example, let's retrieve a data set of hours of computer usage per week for a sample of 50 people, which is an Anderson, Sweeny, and Williams data set used in problem 21 on page 40.

The easiest way to open this data set is by clicking on FILE > OPEN WORKSHEET > and then drilling down to the Chapter 2 subdirectory in your home directory (or alternatively, to the Chapter 2 subdirectory on the CD ROM, located in the folder Minitab Files), where you should be able to identify and click on the worksheet named 'Computer.'

When the data appears in the data window, we can do some simple manipulations. For instance, in the session window, type

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MTB > describe c1
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in order to generate descriptive statistics about the data in column one. Then type

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MTB > histogram c1
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to make a histogram of the data in column one. To keep the histogram as part of your project, minimize it. If you close it, the graph will not be saved as part of your project. To view it again, click on WINDOW, and then click on the histogram.

Now click on FILE > EXIT, and you will be asked if you want to save the project. Say yes, give the project a name, and store it in your home directory.

Preparing Homework to be turned in.

Suppose this was homework that you wanted to turn in. The easiest way to prepare a neat printed copy is to cut and paste the content of these windows into a word processing document. For example, start Microsoft Word on your computer, and open a new, blank document. Minimize Word, restart Minitab and open your project (using FILE > OPEN PROJECT, and then locating and clicking on the project you just saved). Place the cursor in the session (upper) window, and then click on EDIT > SELECT ALL and then on EDIT > COPY. Maximize Word,

and then click on EDIT > PASTE. This transfers the commands and printed output, but not the graphs. To transfer the graph, minimize Word, maximize Minitab, and display the graph by clicking on WINDOW and then the graph itself. Then click on EDIT > COPY GRAPH. Return to Word, decide where you would like to place the graph and then click on EDIT > PASTE. Now you can edit and print the output from within Microsoft Word, deleting any extraneous output or mistakes you might have made. When done editing, type your name at the top of the finished document, a pledge at the end, and print it.

A Note on Retrieving Data

Most of the data sets we will be using are those from Anderson, Sweeny, and Williams. However, some data for xerox problems come from the web, and the data for Minitab Handbook problems are located on the server.

The data downloaded from the web can be retrieved by clicking on FILE > OPEN WORKSHEET, browsing to the xerox subdirectory of your home directory, and locating the appropriate file.

The data sets for use with the *Minitab Handbook* are *on the server*. If you click on FILE > OPEN WORKSHEET the default should take you to the directory on the server where *Minitab Handbook* data files are stored. You should be able to simply select the data file you want. [The data sets are described in some detail in Appendix A of the *Minitab Handbook*.] If for some reason the default data directory does not contain the *Minitab Handbook* files, another way to access them is to enter the following command in the session window:

MTB > retrieve 'g:\apps\win32\mtbwin15\data\filename'

If none of this works, click on FILE > OPEN WORKSHEET and browse the directory tree looking for the data directory and data file you need. It is possible that the path to the data directory has changed since I wrote these instructions.