MBA 8030 001 Statistical Analysis of Business Operations

Course Syllabus – Spring Term 2019

Course number and title	MBA 8030-001 Statistical Analysis of Business Operations
Academic term	Spring Term 2019
Course record number (CRN)	14062
Number of credits	3 credits
Dates, day and time	January 7, 2019 – May 3, 2019 Tuesday 6:00 PM – 8:45 PM
Classroom	601, Clemson at ONE Building Campus
Office hours	Tuesdays, 5 to 6 pm or by appointment
Instructor	M. Gabriela SAVA, PhD 368A Sirrine Hall msava@clemson.edu

Course Description

"Application of modern statistical inference in business operations. Topics include testing statistical hypotheses, consequences of making decisions with incomplete information, univariate and multivariate regression with emphasis on business applications and design of experiments and analysis of variance. Special attention is given to efficient and relevant data collection and interpretation."

Effective management in the information age relies on the proper use and interpretation of data. Virtually every functional area of management relies on the statistical treatment of data and information. Knowing when and how to use statistics as a tool to make decisions in an uncertain business environment is an essential skill of a successful manager.

Learning Goals

The objectives of this course are to present the most important statistical techniques and illustrate their applications. Emphasis will be on appropriate formation of problems, on proper choice of statistical techniques and on effective interpretation and communication of results. Conceptual understanding will be facilitated by the use of technology this course will therefore show how each of the statistical techniques can be implemented in a spreadsheet (MS Excel) environment. By the end of the course, students should be able to recognize and to deal with situations that involve uncertainty, and you should understand how to apply and to interpret regression analysis and other managerially important analytical models.

Course Textbook

The course requires the following textbook:

- Gerald Keller, *Statistics for Management and Economics,* **11th edition**, Cengage Learning

You are welcome to use a hardcopy or an electronic version, if you prefer.

Course Software

We will be using primarily Microsoft Excel and particularly its package Data Analysis. To get Data Analysis you go: **File → Options → Add-ins → Select Analysis ToolPak from the Add-ins list → then Go (bottom of the window) → Select Analysis ToolPak from the new list → then OK.** The Data Analysis package should be found under the tab Data.

Additionally, we will be using the Minitab software. Details about installation can be found here:

- Students can get an online copy of Minitab at https://cuapps.clemson.edu
- Students can get a download copy of Minitab for Windows by using the CCIT Software Center App
- CCIT also recommends having Citrix and VPN on your computer to help the software run better.

Canvas

We will be using Canvas (https://clemson.instructure.com/login/canvas), the Clemson University new course management system. I will post here all the material necessary for this class and also the assignments. You will find there the following items:

- Syllabus - updated as needed throughout the term.
- Course schedule - with week-by-week readings and problem assignments dates (subject to updates during the semester).
- Course handouts – lecture slides, problems templates, assignments solutions, class recordings, group project details.
- Course assignments and Group Project - are to be submitted online using the links provided on Canvas.

Course Method of Evaluation

- **Course Requirements**

Requirement	Percentage of Final Grade
Assignments (equally weighted)	20%
Group Project	20%
Midterm exam	30%
Final exam	30%
Total	**100%**

Note: All parts of the grade are mandatory.

Final grades will be assigned as follows:

A: 90-100%; **B**: 80-89%; **C**: 70-79%; **F**: < 69%

- **Assignments**

Assignments need to be organized and complete to be acceptable. I expect you to clearly label your work and present all the steps you followed to obtain the final results.

Here's a **checklist** that you can follow when completing your assignment for both the pen and paper and Excel problems:

- Each problem should be identified by the chapter number, the problem number and the textbook page;
- Provide complete explanations for the problems requiring solution interpretation;
- All the problems assigned should be saved in ONE Excel spreadsheet;
- Excel file should be saved with your name and the assignment number (e.g. *GabrielaSava_HW1.xlsx*);

The assignments are shown in the course schedule and there are **due on Tuesday at 6 pm**. I expect you to complete the assignments on time. **Late assignments will not be accepted**. Please submit the online assignments using the **Assignment** tool feature in Canvas page for this class. You are permitted and encourage working and discussing the problems with your classmates, however you must submit your work independently.

- **Group Project**

A case study is going to be assigned during this class, which can be solved in *groups of up to five students*. You have to communicate to me **by the end of the fifth class** your groups or I will assign students randomly in groups. The deliverables for the group project will be your Excel or Minitab files and a presentation during the last day of class. The case study solution is going to be submitted online and its due it is shown in course schedule. The case study will count for 20% of your final grade.

- **Midterm and Final exam**

Open book/notes midterm and final exams will be given in class as identified in the course schedule. You should bring your own laptop for the exams. During the exams there will be no communication with fellow students and the web browsing is forbidden. Make sure that you downloaded all the necessary materials before coming to exam. Both the midterm and final exam will count each for 30% of your final grade.

All students are expected to take the examination on the scheduled day. In general, there will be no make-up exams. However, in the event of final exam is missed to either a pre-approved absence by the instructor or due to an illness documented by a physician's note, arrangements may be made to make-up the exam. Make-up examinations are at the discretion of the instructor.

Attendance policy

Students who must miss class are responsible for all material covered and all announcements made in their absence. In the unlikely event that the professor may miss a class, students may leave after 15 minutes. In the event of snow, class will be held if the university is in session

Classroom Decorum

Please come to the class on time, and do not leave during the class unless it is absolutely necessary. Please turn off your cell phones, pagers, etc. so as to not disturb the class unless you expect a medical emergency, in which case please take a seat near an exit. Please do not engage in conversations with your colleagues during class, or engage in other activities that may be distracting to others nearby (for example, Facebook, e-mail, web surfing unrelated to the course discussion, etc.)

Students may not record classroom lectures, discussion and/or activities without my advance written permission. Any such recording, properly approved in advance, can be used solely for the student's own private use.

Students with Disabilities

Appropriate accommodations will be made for students with disabilities that are documented by Disabilities Services. Students must present a letter stating that the disability has been documented and requesting the specific accommodations early in the semester. Additionally, it is the responsibility of the student to give the professor at least one-week notice prior to each instance where an accommodation will be needed.

The Clemson University Title IX (Sexual Harassment) Statement:

Clemson University is committed to a policy of equal opportunity for all persons and does not discriminate on the basis of race, color, religion, sex, sexual orientation, gender, pregnancy, national origin, age, disability, veteran's status, genetic information or protected activity (e.g., opposition to prohibited discrimination or participation in any complaint process, etc.) in employment, educational programs and activities, admissions and financial aid. This includes a prohibition against sexual harassment and sexual violence as mandated by Title IX of the Education Amendments of 1972. The policy is located at http://www.clemson.edu/campuslife/campus-services/access/non-discrimination-policy.html
Jerry Knighton serves as Clemson's Title IX Coordinator and he may be reached at knightl@clemson.edu or 656-3181.

Academic Integrity:

"As members of the Clemson University community, we have inherited Thomas Green Clemson's vision of this institution as a "high seminary of learning." Fundamental to this vision is a mutual commitment to truthfulness, honor and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from

the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form. In instances where academic standards may have been compromised, Clemson University has a responsibility to respond appropriately to charges of violations of academic integrity."

Course Schedule

Day	Lecture topic	Readings	Assignments - Due on TUESDAYSs at 6 pm
Lecture 1 January 8	**Introduction**		
Lecture 2 January 15	**Descriptive Techniques**	Chapters 1, 2, 3, 4	
January 15	***Last day to register or add a class or declare Audit***		
Lecture 3 January 22	**Data collection & sampling Random variables and discrete probability distributions**	Chapters 5, 6, 7	**HW 1 Due January 29**
January 23	***Last day to drop a class or withdraw from the University without a W grade***		
Lecture 4 January 29	**Continuous probability distributions Sampling distributions**	Chapter 8, 9	**HW 2 Due February 5**
Lecture 5 February 5	**Introduction to estimation Hypothesis testing**	Chapter 10, 11	**HW 3 Due February 12** **Groups for the Group Project are due**
Lecture 6 February 12	**Inference about a population**	Chapter 12	**HW 4 Due February 19**
Lecture 7 February 19	**Inference about comparing two populations**	Chapter 13	**HW 5 Due February 26**
Lecture 8 February 26	**Analysis of variance (ANOVA)**	Chapter 14	**HW 6 Due March 5**
Lecture 9 March 5	**Midterm review**	Chapters 1-14	
Lecture March 12	**Midterm Exam**		
March 15	***Last day to drop a class or withdraw from the University without final grades***		
Lecture March 19	**No class – Fall Break**		
Lecture 10 March 26	**Chi-square tests**	Chapter 15	**HW 7 Due April 2**

Lecture 11 *April 2*	**Simple linear regression**	Chapter 16	**HW 8** **Due April 9**
Lecture 12 *April 9*	**Multiple linear regression analysis I**	Chapter 17, 18	**HW 9** **Due April 16** **Group Project is assigned**
Lecture 13 *April 16*	**Multiple linear regression analysis II**	Chapters 17, 18	
Lecture 14 *April 23*	**In-class Group Project presentations**		
Lecture *April 30*	**Final Exam**		