SURVEY OF STATISTICAL TECHNIQUES IN BUSINESS RESEARCH
SCMS 8530
FALL 2020
3.0 Credit Hours

Instructor: Dr. Mehdi Amini, Ph.D.
Phone 1: 901/678-2470
Phone 2: 901/678-2667
Email: mamini@memphis.edu
Class: R 1:00 – 4:00 PM
Office: FCBE 229
Office Hours: With appointment

Course Instruction Mode (REM):
The classes are remote, delivered online live via eCourseware/Zoom, synchronous.

The University of Memphis COVID-19 Notice:
Please review the contents of the COVID-19 Notice available via this link: https://www.memphis.edu/fcbe/faculty/covid_19_notice.php

■ COURSE INSTRUCTION MODE:
This semester the course instruction is remote. The attribute of remote instructions include: (1) Delivery of lectures will be via pre-recorded lecture videos which would be posted on the course website; (2) The class sessions are conducted live online, during the designated course period, via eCourseware virtual live meetings on the course website; (3) Other student-to-student and student-faculty interactions are conducted via eCourseware virtual live meetings on the course
website or freely available Zoom Video Conferencing software. To learn more about these attributes and eCourseware capabilities, please download and review the posted documents within the Remote Learning Environment module on the course website.

**COURSE DESCRIPTION:**

Experimental and survey investigations are integral components of scientific research method. Application of these procedures within the “hard” and “soft” sciences invariably leads to the use of techniques and methods offered by the science of statistics. The science of statistics deals with: (a) collection and summarization of data; (b) designing experiments and surveys; (c) measuring the magnitude of variation in both experimental and survey data; (d) estimating population parameters ad providing various measures of the accuracy and precision of these estimates; (e) testing hypotheses about population; and (f) studying relationships among two or more variables. The coverage includes a brief review of descriptive statistical methods followed by inferential statistical techniques including hypothesis testing, analysis of variance, association analysis, regression analysis, and nonparametric methods.

To prepare our Ph.D. students for scientific business research, the course provides an experiential learning process including three components. (1) “Small” homework assignments: the purpose is to understand topics covered in the class. (2) “Large” data set analyses: Collection, analyses, and presentations of data set(s) relevant to the major field of student Ph.D. program. The data set(s) may be collected through several sources including faculty, internet, etc. The objective of this component is to engage our students in the real-world research within their academic filed and allow them to apply the statistical methods to the real-world large-scale data sets. And (3) Extensive use of SPSS software to complete components 1 and 2.

**COURSE OBJECTIVES:**

- Developing a knowledge base about statistical methods.
- Enhancing critical skills in applying statistical methods for business research.
- Providing opportunities to apply Excel and SPSS for conducting relevant statistical methods and analysis of results.
- Enhancing presentation skills relevant statistical methodological concepts and applications.

**TEXTBOOK, SPSS Software, SPSS USER GUIDE, AND LECTURE NOTES:**


(2) *IBM SPSS Statistics Software*, Student Academic Version, Purchase at [http://www-01.ibm.com/software/analytics/spss/]
(3) **How to use SPSS?** Brian Cronk, Pyrczak Publishing Inc., Edition 7.


*NOTE:* IBM SPSS Statistics Software can be installed on the U of M owned desktop in your office. If you wish to have a copy on your own laptop or home desktop, then you need to purchase a copy online as instructed in the item (2) above.

- **COURSE WEBSITE:**
  - The website for this course may be found at: eCourseware.
  - The website is organized to include:
    - Student Group Discussion Boards.
    - Lecture PP slides.
    - Homework/case assignments.
    - Course announcements.
    - Other course documents for download.

- **RELATED WEBSITES:**
  - Fortune Magazine: [http://www.fortune.com](http://www.fortune.com)

- **ADDITIONAL REFERENCES:**

### PREREQUISITE:
SCMS 7020, or equivalent.

### EXAMINATION & GRADING:

<table>
<thead>
<tr>
<th>Main Activity</th>
<th>Sub Activity</th>
<th>Sub Activity Percentage Contribution</th>
<th>Main Activity Percentage Contribution</th>
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<tbody>
<tr>
<td>HW Assignments</td>
<td></td>
<td>35%</td>
<td>35%</td>
</tr>
<tr>
<td>Semester Group Project</td>
<td>Project Presentation</td>
<td>10%</td>
<td>25%</td>
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<td></td>
<td>Project Report</td>
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<tr>
<td>Exam I</td>
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<td>Exam II</td>
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<td>Total</td>
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<td>100%</td>
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**Percentage Range**

- 95-100% = A
- 90-94.99% = A-
- 87-89.99% = B+
- 84-86.99% = B
- 80-83.99% = B-
- <60% = F

To distinguish individual student’s performance as accurately as possible, we’ll be using “+” and “-“grading system.

### ACTIVITIES AND ASSIGNMENTS:

**I. Recorded and Posted Lecture Videos:** A set of pre-recorded videos of lectures along with their URLs would be posted. You need to view these
videos before each live class session. The live class session would be dedicated to your questions and discussions of various issues.

II. **Readings:** In addition to the textbook, papers and articles are assigned to provide further understanding of the concepts discussed in the class. Completions of these reading assignments are essential to our class discussions, exercises, and case presentation and discussions.

III. **Homework Assignments:** To practice the concepts discussed within the lectures, homework assignments are made from the textbook and/or other sources, supporting documents are posted on the course website. These assignments are required to be completed by individual students. Solutions to these assignments will be presented in the class by students. Solution to these assignments must be submitted for grading to the student’s designated drop box within the course website.

IV. **Semester Projects:** Two semester projects are assigned to the student groups, majoring in the same/closely similar areas:

1 – **Group Project 1:** A comprehensive current litter search about the statistical and analytical methods utilized commonly in the academic area of the student group. A presentation should be delivered to the class and a short report should be developed. Both documents would be submitted for grading.

2 - **“Large” Data Set Assignments:** Early in the semester, student groups are formed. Each team is expected to (1) identify sources and collect a “large” data set relevant to the issues of research interests in his/her major field of study (e.g., marketing, MIS, management, accounting, etc.). The sources of research data could be faculty, websites, journal articles, etc. (2) Receive approval from the instructor. (3) Apply the topics discussed in the class on the “large” data set. (3) Present analyses, results, and conclusions to the class in a series of three presentations, each 15-20 minutes of length. And (4) develop a final research report summarizing all conducted analyses, results, and conclusions. It is expected to use SPSS extensively in completing all relevant analysis.

### PARTICIPATION & ATTENDANCE:

Class attendance and participation are expected. The technical nature and organization of the course require your maximum participation in the class discussions and activities. Active participation of students in all class discussions, assignments presentations, and semester projects 1 and 2 presentation sets and discussions are encouraged. A substantial portion of this class is intended to foster learning through discussion.

### CLASSROOM CONDUCTS:
1. Please arrive on time.
2. Be prepared.
3. Submit your assignments on time.
4. Turn-off your cells during the class sessions.
5. No Internet browsing unless it is permitted for a class exercise.

**PHD DEGREE PROGRAM LEARNING OUTCOMES:**

The learning outcomes for this degree program are located on the following URL. Notice that Goals indicate Learning Outcomes for the degree program. The objectives under each learning outcome indicate what must be done to reach the learning outcome. Faculty members in the Fogelman College developed these learning outcomes and periodically assess students to determine the level that the learning outcomes are being met. URL: http://www.fcbeassessment.net/LearningOutcomes/PhDDegreeLearningOutcomes.pdf

**ACADEMIC INTEGRITY, CLASS CONDUCT AND PRE-REQUISITES:**

Students are expected to familiarize themselves with the guidelines outlined on the website of the Office of Student Judicial and Ethical Affairs (http://saweb.memphis.edu/judicialaffairs) and to behave accordingly. Any violations of academic integrity will be reported to the University's authorities. The University has strict codes concerning cheating (see the Academic Misconduct section of the Student Handbook). Compliance with University code is required and will be strictly enforced.

**WARNING:** A prerequisite and upper division check will be completed once the first class roll has been issued. You must meet the following requirements to be enrolled in any 3000-4000 level business courses. Any student seeking a degree in the Fogelman College of Business must:

1. Have completed all required lower division Business Administration courses with a minimum grade of “C” (2.0) in each.
2. Have a minimum quality point average of 2.25 (ACCT major 2.5) in all required lower division business courses and MATH 1312.
3. Have accumulated 55 hours of course work including the required 9 semester hours of English. Non-Business majors must have junior or senior standing and have met specific prerequisites of courses.

If you have not met these requirements, it is your responsibility to correct the situation during the official add-period.

**STUDENT SERVICES:**
Please access the FCBE Student Services page for information about:

- Students with Disabilities
- Tutoring and other Academic Assistance
- Advising Services for Fogelman Students
- Technical Assistance

**COURSE SCHEDULE:**

The schedule below is a tentative outline for the course. We will make a reasonable effort to adhere to this schedule, but you should know that I reserve the right to alter this calendar as circumstances may dictate. All changes will be announced in class. Students not attending class are responsible for obtaining this information. Each session is described by the topic, related chapter in the textbook and lecture number. The reading and exercise assignments are included within the lecture notes distributed each week. Also, group case assignments (case presentation and analysis, critic, and jury) schedule follow the tentative outline.
# Tentative Course Schedule

**SCMS 8530 - FALL 2018**

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Textbook Chapter(s)</th>
<th>SPSS Chapters</th>
</tr>
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<tbody>
<tr>
<td>01</td>
<td>08/20</td>
<td>Review of Basic Concepts</td>
<td>CH01</td>
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<tr>
<td>02</td>
<td>08/27</td>
<td>Intro to SPSS: Basic Statistics and Sampling</td>
<td>CH02</td>
<td>Intro &amp; Relevant CHs</td>
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<td>Error and Confidence Intervals</td>
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## PART I: BASIC CONCEPTS

**03 09/03**

- Preliminary Data Screening
- CH04
- Relevant CHs

**04 09/10**

- Comparing Group Means Using the Independent Samples t Test
- CH05
- Relevant CHs
- One-Way Between Subject ANOVA
- CH06

**06 09/17**

- One-Way Between Subject ANOVA
- CH06
- Relevant CHs

**06 09/24**

- Factorial Analysis of Variance
- CH13
- Relevant CHs

## PART II: COMPARISON OF GROUP MEANS

**Labor Day: Monday, September 7th**

**07 10/01**

- Bivariate Pearson Correlation
- CH07

- Alternative Correlation Coefficients
- CH08
- OPTINAL

**Team Project Presentations**

**Take-Home Exam I: CHs 1 through 7 & 13**

**Fall Break: Saturday – Tuesday, October 13 – 16**

**08 10/08**

- Bivariate Regression
- CH09
- Relevant CHs
- Adding a Third Variable: Preliminary Exploratory Analyses
- CH10

**09 10/15**

- Multiple Regression Analysis with Two Predictor Variables
- CH11
- Relevant CHs
- Dummy Predictor Variables and Interaction Terms in Multiple Regression
- CH 12
- OPTIONAL

**10 10/22**

- Multiple Regression Analysis with More Than Two Predictor Variables
- CH14
- Relevant CHs

## PART IV: MODERATION AND MEDIATION
<table>
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<tr>
<th>Date</th>
<th>Topic</th>
<th>Ch</th>
<th>Relevant Chs</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/05</td>
<td>Moderation: Test for Interaction in Multiple Regression</td>
<td>CH15</td>
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<tr>
<td></td>
<td>Mediation</td>
<td></td>
<td>CH16</td>
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<tr>
<td></td>
<td>Binary Logistic Regression</td>
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<td>CH23</td>
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**Team Project Final Presentations**

**Project Report & Presentation Submission**

**Comprehensive Take-Home Exam II: All Covered Chapters & Lectures**

**Friday, November 13 – Tuesday, November 17**

**Submission Deadline: Group Assignments Drop Box**

**Final Grades: 2:00 – 3:00 PM**

Homework Assignments will be Posted on the Course Website
Dr. Amini is the George Johnson Professor of Supply Chain and Operations Management at the Department of Marketing & Supply Chain Management, in the Fogelman College of Business and Economics (FCBE), at The University of Memphis. He serves as Associate Director of FedEx Center for Supply Chain Management and Director of the Enterprise Simulation and Optimization Lab (eSOL), at The University of Memphis. He is Cyber Security Fellow and Biologistics Fellow at the FedEx Institute of Technology. Currently, Dr. Amini is a member of the university Research Council and Internal Review Board (IRB). For the past decade, he held Visiting Professorships at both Royal Institute of Technology and Luleå University of Technology in Sweden. In addition, he served as Director of FCBE Master Programs from 1994 to 1996.

For over two decades, Dr. Amini primary teaching have been in the areas of supply chain management, operations management, sustainable enterprise and business analytics. He has been teaching in the undergraduate, Professional MBA, Executive MBA, Customer-Driven MBA, International MBA, and Ph.D. programs in United States and countries in Europe, Africa, and Middle East.


Dr. Amini has received several million dollars of funding from institutions within the private and public sectors to support different research projects. Dr. Amini has been involved in corporate research, consulting, and executive educational programs for more than two decades. He has received several university awards for excellence in teaching, research, service, and outreach efforts.

Dr. Amini holds a BA in Business Administration from The University of Tehran. He received his MBA degree in Production Operations Management from the University of North Texas, USA, and MS and Ph.D. degrees in Operations Research from Southern Methodist University, USA.