

GOVERNORS STATE UNIVERSITY  
College of Business and Public Administration

Course Title:	STAT 362: Statistics for Management II (Section B, Reference # 211059)
Session:	Winter 2000 (Block 1)
Time:	6:00-8:50 Friday
Instructor:	Dr. David A. Parmenter
Office:	C3356
Phone:	(708) 534-4961
e-mail:	d-parmen@govst.edu
Office Hours:	2:00 – 3:00 MW, 6:30-7:30 T, 5:00-6:00 F and by appointment
Catalog Description:	A continuation of STAT-361. Topics covered include analysis of variance, regression, correlation, time series, indexing, nonparametric statistics, bivariate distributions, and chi-square tests. Students make extensive use of the computer in the analysis of data and application of statistical tests as they apply in business situations.
Prerequisites:	STAT 361 or its equivalent
Textbooks:	<u>Statistics for Business and Economics (7<sup>th</sup>)</u> by Anderson, Sweeney and Williams <u>Workbook for Statistics for Business and Economics</u> by Ahmadi (optional)

OVERVIEW:

Including a substantial review of STAT 361, this course will cover most of the standard techniques available for statistical inference. Techniques covered will include confidence intervals and hypothesis testing for both means and proportions, simple and multiple linear regression, analysis of variance, Chi-square and nonparametric tests. Students should have successfully completed STAT 361 or the equivalent prior to enrolling in this course.

In theory, as undergraduate students in a business program, you are being trained to be entry level managers. As such you need to know how to interpret data for decision-making purposes. The purpose of this class is not as much to turn you into statisticians as it is to turn you into intelligent consumers of statistics.

Most of the class meetings will be held at least partially in the assigned classroom. These class meetings will be conducted using a standard lecture format. In order to get the most out of these classes you should read the assigned chapter before the lecture and ASK QUESTIONS. Although it sounds corny, there really is no such thing as a stupid question. If you are confused by a particular topic it's very likely that many of the other students are confused as well.

During the second half of the course we will meet frequently in the computer lab where we will use the software package Excel to solve a variety of problems which are too complex to do by hand. Some of the homework assigned during this portion of the course will require you to use Excel. The third midterm exam and the final exam will require you to interpret Excel output in order to answer a variety of questions.

I didn't select Excel as the software for this class because it is the best statistical package available – it's not. I selected Excel because it's so commonly available and is familiar to most of you.. I'm hoping that using Excel, rather than a more sophisticated but less readily available statistical package, will have two benefits. First, it should be more convenient for you to do your homework because you won't necessarily have to do it in the GSU computer lab (because so many of you have Excel either at home or at work). And secondly, and more importantly, learning how to do statistics with a software package that you already use anyway makes it more likely that you will continue to make use of your statistical expertise long after this class is over.

COMPETENCIES:

After completing this course you should be familiar with the use of the statistical techniques mentioned above. You should be able to determine the appropriate technique to use on a particular problem. You should understand the assumptions and logic behind each method and should be able to perform the appropriate calculations (by hand for some methods and via the computer for others). You should be able to analyze the results of these calculations and make intelligent managerial decisions based on the data. You should also have become reasonably familiar with the statistical capabilities of the software package Excel.

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## EVALUATION:

Your grade in this course will be based on the following assignments.

Homework	20%
Midterm 1	20%
Midterm 2	20%
Midterm 3	20%
Final Exam	20%

Although the final results will be curved if necessary, you should expect a curve which follows the standard 90-80-70-60 format.

## HOMEWORK:

Homework problems will be assigned weekly. There is simply no way to learn this subject well without practicing it. Homework problems will be selected carefully so as to test your knowledge of the important concepts and formulas. Since the same person (me) is both selecting the homework problems and writing the test questions, it would suggest that the homework problems and test questions will be similar. Thus homework is doubly important. It counts for a full 20% of your final grade and also provides practice for the tests.

In the second half of the trimester, when the problems become too complex to do by hand, some of the homework will involve the use of the statistical computer package Excel. It is assumed that you are familiar with the basics of Excel. Instruction on the program's statistical capabilities will be given at the appropriate time in the trimester.

Your homework must be well organized and legible. Show your work on problems involving complex calculations. Your job when doing the homework is to convince the grader (once again, me) that you know what you are doing.

Writing down the correct answer without showing how you got that answer will not get full credit. Late homework will be accepted but will be penalized by losing 25% credit for each class period that it is late.

The homework assignments are shown on the last page of this syllabus.

## EXAMS:

There will be three midterm exams, each of which will cover about one third of the course. The third midterm will be given late enough in the trimester so that no new material will be covered between the third midterm and the final exam. The final exam will be cumulative. It will consist of three parts, one part for each third of the trimester. The final exam can have a very large impact on your grade. The overall score counts for 20% of your grade. In addition, you will be able to replace any one of your midterm scores with the score that you receive on the corresponding portion of the final exam. For instance, if you receive a 62 on the second midterm but score an 87 on the second portion of the final, your midterm grade of 62 could be replaced with a score of 87. The midterm grade to be replaced, if any, will be chosen so as to provide you with the greatest benefit.

To help you prepare for the tests I will be handing out copies of last year's exams. The exams given during this trimester should be fairly similar to those given previously.

For each exam you will be allowed to use a one-page "cheat sheet." This means that you should not waste any mental energy trying to memorize formulas (save your brain cells for trying to understand the concepts). You may include anything you want to include on your cheat sheet, e.g. formulas, definitions, example problems, prayer, etc. The only rule is that everything put on the sheet must be created by you. This means no photocopying. I allow a cheat sheet rather than giving an open book exam because the act of putting the sheet together should force you to organize things in your mind. Most of the students who have taken this class from me would tell you that the effort put into creating a very thorough and well-organized cheat sheet is well rewarded. You will do much better on the exams.

The exams will not start until 7:00. The time between 6:00 and 7:00 will be used for a review session. These review sessions will be question-and-answer only, i.e. I won't have anything prepared – I will simply answer any questions that you have. Attendance at the review sessions is not mandatory. Show up at 6:00 if you have a lot of questions.

Show up at 6:30 if you have a few. Show up at 6:55, just prior to the exam, if you have none.

### STATISTICS TUTORING:

The Center for Learning Assistance in the Office of Student Development provides tutors free of charge to GSU students. This office is in room B1215 and can be reached at 534-4508. There are generally only one or two tutors assigned to statistics classes and thus there won't be many appointments available for statistics students. Call early to make an appointment as the tutors tend to get booked up quickly, particularly toward the end of the trimester.

### SYLLABUS STATEMENT FOR PERSONS WITH DISABILITIES:

It is the intention of the institution to support full participation of all students, regardless of physical ability level. Therefore, if any student needs consideration of his/her physical abilities in order to complete the course, please notify the instructor as soon as possible.

### SCHEDULE:

The schedule below includes chapter assignments from the Anderson, Sweeney and Williams text. Note that you should always read the introduction to the chapter in the ASW text. For instance, in chapter 10 you are only assigned sections 10.2 and 10.3 in ASW. This means that you may skip section 10.1. Don't also skip the two or three introductory pages at the beginning of the chapter that precede section 10.1.

DATE	TOPIC	CHAPTERS
1/14	Introduction and Review	3, 5, 6, 7
1/21	Confidence Intervals	8
1/28	Confidence Intervals/Hypothesis Testing	8, 9
2/4	Hypothesis Testing	9
2/11	Lincoln's Birthday	
2/18	Midterm 1	Covering 8 and 9
2/25	Two Population Tests and Chi-Square Tests	10 (10.2-10.3 only), 12 (12.1-12.2 only)
3/3	Analysis of Variance	13 (13.1-13.3 only)
3/10	Midterm 2	Covering 10, 12 and 13
3/17	Simple Linear Regression and Correlation	14
3/24	Multiple Regression	15
3/31	Multiple Regression	16
4/7	Nonparametric Tests	19 (19.4 only)
4/14	Midterm 3	Covering 14, 15, 16 and 19
4/21	Final Exam	Cumulative

**NOTE: THE WITHDRAWAL DEADLINE IS MONDAY MARCH 20th.**

## HOMEWORK LIST:

Homework is due on Friday. Late homework will be accepted through Tuesday at 12:00 PM without penalty. After that it will lose 25% and will continue to lose 25% per week for each additional week that it is late. Try to do your homework on time. The homework should help you to understand what you heard in the lecture. Therefore, if you do the homework on time (before the next lecture) you should be more comfortable with one chapter before we move on to the next chapter. Students who habitually hand in their homework late tend to do poorly in the course.

Note: If you choose not to hand in a particular assignment on Friday, planning to hand it in by Tuesday at noon, you must accept the risk that you might not be able to successfully do so. I don't want to receive any sob story phone calls on Tuesday morning about sick children, inoperative automobiles or homework-eating canines. An assignment that isn't handed in on Friday is technically late (even though I won't take any points off if you get it to me by Tuesday at noon). Thus I won't have much sympathy with Tuesday morning problems.

If necessary you can mail homework to me at Dr. David Parmenter, College of Business, Governors State University, University Park, IL, 60466 or fax it to me at (708) 534-8457. If you use the fax make sure that the writing on your original copy is very dark. Also make sure that your fax is clearly marked as being for me – the fax number given above is for the departmental fax and thus your work might be given to another professor if it isn't clearly labeled.

Answers to the even numbered questions can be found in Appendix D on page A-41. (Note: showing nothing more than the answer on your homework will generally not get you full credit). Answers to the self-test exercises can be found in Appendix E on page A-59. Homework assignments that are due the day of an exam will include primarily even-numbered or self-test exercises so that you can check your work prior to taking the test.

HW #	DUE	CHAPTER	PROBLEMS	SPECIAL INSTRUCTIONS
1	1/21	3, 5, 6, 7	Ch. 3: 61ad Ch. 5: 36ab Ch. 6: 19 Ch. 7: 37, 49	Don't forget to show your work on even numbered problems like #36ab (the answer is in the back of the book in Appendix D)
2	1/28	8	7, 16ab, 21ab, 51	
3	2/4	8, 9	Ch. 8: 57 Ch. 9: 1a, 3a, 4a, 7, 10	On #7bc give the "real world" consequences of making Type I or Type II errors – what will the firm DO in error if it makes each mistake?
4	2/18	9	20, 38, 52, 58abc, 69	Note: the correct answer to #69 is $n = 76$ . Don't forget to show your work.
5	3/3	10, 12	Ch. 10: 19, 29 Ch. 12: 3, 31	Don't forget to show your work on self-test problems like #3 (the answer is in the back of the book in Appendix E)
6	3/10	13	1c, 11	Use EXCEL on #1c. Specify the hypotheses, the decision rule, the observed value and the conclusion. (Answer: $PV = 1.25E-06 = .00000125 \rightarrow$ Reject $H_0$ ). Use the LSD procedure from the text on #11. (Answer: $LSD = 3.23 \rightarrow \mu_1 < \mu_2, \mu_1 < \mu_3, \mu_2 > \mu_3 \rightarrow$ overall $\mu_1 < \mu_3 < \mu_2$ ).
7	3/24	14	21, 29, 38, 65abc	Use EXCEL on #65. In part b specify the hypotheses, the decision rule, the observed value and the conclusion. On #29 don't bother showing the ANOVA table.
8	3/31	15	7, 35, 36, 50abcf	Use EXCEL on all. As usual, specify hypotheses, decision rule, observed value and conclusion whenever performing hypothesis tests. On #36c explain why 36c results differ from those of 35d.
9	4/7	16	6, 18b	Use EXCEL on all. On #18b use the backward elimination method (using $\alpha = .05$ ) from the text.
10	4/14	19	30	Specify the hypotheses, the decision rule, the observed value and the conclusion