Why Study Statistics? Managers need strong quantitative and statistical skills in order to make sense out of the masses of data being collected in today’s computerized business environment. However, being able to crunch numbers in an Excel spreadsheet is *not* enough. Managers must also be able to understand what such summaries and tabulations mean. In particular, managers must understand importance of incorporating the concepts of *variability* and *uncertainty* into any data evaluation and decision making effort.

Course Description. The course covers the basic tools and concepts of statistics as they apply to management: descriptive statistics, exploratory data analysis, statistical relationships (including correlation and regression), causation, sampling, and statistical inference (including significance tests and confidence intervals). In this context, we will cover a variety of statistical methods to analyze data.

Course Goals. Business Statistics has a number of goals. They include helping you to:

1. Master basic data analysis skills.
2. Evaluate, critique, and understand the limitations of analyses performed by others.
3. Use quantitative methods and material to support your written arguments.

My personal goal is to help demystify statistics for you and interest you in continuing to expand you understanding and application of statistical methodology in your business.

Prerequisites. In order to succeed in this course, you must be familiar with algebra at the pre-calculus level. Calculus is not required, nor is any prior knowledge of statistics assumed. However, the class will proceed at a rapid pace, and those with a background in statistics will likely have an easier time.

You should have access to a personal computer (either Windows-based or Mac) and be comfortable learning new software with a “point and click” feel. You should also be able to download course materials from the Internet: Lecture notes, homework solutions, and other course materials will be distributed electronically via the course website.

Course Materials. I have listed a number of different types of course materials below. *Required* items will be necessary for completion of reading assignments and homework and should be purchased. *Supplemental* items might be useful to students requiring additional background material of a level at or below the required texts.

**Required:**

Grading. The course grade will be determined by your performance on homework, quizzes, class participation/attendance, and a final exam, as described below. Course letter grades will be determined at the end of the term according to a curve centered around B+. Letter grades will not be given for individual assignments.

Homework. Homework will make up 20% of your grade. If you must miss a class then it is your responsibility to complete and submit the assignment prior to the due date. A missed assignment will be recorded as zero.

Homework assignments must be turned in before the start of class on the day they are due. Assignments turned in after they are due will automatically lose 50% of the grade, with an additional 10% per day for each day late after that.

In general, homework must be turned in on paper. If for some reason you cannot attend a class and you cannot submit your assignment via a classmate, you may submit your assignment to me electronically. However, note that this electronic submission is on an exception basis only.

Quizzes. Quizzes will be given throughout the term during the first 10 minutes of most of the classes. It is your responsibility to be here on time to take the quiz. No make-ups will be given. Quizzes will be short (10 questions) true/false, multiple choice style, and will be drawn directly from the class notes and reading. The lowest quiz score (including zeros for those quizzes missed, if any) will be dropped, and the remaining quiz scores will make up 20% of your grade.

Class Participation/Attendance. Class participation and attendance will comprise 10% of your grade. Class participation will be 5% and is awarded at my discretion. At the end of the course, I will give each person between one and five percentage points for participating in class. Participation does not mean grandstanding, nor does it mean knowing all the answers. Asking an insightful question and demonstrating interest in the class is what is important. Attendance will be taken in each class, and missing two classes will result in an automatic loss of 2.5%. Missing three or more will result in the loss of the full 5%.

Final Exam. The final exam will comprise 50% of your grade. The exam will generally be comprised of true/false and multiple choice questions, but it will also have some problems requiring calculations as well. The exam will be open book and open notes.

Return of Graded Material. Homework and quizzes will be returned at the next class meeting after they are submitted. Note that this means that you will be submitting a new
assignment or taking the next quiz before you get your last one back. However, solutions will be posted to the course website within the next few days after each class so that you can get immediate feedback on your work. I suggest that you keep copies of your homework so that you can immediately compare it to the solutions. Unclaimed assignments will be discarded after four weeks.

**Homework Policy.** There will be approximately ten homework assignments over the term as indicated in the schedule below. You are encouraged to discuss homework problems with your peers, but homework assignments must be written up individually. You have the following objectives on your homework assignments:

- Answer the question you were asked.
- Argue clearly and concisely that your answer is correct.
- Demonstrate your skill in using the statistical tools needed to arrive at your answer.

I will judge your homework assignments by how clearly I feel you understand the material. Remember that nothing conveys clear thinking like clear writing. The definition of clear writing includes the appropriate use of and reference to computer output. If you examined certain graphs and/or statistics when arriving at your solution then include that output in your report so that I can follow your logic to your conclusion.

Computer output should be clearly labeled and referred to in the text. Ideally, the output should be placed in a figure close to the textual reference. Including large sections of computer output without reference in the text is a signal that you are not sure what is important and what is not and will likely count against your grade.

**Academic Integrity.** Academic dishonesty of any type will not be tolerated in this class. Any form of cheating will result in automatic course failure.

A comment about writing the assignments up individually and working in teams: You are strongly encouraged to work together in teams to discuss the problems and concepts. However, you are required to write up the assignments individually. This means that all the words in your assignments are your own, and you generate all of your own computer output and graphs.

Now, while correct solutions will have very similar and perhaps even have the same computer output, no two answers should be phrased the same way. If I find two or more assignments that are highly similar, I will at a minimum give the homework a zero, and may refer the incident to the Dean.
## Business Statistics Class Schedule

<table>
<thead>
<tr>
<th>Day</th>
<th>Date</th>
<th>Topic</th>
<th>Readings, Cases &amp; Practice Exercises</th>
<th>Homework</th>
</tr>
</thead>
</table>
| Fri     | Sept 19   | Numerical Descriptive Statistics; JMP Orientation                    | Reading: Business Statistics, chpts 1 & 2; BBS chpts 1 & 2 (pp. 1-8)  
Case(s): BBS chpt 2: GMAT Scores                                      | A1Q1     |
| Thurs   | Sept 25   | Graphical Descriptive Statistics; JMP Orientation (continued)        | Reading: Business Statistics, chpt 2; BBS chpt 2 (pp. 5-8)  
Case(s): BBS chpt 2: GMAT Scores, GM Stock Returns                   | A1Q2     |
| Thurs   | Oct 02    | Probability and Random Variables                                     | Reading: Business Statistics, chpts 4 & 6; BBS chpt 3 (pp. 41-44)  
Case(s): BBS chpt 3: Exec. Compensation, Int’l Airline Passengers   | A1Q3     |
| Thurs   | Oct 02    | The Normal Distribution                                              | Reading: Business Statistics, chpt 3; BBS chpt 3: Automotive Manufacturing                          | A2Q1     |
| Thurs   | Oct 23    | Sampling Distributions and the Standard Error                        | Reading: Business Statistics, chpt 4; BBS chpt 4 (pp. 65-67)  
Case(s): BBS chpt 5 Motor Shafts & Consumer Goods                   | A2Q3     |
| Thurs   | Oct 23    | Confidence Intervals                                                 | Reading: Business Statistics, chpt 11; BBS chpt 5 (pp. 93-96)  
Case(s): BBS chpt 5 Motor Shafts & Consumer Goods                   | A3Q4     |
| Thurs   | Oct 30    | Collecting Data                                                      | Reading: Business Statistics, chpt 12; BBS chpt 6 (pp. 107-110)  
Case(s): BBS chpt 6: Hotel Satisfaction Survey                      | A2Q2     |
| Thurs   | Nov 06    | Hypothesis Testing I                                                 | Reading: Business Statistics, chpt 13; BBS chpt 7 (pp.127-130)  
Case(s): BBS chpt 7: Painting Process, Food Processing Line         | A3Q1     |
| Thurs   | Nov 13    | Hypothesis Testing II                                                | Reading: Business Statistics, chpt 13; BBS chpt 8 (pp. 155-157)  
Case(s): BBS chpt 8: Taste-Testing Tea, Pharmaceutical Sales        | A3Q2     |
| Thurs   | Nov 20    | Fitting Equations to Data                                            | Reading: Business Statistics, chpt 15; BBS chpt 11 (pp. 213-215)  
Case(s): BBS chpt 11: Mutual Funds                                   | A3Q3     |
| Thurs   | Nov 27    | Holiday: Thanksgiving                                                | Reading: Review all course readings                                                                    |          |
| Thurs   | Dec 11    | Review Session                                                       | Case(s): Review all cases                                                                            |          |
| Week of | Dec 15    | Final Exam                                                           |                                                                                                        |          |

9/09/08