

Technology Projects

Math 113 - Introduction to Applied Statistics

Introduction

This is an applied statistics course, which means that we will be working with applications of statistics. We're going to concentrate more on what the results mean and less on the mechanics needed to get the results. We will do very little paper and pencil calculations in this course. However, we will be using the computer and the Minitab software to do the calculations for us.

Each chapter in your text ends with a very brief summary of how to do the things covered in that section using different statistical packages, but it is very limited and doesn't really have any real-life data to go along with those instructions.

The purpose of these technology problems is to have you collect data and then analyze it with the computer and explain the results. The book consistently emphasizes the who, what, where, when, why, and how of data and the three rules of data analysis, which are 1) make a picture, 2) make a picture, and 3) make a picture.

Each of these are group projects and you may have up to three people in a group. You should turn in one technology project for the entire group, not one per person. The entire group should work on the project and participation is a part of the grade. If you can't find time to work together, you may, for example, assign one person to collect the data, another to do the Minitab analysis, and the third to write up the report that goes with it.

Using the Computer

I realize that most of you have not used Minitab or other statistical software before, so I've written some notes that will help you with the Minitab steps. These can be found under the technology projects link from the Math 113 home page. You will want to have these notes open while you're working on the Minitab. What I suggest is having one person in the group open up the Minitab notes on one computer and another person open up Minitab and Microsoft Word on another. The computers in our classroom have LCD panels on top of the desk, so you should be able to see each other's computer screens to follow what they're doing.

Do not print out the Minitab instructions for following the project, just follow them from the screen. That way, should one of them be wrong, I can correct it, you can refresh the screen, and we won't have wasted the paper.

Several of the projects will require that you gather information off of the Internet and enter it into Minitab. Minitab will open an Excel spreadsheet, so you may find it more

convenient to collect the data at home in an Excel file and then bring it to school where you can open it in Minitab.

You will also be highlighting and copying the output from Minitab and pasting it into Microsoft Word, so you'll want to start both programs when you're working on the projects. I have found that pasting information into Word works best if you have typed information and left a blank line or two where you want the graph to go. If you paste the graph before you have any text, it can be difficult to get the text to look properly.

For those of you who prefer to use the mouse, you can right click the mouse button in either Minitab or Word and choose Copy or Paste. For those who prefer the keyboard, control-C stands for Copy and control-V for paste. To switch between applications, you can either go to the bottom of the screen with the mouse and click on the other application or you can use alt-Tab to switch between open windows.

When you log into the computer, be sure you log in as the "math" user. This will give you access to the R drive (R:) on the computer. The R: is set up so that you can save your files there and then get access to them from anywhere in the College. This means that you can start your work in the classroom, but finish it in the open computer lab in room C239. It also means that you can start on one computer and then someone else in your group can pull it up on another computer in the classroom and continue working on it.

On the R:, there are folders set up for each of the sections of Math 113. These are called "01", "02", and "03". Inside of those folders, you will find folders to save your technology files called "tech1", "tech2", "tech3", and "tech4". Save your files in the appropriate section and technology problem on the server. If you want to and know how, you can create another folder under those folders for your group. Make sure each person in the group knows what you're calling your files.

The complete path to save your files might look like this: **r:\01\tech1** for someone in section 01 working on technology problem 1 or **r:\02\tech4** for someone in section 02, working on technology problem 4.

Because the files are shared across a network, it is possible that more than one person can have the file open at a time. *This is a very bad idea.* If you ever do it, make sure that only one of you makes changes to the file. If more than one of you makes changes, then when you save it, you'll overwrite the other persons changes and lose them. For that purpose, it is best to have one person working with Minitab and Word. It is possible to create two or even three Word documents and then copy and paste them together to make

the final report if you want to have more than one person work on things at a time. Just be sure you use different file names if you're going to do this.

Project Grade

Each technology project is worth 25 points. This is determined by the instructor based on how well you address the who, what, where, when, why, how of the data, make pictures, and answer the questions asked. It is not sufficient to merely copy the Minitab output into Word, put your names on it, and turn it in. Be sure you explain what you're looking at. The mantra in the class is Think, Show, Tell. Be sure you do this for these projects.

All projects must be printed. There is a printer in the room. Wait until you have your final project ready before printing. That is, don't print lots of test sheets to see what it's going to look like. You can also go into printer options and turn on printing on both sides of the paper under the Finishing tab. The school is in a budget crunch since the State has cut back funding and so we should try to save where we can.

Rubric for Assessment

The grade that you receive for the project will be based on the following rubric. This 25 point portion of the grade is based on the group effort. Each member of the group will receive an identical score.

Goal	Excellent (5 points)	Average (3 points)	Poor (1 point)
Identification	The full name of each group member is given and correctly spelt	At least one full name is missing or spelt incorrectly	The first names of the group members are given
Organization	Each question is identified by the question number and the text of the question.	Each question is identified by the question number	Questions are not identified
Annotation	Each output (text or graph) from Minitab has an explanation	One or more outputs have no description	Only the output from Minitab is given, there are no explanations
Completeness	Each question is fully answered	One question is completely missing or parts of a question are not answered	More than one question is not answered
Correctness	There are 0 or 1 errors in the output or descriptions	There are 2 to 3 errors in the output or descriptions	There are more than 3 errors in the output or descriptions

The project will lose 10% of its value for each class period it is late. If you earn a 23 but it is two days late, then your grade will be $23(0.8) = 18.4$ or 18 points.

Participation Grade

There is another 5 point participation for each of these projects. Your grade for each project will be the average of the grades turned in for you by each of the students.

For every project that you do, you will turn in an a short summary of what each person in the group (including yourself) did and how many points out of five you would give them for their effort. Be sure to put your name, section number, and what the assignment is at the top of the sheet.

These evaluations should be typed up individually. The other students in the group will not see what you wrote about them, just the average score they got from all of the students.

You need to evaluate everyone in the group including yourself. Even if you're the only person in the group and did all of the work, you still need to evaluate yourself or you'll miss out on the participation grade.

There will be a semester project where you will be asked to evaluate the people in your group. That evaluation will follow the same format described here.

Due Dates

All technology project materials are due at the beginning of the class period on the day of the exam over that unit of the book. These dates are listed on the calendar the instructor gave you. Late material will be accepted, but you will lose 10% of the value per class period.

Sample Evaluation

Bob Johnson
Math 113-01
Tech 1 Evaluations

John Smith - 5

John was an excellent worker who attended every meeting. He collected all the data off the Internet and put it into Excel for us. He explained where we were going wrong on creating the pie chart.

Elizabeth Miller - 5

Liz was a hard worker, too. She showed up for every meeting except one and ran Minitab and pasted the output into Word. She also typed up the explanation in Word, so even though she missed the one meeting, she deserves all the points.

Bob Johnson - 2

I'm a bum. I missed half the meetings and let John and Elizabeth do the whole thing. I did tell them where to find the Minitab notes, though.