### INSTRUCTOR
Mrs. Bonnie Schroeder

### OFFICE
Fisher Hall 330

### OFFICE HOURS
M, T, W; 12:00 – 2:00 PM; other times by appointment only.

*Office Hours are run according to a FIFS or a shared system. You cannot “schedule” time during office hours for an appointment. Come organized and prepared to ask questions. Office hours are not for “camping” to do homework and/or to study.*

### VOICE MAIL
for emergency messages only: 688 - 8062

### E-MAIL
[mailto:schroeder.1@osu.edu](mailto:schroeder.1@osu.edu)

All communications must use secure OSU e-mail. Do not use gmail, yahoo, or other personal e-mail accounts.

SUBJECT must include **BM2320**

If protocol is followed, you should expect a response no later than the next business day.

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### COURSE REQUIREMENTS

| PREREQUISITES | Statistics 1430 and CSE 2111 or 1113.  
  *Note: We are not able to waive prerequisites for this class.* |
|---|---|

**TEXT BOOK - Optional**
Moore, McCabe, Duckworth, Alwan
*The Practice of Statistics for Business and Economics Using* (3rd edition)
W. H. Freeman and Co. (Chapters 1 – 15)
ISBN: 10-1429242531 or 13-9781429242530
*Note: Chapter 15 is a supplemental chapter not printed with the standard text book. It is, however, free and open at the companion web site for the text book ([http://www.whfreeman.com/psbe3e](http://www.whfreeman.com/psbe3e)).*

**Pearson MyStatLab**
Sharpe, DeVeaux, Velleman
*Business Statistics, 3rd Edition*
Access including e-text will be provided at no to you cost by Pearson – Pilot Program

**CALCULATOR**
There are no requirements/restrictions related to the calculator that you use for classroom purposes or exams, but you must bring a calculator to every lecture, recitation, and exam.

**CLASSROOM SUPPORT MATERIALS**
Probability tables – These are posted on Carmen and should be printed.
Course formula packet – This is posted on Carmen and should be printed.
Turning Technologies RF Clicker or Response Ware


COURSE OVERVIEW and OBJECTIVES

A. Vast amounts of data are collected in today's global business and economic environment. The most successful decision-makers and managers are those individuals/groups that can put this information to work effectively to guide their decision process. Accountants routinely conduct audits for their clients using statistical sampling procedures that allow them to draw a conclusion about the accuracy of the accounts receivable amount shown on a balance sheet based on the information obtained from the carefully validated sample. Financial advisors use a variety of statistical information to measure the risk associated with investments. A variety of statistical information is used in production processes to monitor the quality of the output of that process. Electronic scanners used at retail checkout counters gather data used in establishing future marketing strategies. These are but a few examples of the uses of information generated through statistical analysis of data.

The first objective of the course is to familiarize you with some common statistical methods used for generating decision-making information from data. We will focus our attention on estimation and hypothesis testing, Analysis of Variance, Regression analysis and model building, forecasting with time series, and Monte Carlo simulation. We emphasize data investigation and mastering statistical reasoning, not mathematical rigor. Our approach will generally follow a three-step process:

1. PLAN
   - Identify the question that needs to be answered.
   - Obtain relevant data. Understand the characteristics of the data.
   - Select a model and method. The Normal and Binomial models will be stressed because of their general applicability and ease of implementation, but they are applicable only under certain conditions. Before any calculations are performed, we must verify that the data conditions support the model.

2. CALCULATE (DO)
   - All formulas and calculations must be understood, and therefore demonstrated and practiced, in order to use the methods properly. The computational burden will be eased in practice by the use of readily available statistical computer software.

3. COMMUNICATE (REPORT)
   - Proper selection of the model, accurate measurement, and a correct analysis are necessary but not sufficient for the solution of management problems. The final, and most important, part is the interpretation of the results of the analysis. We will emphasize contextual communication of the results of a statistical analysis to a business audience.

B. Professional appearance and conduct, effective communication, self-motivation, and team-work are as vital for ensuring success in the business environment as are strong technical skills. Inattentiveness during meetings, talking or “text-messaging” while others are speaking, and arriving late to appointments are unacceptable behaviors in the business arena. Preparing incomplete, unorganized, sloppy, and/or illegible projects will limit your promotion possibilities. Missing project deadlines will compromise your employment status. A secondary goal of the course, then, will be development of behaviors, work habits, and communication skills consistent with expectations in the business environment:

1. CITIZENSHIP
   - Common courtesy will be extended to everyone, peers and instructors.
   - Use of electronic devices is restricted to class related activities.

2. TEAM WORK – some graded activities will be completed in groups

3. COMMUNICATION – evaluation of written and oral expression will factor into grade determination

4. PREPARATION for every “meeting” – research discussion topics and have appropriate materials
COURSE GRADE

Determination: The class earned distribution will adhere as closely as possible to the Ohio State University recommended distribution (A = 93% and above, A- = 90% to less than 93%, etc.).

Components:

<table>
<thead>
<tr>
<th>Component</th>
<th>Item Points</th>
<th>Total Points</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Participation/Evaluation</td>
<td>5</td>
<td>90</td>
<td>9</td>
</tr>
<tr>
<td>MyStatLab – Homework</td>
<td>15</td>
<td>150</td>
<td>15</td>
</tr>
<tr>
<td>2 “Cases”</td>
<td>55</td>
<td>110</td>
<td>11</td>
</tr>
<tr>
<td>2 Midterm Exams*</td>
<td>200</td>
<td>400</td>
<td>40</td>
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<tr>
<td>Final Exam*</td>
<td>250</td>
<td>250</td>
<td>25</td>
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<tr>
<td>Total</td>
<td></td>
<td>1,000</td>
<td>100</td>
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Up to 50 bonus points for comparison and critique of resources

An average of 50% or higher on the exams is required to pass the class, regardless of performance on the other components.

PROCEDURE

   - Prepare for class discussion/presentation.

2. Lecture – notes available on Carmen > Content > Week # > Lecture
   - Development/presentation/application of new content
   - Graded assessment of understanding will take place during every meeting.
   - Turning Point response system; you must have a clicker or ResponseWare. **Anyone caught submitting responses for another student (using more than one clicker device) will forfeit all clicker points for the semester.**

3. Recitation – notes/problems available on Carmen > Content > Week # > Recitation
   - Q-and-A
   - Practice and reinforce topics presented in readings, text, and lectures.
   - Introduction of new concept on occasion
   - Graded assessment of understanding will take place during every meeting, with the exception of Exam days.
   - Turning Point response system; you must have a clicker or ResponseWare. **Anyone caught submitting responses for another student (using more than one clicker device) will forfeit all clicker points for the semester.**

4. Practice – Reading and re-reading the notes and text will not be sufficient for you to understand the concepts and, by extension, for you to successfully complete assignments and exams. The following practice opportunities will be provided and should be attempted after the associated material has been covered in video and/or class.
   - **Required Homework using Pearson MyStatLab** will be due each Friday by 11:59 PM except during exam weeks.
   - Additional Practice posted on Carmen with each weekly module.
   - MyStatLab – My Study Plan
   - Text book problems
5. Video – on-line presentations available on Carmen > Content > Week # > Videos
   ➢ Review of most course topics will be available via videos that can be accessed in Carmen. The collection of videos is a supplemental, optional resource.

6. Cases: Learning theory and techniques are necessary but not sufficient for statistical analysis in today’s business world. Statistical analysis in support of business decisions requires the manager to understand statistical software and interpret statistical results. Whether you are charged with performing the statistical analysis or not, you must be able to determine whether presented statistical results make sense and are reasonable.
   ➢ Require the use of statistical computing software
   • Excel, Excel’s Data Analysis Add-in, StatTools, StatCrunch, Minitab, Other
   • StatCrunch included in MyStatLab
   • Minitab is available in Mason Computing Labs as well as in some University settings (for example, Thompson Library, 18th Street Library)
   • StatTools is available in the FCOB Mason computing Labs: All Programs > Palisades Decision Tools > StatTools#.
     o All students will have the opportunity to purchase a 1-year Student Version of the StatTools software for a nominal fee (approx. $50.00) at the following link:
       http://www.palisade.com/academic/students.asp
     o After placement of order, an installer and an activation code will automatically be sent. StatTools is not compatible with Apple computers.
   ➢ Cases will be completed in groups
     • Teamwork: You will work with a group of your peers to complete each case. The members of each team will be determined by the instructor.
     • Be advised that students consistently given low peer evaluation scores will be teamed together for the next case or will be assigned to complete the next case alone.
     • We cannot control when a student will drop the class or simply refuse to participate, so be prepared to solve the entire case, no matter what.
   ➢ Detailed information will be provided for each case on Carmen > Content > Cases > Case #.
   ➢ Each assignment will allow you to practice and improve not only your statistical skills, but also your written communication skills. Your assignment submission should be worthy of presentation in a professional setting

7. Exams:
   ➢ MAKEUPS given only according to University guidelines for excused absence.
   ➢ REQUIRED MATERIALS (formula pages, probability tables) will be provided.
   ➢ PENCIL must be used to write the exam.
   ➢ CALCULATOR is necessary, but there are no restrictions/requirements regarding calculator model.
   ➢ NO INTERNET OR CLOUD assess is allowed.

GRADE APPEAL POLICY
Although we make every effort to grade in a consistent and fair manner, occasionally an error is made or a student feels that an error has been made. Any request for re-evaluation of a grade must be submitted, in writing, within two weeks of grade availability.

COMMUNICATIONS REGARDING GRADES
Due to increased security concerns by the University regarding “sensitive” information, ABSOLUTELY NO student grade information will be shared via e-mail.
GRADUATING SENIORS
Graduating seniors must make their status known to their instructor at the beginning of the semester and follow up with a reminder during the last week of classes.

ACADEMIC MISCONDUCT
All material submitted for course grade credit must be your own work. Your instructor will report any suspected case to the University Academic Misconduct Committee for investigation. Past cases submitted to this group have typically resulted in the assignment of grade of E for the course plus disciplinary probation. A second offense may result in dismissal from the University. **Academic misconduct is a serious threat to the integrity and value of your diploma.** Such behavior is intolerable. For more information see the (revised) Code of Student Conduct, 3335-23-04 Prohibited Conduct, Part A. Academic Misconduct and Code of Student Conduct, Judicial Procedures, 3335-23-05 through 3335-23-13.

DISABILITY ACCOMMODATION
If you are entitled to an accommodation based on the impact of a disability, arrange an appointment with your instructor as soon as possible to initiate the process. Understand that without prior arrangement, special accommodation will not be given.

TIPS FOR SUCCESS IN THIS COURSE
1. **Attend all lectures and recitations** with a positive attitude.
2. **Participate** in any open discussions and don’t be afraid to ask questions.
3. **Take effective notes.** Often times your instructor’s comments are more important than what is already printed gets written.
4. **Stay current with the course material.** Each week’s material uses the prior weeks’ material as foundation. It is difficult and risky to build on a weak foundation.
5. **Form study groups.** Studying with other students is definitely encouraged. Articulating the material in your own words is helpful in reviewing the lecture material, as is testing each other on content.
6. **Practice** as many problems as time will allow. You cannot learn to swim without getting into the water; you cannot learn to prepare gourmet meals by watching “Iron Chef;” you cannot learn statistics without putting pencil to paper – a lot!
7. **Ask questions.** Seek help, in class and out.
8. **Communicate** any problems you are having or emergencies that arise to your instructor or TA immediately. We can be of most help when asked or notified with ample lead-time.
<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Agenda</th>
<th>Assigned Reading (Sharpe)</th>
<th>Comparative Reading (Moore)</th>
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<tbody>
<tr>
<td>1</td>
<td>M 5/11</td>
<td>Course Introduction</td>
<td>Chapter 7</td>
<td>Chapter 1, 4.1 - 4.3, 5.3</td>
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<tr>
<td></td>
<td>W 5/13</td>
<td>Review Normal Distribution</td>
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<td>Sampling Distributions</td>
<td>Chapter 9</td>
<td>Chapter 3, 4.4, 5.3</td>
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<tr>
<td></td>
<td></td>
<td>CI Estimation [p and μ (σ known)]</td>
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<td>6.1, 8.1*</td>
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<td>2</td>
<td>M 5/18</td>
<td>Hypothesis Tests Part I [p and μ (σ known)]</td>
<td>Chapter 10</td>
<td>6.2, 6.3, 8.1*</td>
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<tr>
<td></td>
<td>W 5/20</td>
<td>CI Estimation and HT [μ with σ unknown]</td>
<td>Chapter 11.4 – 11.7</td>
<td>7.1</td>
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<td></td>
<td>M 5/25</td>
<td>No class – Memorial Day</td>
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<tr>
<td></td>
<td>W 5/27</td>
<td>Review/Practice</td>
<td>Chapter 12</td>
<td>12.5, 12.6 new</td>
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<tr>
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<td>6.4</td>
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<td>4</td>
<td>M 6/1</td>
<td>Midterm 1</td>
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<td></td>
<td>W 6/3</td>
<td>Comparing 2 populations: μ_3, μ_1 - μ_2, p_1 - p_2</td>
<td>Chapter 13</td>
<td>Chapter 4.3*, 7.1, 7.2, 8.2</td>
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<tr>
<td>5</td>
<td>M 6/8</td>
<td>Chi-square Tests</td>
<td>Chapter 2.3</td>
<td>Chapter 2.5</td>
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<td>W 6/10</td>
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<td>Chapter 14</td>
<td>Chapter 9</td>
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<td>6</td>
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<td>One-way ANOVA – Part I</td>
<td>Chapter 20.1 – 20.7</td>
<td>Chapter 14.1</td>
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<td>W 6/17</td>
<td>Case #1 due</td>
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<td>Review/Practice</td>
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<td>7</td>
<td>M 6/22</td>
<td>One-way ANOVA Part II</td>
<td>Chapter 20.8 – 20.9</td>
<td>Chapter 14.2</td>
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<td>W 6/24</td>
<td>Two-way ANOVA</td>
<td>Chapter 20.10</td>
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<td>W 7/1</td>
<td>Simple Linear Regression – Part I</td>
<td>Chapter 4</td>
<td>Chapter 2.1 – 2.4</td>
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<td>M 7/6</td>
<td>Simple Linear Regression – Part II</td>
<td>Chapter 15</td>
<td>Chapter 10</td>
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<td>10</td>
<td>M 7/13</td>
<td>Multiple Regression – Part I</td>
<td>Chapter 17.1 – 17.5</td>
<td>11.1, 11.2*</td>
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<td>W 7/15</td>
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<td>11</td>
<td>M 7/20</td>
<td>Multiple Regression – Part II and Special Topics</td>
<td>Chapter 16</td>
<td>11.2, 11.3</td>
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<td>W 7/22</td>
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<td>Chapter 18</td>
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<tr>
<td>12</td>
<td>M 7/27</td>
<td>Forecasting with Time Series</td>
<td>Chapter 19</td>
<td>Chapter 13</td>
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<td>W 7/29</td>
<td>Case #2 due</td>
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<td>Review/Practice</td>
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<tr>
<td>13</td>
<td>W 8/5</td>
<td>Final Exam, 10:00 – 12:00</td>
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