BUSA 3110 – Spring 2016 – Melton Sections
Statistics for Business – Full Syllabus
3 semester hours

Professor: Dr. Kim Melton
Office: 132 Newton Oakes Center (Dahlonega) **Phone:** (706) 867-2724
Email: kmelton@ung.edu (This is the only email account that I check regularly.)

Office Hours 10:00 – 11:00 Monday and Friday
10:00 – 11:00 Wednesday (in the lab)
8:30 – 11:30 Tuesday
Other times by appointment (or by chance—just drop by)

Meeting Location: Most class meetings will be in Newton Oakes 017.
Some Wednesday classes will meet in Newton Oakes 109 (a computer lab)

Prerequisites MATH 2400 with a grade of at least C and some experience using spreadsheets

Course Description: A second course in statistical methods with special orientation to applications in business. Emphasis will be placed on application of statistical techniques, assessing their appropriateness, and communicating results to various audiences. Topics include data collection, sampling, data visualization, data analysis, model building using regression, and other statistical techniques. Statistical software is used extensively in the course. This course should be taken as soon as the prerequisite is satisfied.

Course Objectives: Upon completion of this course, students should be able to:

- select appropriate statistical methods to guide *decision-making*
- generate and use statistical output to analyze data
- identify the limitations of the statistical methods covered
- communicate how statistical studies were conducted and the results of those studies
- recognize ethical issues related to the collection and analysis of data and the communication of the results of the analysis

Texts and Other Required Support Material

1 and 2) Textbook and MyStatLab: These come together in a custom package available from the Dahlonega or Gainesville Campus Bookstore. The package includes selected chapters from *Business Statistics*, 3rd Edition by Sharpe, De Veaux, and Velleman in loose-leaf format and access to MyStatLab. MyStatLab provides electronic access to the entire textbook. Directions for accessing MyStatLab for your specific course or for alternative ways to obtain the required materials see links at the following website: http://faculty.ung.edu/kmelton/busa3110.html.

3) Access to the web (for download of software and access to other resources)

4) Access to JMP Statistical Discovery Software (JMP Pro version 12). This software is available for you to install on your own computer (Windows or Mac) and is included in your fees.

5) Access to Desire2Learn (D2L) e-Learning site for this course. After Drop/Add, all of my sections will use the D2L course set up for Section DA (regardless of the section listed in Banner). Note: I have not integrated MyStatLab into D2L (i.e., these will require separate logins).

6) Access to Microsoft Office. (see: http://blog.ung.edu/servicedesk/a-new-way-to-get-office/ for information on installing Office on your own computer without additional cost to you).

7) A stand-alone calculator (i.e., not the one on your phone or connected to a devise that has internet access). The calculator should be able to do basic arithmetic and statistics (mean and standard deviation for one variable).

Methods of Instruction

- Class will meet in a traditional classroom on Mondays and Fridays. These will use a combination of interactive lectures to present theoretical material, small group exercises, and presentation of situations where the theory can be applied. Many Wednesdays class will meet in the computer lab (NOC 109) for hand-on instruction. Regardless of the location, you will be expected to actively engage in the class through asking and answering questions.
- Computation is a key part of any statistical analysis; but in today's environment, most of the calculations can be done by a calculator or computer. JMP Statistical Discovery Software will be used for most of the analysis in the course. Instructions for downloading JMP to your computer are available later in this syllabus.
- Working homework will provided the experience necessary for you to use statistics successfully. Material will be presented in four modules where the content of each module is tied to one or more levels of the Data, Information, Knowledge/Understanding, Wisdom continuum.

Course Format

The course will be presented in six Modules. These Modules will be tied to recognizing that Statistic involves collecting **data**, transforming that data into **information** to describe situations, and using the information to develop **knowledge** (insight) so we can explain how and why outcomes vary. Throughout this process of going from data to information to knowledge, we will explore the **wisdom** required to use the tools ethically, to evaluate the effectiveness of various options, to understand assumptions made, and to communicate the analysis to various audiences. The last page of this syllabus shows the topics to be covered in each Module, the order of coverage, and support material that will be used.

Each Module will include a set of PowerPoint slides, assigned readings (from the text and/or outside sources), graded homework problems, graded chapter quizzes, instructor supplied (graded) assignments, and ungraded assignments that provide questions for the Test Bank for the final. In addition, most Modules will include preparation/participation assignments (some announced and some unannounced).

Sequence of topics, book coverage, and approximate length of the module

Module 1	Data - What is it, Types of data, How can we use it (Chapters 24 and 1)	~ 2 weeks
Module 2	Summarizing Data - Visually and Quantitatively (Chapters 2, 3, and 4.1)	~ 2 weeks
Module 3	Collecting "Good" Data (Chapter 8)	~ 2 weeks
Module 4	Inference for One Variable (Chapters 9-12)	~ 2.5 weeks
Module 5	Simple Linear Regression (Chapters 4, 15, and 16)	~ 2 weeks
Module 6	Multiple Regression and Model Building (Chapters 17 and 18)	~ 4.5 weeks

Grading

Your grade will come from a combination of five different types of assignments—1) Required Homework in MyStatLab, 2) Chapter Quizzes in MyStatLab, 3) Instructor provided assignments (Computer Assignments for submission, In-Class Quizzes/Exercises, or Out-of-Class Quizzes), 4) Preparation and Participation Points, and 5) a Final Exam.

Weighting for assignments will be as follows (with a more complete description below):

MyStatLab Homework	16 points	Based on the average of the assignments
MyStatLab Quizzes	16 points	Based on the average of the assignments
Instructor Supplied Assignments	64 points	8 points per assignment
Preparation and Participation	10 points	See below
Final	0 – 16 points	See below
MAX possible points = 106		

MyStatLab Homework: During the semester, you will have many graded homework (expect 15 to 20 during the semester). These will be designed to take approximately 30 minutes to complete. The problems are algorithmic versions of the identified problem printed in the textbook. These assignments will be released approximately one week before they, are due and you will have an unlimited number of attempts to complete the assignment.

You may use your notes and your textbook. Each assignment will have a release date prior to when the material is covered and a due date after the material is covered. Attempting the assignment near the time it becomes available is recommended. This alerts you to the kind of material that will be covered, provides a grade in case "life happens" before the deadline, and lets you go back and change the answers closer to the deadline. Each assignment will be assigned a grade on a 0-100 scale. The points for your course grade will come from dropping the lowest two grades, averaging the remaining grades, and taking this percent of the 16 available points. [Example: If your homework average is 75, then your points would be .75 x 16 = 12.]

MyStatLab Quizzes: During the semester, you will have approximately one quiz per chapter covered. These are designed to take approximately 15 - 25 minutes to complete. Typically, these assignments will be released approximately one week before they are due and will be due at least one day after the deadline for MyStatLab homework covering the same chapter. You are allowed to use your textbook and notes for these assignments. You will be allowed three attempts and the highest grade will count. Feedback will be provided after the deadline. Each quiz will be assigned a grade on a 0-100 scale. The points for your course grade will come from averaging all of the quiz grades and taking this percent of the 16 available points.

Instructor Supplied Assignments: During the semester, you will have 8 graded assignments supplied by the instructor. Each of these will be graded out of 8 points. These assignments will include quizzes (in and out of class), in-class assignments (individual or group), and computer assignments. All in-class assignments will be announced at least one week ahead of time. Out-of-class assignments will be released approximately one week prior to the due date. All instructor supplied assignments will include information about support materials and conversation allowed during the assignment. The points for your course grade will be the sum of the individual grades.

Preparation and Participation: During the semester, I will provide small assignments that are intended to help you with upcoming material or to confirm that you have been paying attention in class. These will be recorded as 1-3 points each. Examples: 1) your roll verification / syllabus quiz that will be administered in D2L during the second week of the semester will be assigned 3 points in this area; 2) when I give you an assignment to "Bring ____ to class next time", that means that you need to have the identified material on paper, and I may check to see if you have brought the material to class (or I may collect the material) for you to earn point(s) [If you will miss a class where part of the assignment is "bring ___", you can email the material to me prior to the start time of class.]; 3) during class to check to see if you have been "tuned in," I may ask you to answer a quick question related to what we have just covered for 1 point [and, you must be in class to earn these points.]. The points for your course grade will come from dividing the total number of points you earned from these activities by the total number of points available and multiplying this by the 10 available points. [Example: If you earned 12 of 15 possible points, then 12/15 = .8, and your points would be .8 x 10 = 8.]

Additional homework assignments: To learn statistics, you must practice. Practice comes from attempting to work problems (from start to end), identifying what you don't understand, and dealing with the areas where you are struggling. You are encouraged to work together on these assignments and to seek assistance via email or during office hours if you have questions. To use a sports analogy, you must practice before games. Ungraded homework is the practice and graded assignments are the games. Also, these ungraded assignments make up the test bank for the final.

Pre-final grade: To determine your course grade prior to the final, add your *points* from the MyStatLab Homework, the MyStatLab Quizzes, the Instructor Supplied Assignments, and the Preparation and Participation assignments. That means that prior to the final you could potentially earn 16 + 16 + 64 + 10 =106 points. You must earn at least 90 points to receive an A; 80 for a B; 70 for a C; and 60 for a D. Remember that all BBA students must earn a grade of C or higher in this course to graduate.

Final: The ungraded homework problems will serve as the Test Bank for the final. These will include additional problems from your textbook (using the actual data supplied with the textbook), chapter discussion questions, and supplemental problems on the topics covered in class. Your Final will be open book, open notes,

and closed neighbor. For the Final, you will be provided 5 to 10 problems from the Test Bank and may select 2 of these to work. Each of these problems will be graded out of 8 points. Your grades on these problems can be used to replace your lowest grades in the Instructor Supplied Assignments section. Your Final exam will be held in the computer lab based on the following University assigned schedule.

Regular Class Time	Final Exam – Date and Time	
8:00 – 8:50 Monday, Wednesday, Friday	Monday, May 2, 2016	8:00 – 10:00
9:00 – 9:50 Monday, Wednesday, Friday	Friday, May 6, 2016	8:00 – 10:00
11:00 – 11:50 Monday, Wednesday, Friday	Friday, May 6, 2016	10:20 – 12:20

General Expectations

Attendance: You are expected to attend class each day. Students who fail to attempt any combination of 5 or more Instructor Supplied (graded) Assignments or MyStatLab Quizzes; or who miss 7 regularly scheduled class sessions will be considered to have violated the attendance policy. Meeting either of these criteria may result in a grade of WF.

Preparation: Students should arrive on time, stay for the entire class, and be prepared for class. "Prepared" means that each student should have read the assigned material, attempted all assigned problems, and printed out and brought a copy of any assignment listed as "bring to class". Students who are unable to complete an assigned problem should come prepared to ask questions about the problem. Students who are unable to determine how to start a problem should seek help during office hours or via e-mail prior to class time. *Students should plan to spend approximately six hours per week on class material outside of class.*

Participation: Statistics is like a foreign language; and, like learning a foreign language, learning statistics requires active involvement on your part. Part of the process of learning statistics involves new ways of thinking. You are expected to attempt to answer questions in class and to ask questions as they arise. Answers that appear to be "common sense" can be misleading when variation is taken into account. As a consequence, you will often be asked to explain the thought process that you used to reach an answer. Sometimes the greatest steps in learning come from understanding when/why a specific answer is not appropriate in a given setting.

Graded Assignments: Each Instructor Provided Assignment will include a due date and time. For Instructor Provided Assignments that are turned in (to D2L or "at the beginning of class on ___), late assignments will be subject to a penalty of 10% per day (or fraction of a day). Once grades (or answers to the questions) have been provided, late assignments will not be graded. MyStatLab assignments must be submitted prior to the posted deadline—late submissions are not accepted or will receive a grade of 0. Unless otherwise specified, electronic submission should be in a format readable by MS Office 2013 for Windows or JMP Pro 12. FAXed assignments are not accepted without prior approval. Some graded assignments may be copied for assessment purposes.

Make-ups: If a student will miss an In-class assignment due to an excused absence, arrangements for a make-up should be made ***prior to the time of the assignment***. If the absence is unplanned, timely notification and documentation will be required to consider a make-up. No make-ups will be given for unexcused absences and a grade of 0 will be recorded. Also, no make-ups will be provided after graded assignments (or answers) have been returned to students.

Individual and Collaborative Work: Students may collaborate on ungraded homework problems that form the test bank for the final. This means that students may work together; this does not mean that students may divide an assignment so that each student does separate parts.

All work on assignments that are submitted for grading is to be completed by the individuals named on the submitted assignment. If an assignment is listed as individual (or to be done independently), **no conversation** about the assignment may take place between individuals; for graded group assignments, the submitted work must be completed by the individuals in the group submitting the paper without conversation with individuals

outside of that group. Inappropriate communication (virtual or otherwise) will be treated as Academic Dishonesty and a violation of the Academic Integrity Policy (as described in the Student Handbook-under Code of Conduct). Internet search engines or plagiarism detection software may be used to determine if students have plagiarized material and violated this policy.

Calculator: Each student is expected to have (and know how to use) a calculator with statistical mode. Calculators on cell phones may not be used for quizzes.

Extra Credit: The grading approach providing 106 points prior to the final and allowing the final exam grades to replace two instructor supplied assignments provides extra credit. In addition, some graded assignments will include an extra credit question. The only other kind of extra credit will come when a student reports a significant mistake in support material provided on D2L or other course material. The first student to report the error will be eligible for the extra credit.

Telephones: North Georgia uses Blackboard Connect Emergency Notification System to communicate emergency messages to the university community. If you have not already gone to your Banner account and registered your number(s), please consider doing so. During class, please set your cell phone to vibrate, put your phone away, and refrain from answering calls or checking text messages if your phone is the only one "ringing." **Telephones must be put away during class**.

Supplemental University Information:
Please see http://ung.edu/academic-affairs/policies-and-guidelines/supplemental-syllabus.php for university policies related to:

• Disability Services	• Academic Exchange
• Academic Integrity	• Inclement Weather*
• Disruptive Behavior	• Course Grades
• Class Evaluations	• Withdrawal Process

* More on inclement weather:

- If the University is closed for part of a class period, I will consider the class cancelled for the day. Example: If the University says that classes will begin at 9:30, I will consider the 8:00 and 9:00 classes cancelled, but not the 11:00 class.
- If there is an in-class graded assignment scheduled on a day when the University announces a late opening, the assignment will be postponed (for all sections) to the next class period.
- If there is any other assignment due on a day when the University announces a late opening, I will attempt (dependent on whether I have power and internet service) to send you an email update on the deadline.

Also, see http://ung.edu/academics/academic-calendar.php for important dates for the semester (drop/add, withdrawal, breaks, etc.).

Data, Information, Knowledge, Wisdom Continuum (based on the work of Russell Ackoff)

- **Data:** The raw values - as in numbers, responses, etc.
- **Information:** Describes (Answers questions like who, what, when, and where)
- **Knowledge/Understanding:** Explains (Provides instructions and answers to how-to and why questions)
- **Wisdom:** Deals with value - as in effectiveness/goodness/appropriateness (Evaluates knowledge and understanding - requires judgment and contextual understanding—under what conditions, and how does this relate to a larger system)

Data, Information, and Knowledge/Understanding are focused on <u>efficiency</u>. [<u>Doing things right</u>]
Wisdom is focused on <u>effectiveness</u>. [<u>Doing the right things</u>]

Segment	Topics	Support Materials
Introduction/Overview (Module 0)	Course Organization (Data/Information/Knowledge & Understanding/Wisdom) The changing role of Statistics in today's world	Syllabus Outside sources (videos and article)
Data (Modules 1 and 3)	What is Statistics (as a discipline)? Sources of data (primary/secondary, internal/external) Measurement scale (qualitative/quantitative) (nominal/ordinal/interval/ratio) Data Cleansing Data Collection (census/sample, direct/indirect measurement, structured/unstructured)	Chapters 1 and 24 JMP Outside sources Chapters 1 and 8
Wisdom and Data	Characteristics of good data (choice of variables, operational definitions, measurement variation, psychological impact) Assumptions behind data collection Communication and Ethics	Integrated and supplemented with current examples
Information (Modules 2, 4, and 5)	Data visualization Descriptive and Inferential Statistics (parameters/statistics; measures of location, spread, and shape) Simple Linear Regression	Chapter 2-3 and JMP Chapters 9-12 and JMP Chapters 4, 15 and JMP
Wisdom and Information	Choice of visual display (population/sample/process) Choice of quantitative summary measure (population/sample/process) Assumptions for statistical inference Communication and Ethics	Integrated and supplemented with current examples
Knowledge (Modules 5 and 6)	Theory Development Multiple Regression (using quantitative and qualitative independent variables and considering interaction) Predictive and Prescriptive Analysis	Chapters 16-18 and JMP
Wisdom and Knowledge	Model Assumptions Model Building Communication and Ethics	Integrated and supplemented with current examples