SCMS 8540-001 – Multivariate Analysis for Business Research
Spring Semester, 2019
3.0 Credit Hours

Instructor: Daniel L. Sherrell, PhD
Class: Tuesday, 1:00 – 4:00pm, FCBE 365
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E-mail: dsherrll@memphis.edu
Office: Fogelman Executive Center: room # 150
URL: D. Sherrell academic website
Office Hours: 10:00am – 1:00pm, Tuesday
10:00am – 12:00pm, Wednesday
Other times by appointment

Course Overview:
The conduct of scientific research in the business disciplines requires data analysis tasks covering a wide variety of circumstances. Many of the available multivariate techniques are useful tools for completing these analysis tasks. The primary objective of this course is to provide Ph.D. students with a survey of the available relevant multivariate analysis techniques which may be applied to solve business research problems. The course is designed to give students the opportunity to apply these techniques to data analysis problems to gain hands-on experience in their use. The coverage of techniques in this course includes factor analysis; multivariate regression; MANOVA; and structural equation modeling.

Pre-Requisites/Co-Requisites:
SCMS 8530 or equivalent

Required Texts (and Related Materials):

- There will be a set of reading materials assigned for discussion on a variety of topics relevant to the application of major multivariate techniques. The assigned materials will consist of articles from the relevant research literature and the appropriate chapters from the text. The course instruction pedagogy is built around a seminar format. Class discussion and analysis are the primary vehicles through which meaning and understanding of the assigned topics will be developed. This approach puts the burden of preparation on the student to become familiar with the material to be discussed prior to the class meeting for discussion of a specific topic.
Location of Course Materials:
The course syllabus and lecture notes/slides will be made available through the University elearn course management system at: eCourseware website (opens in new window). The assigned reading material will be available on the University UMdrive site at:

Link to UM drive SCMS 8540 public directory (opens in new window).

Course Objectives:
Upon completion of this course, students:

Fogelman College: Learning Outcomes for Your Degree:
This course is designed to help you to meet the overall learning objectives for the Ph.D. degree offered by the Fogelman College. You should take the time to become familiar with the overall learning objectives as a student in the Ph.D. program:

The Fogelman College has established the following learning goals for all students successfully completing the PhD degree:
- Graduates will demonstrate a detailed knowledge of their areas of specialization.
- Graduates will master the analytical/methodological skills needed to evaluate and conduct research in their areas of specialization.
- Graduates will demonstrate their ability to design and conduct original research in their chosen fields of specialization.
- Graduates will be able to teach college-level courses in their areas of specialization.
- Graduates will be able to communicate the results of their research in a clear and effective manner.

Course Methodology:
The content covered in the course will be delivered through a variety of activities: class discussion; lecture; application activities; and class demonstrations. Student participation is required in each of these activities to provide sufficient opportunities for learning.

Professor’s Expectations of Students:
In general, you should assist the instructor in creating a positive, supportive environment for learning by staying engaged in the course and actively participating in all class discussions.

Student’s Expectations of the Professor:
In my role as your instructor, there are certain things you can expect from me including: well-organized and engaging learning experience, response to emails within two (2) business days, and feedback on all work submitted within 7-10 calendar days.
Grading and Evaluation Criteria:
Each student’s performance in this course will be evaluated on the basis of:

a) Two exams covering the assigned text material;
b) Development & analysis of three analytical exercises using assigned data sets;
c) An individual scale development research project; and
d) Class participation.

Exams:
The two take-home exams will be composed of broad-scope discussion/essay questions of the type typically included on Ph.D. comprehensive exams, as well as applications-type questions covering the techniques discussed in class. Questions for the two exams will be drawn from the assigned reading materials and class discussions over the assigned topics. See the course schedule for the material assigned to be covered for each exam.

Analysis Exercises:
Students will be given a series of data sets and asked to design, conduct and report on the findings from an analysis of each of those data sets. Each data set will be accompanied by a research question that students will be asked to address. Using the analysis procedures available in SPSS, each student will be responsible for:

- Developing specific hypotheses to be tested that address the assigned research question;
- Editing and analyzing the data set to test the stated hypotheses; and
- Writing a brief (i.e., 10 pg. maximum) descriptive report summarizing the results of that analysis. The report should be prepared using a 12 point font; double-spaced; with 1 inch margins and professional in appearance.

The reports summarizing the results of each analysis should be submitted electronically or in class on the assigned dates shown in the course schedule (i.e., Exercise I-2/05; Exercise II-3/12; and Exercise III-4/09).

Each report will be judged on:

- The effectiveness of the hypotheses in addressing the research question;
- The thoroughness of the data analysis conducted to address the stated research hypotheses;
- The quality of the data analysis used to test the research hypotheses (i.e., validation of analysis technique assumptions; measures taken to address problems; etc.); and
- The quality of the research report description in reporting the results of the analysis.

Scale Development Project:
Each student will be asked to:

- Choose a latent (i.e., unobservable) construct of interest to them,
- Develop a conceptual definition supported by the relevant research literature, and
- Develop and test a multi-item scale to measure the operationalized latent construct
- Collect sufficient data to evaluate the reliability, construct validity and nomological validity of the measurement scale
- Prepare a report describing the scale development process and obtained results
The scale development process used in the project (at a minimum) should encompass construct definition; item generation; scale item purification; and pilot testing to assess scale psychometric quality and scale nomological validity.

A prospectus report containing a description of the chosen construct and its conceptual definition based on the relevant research literature, as well as a detailed outline of the planned scale development process (with a timeline) should be developed and turned in during class on 2/26 (see the course schedule). Students will be responsible for developing a presentation of their completed scale project via powerpoint slides to describe their project results to be made in class on 4/16 (see schedule). Finally, the completed scale development paper should be turned electronically no later than 12:00pm on Tuesday, 4/30 during the final exam period (see schedule).

The written scale development report should be professional in appearance and of sufficient length to adequately describe the scale development activities undertaken by the student. Students will be responsible for acquiring a number of respondents sufficient to assess the psychometric and nomological properties of their new scale. The use of convenience sample designs for the purposes of scale purification and assessment is acceptable, as long as the appropriate limitations of this tactic are recognized in the Scale Project paper. The scale developed for this research project must be original to the student and not a revision of a previously published scale.

Class Participation:
Students will be expected to come to class fully prepared to discuss the assigned topics for that particular meeting.

List of Formal Assessed Activities:

<table>
<thead>
<tr>
<th>Course Component</th>
<th>Percent of Course Grade</th>
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<tbody>
<tr>
<td>Exam I</td>
<td>15%</td>
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<tr>
<td>Exam II</td>
<td>15%</td>
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<tr>
<td>Analysis Exercise I</td>
<td>10%</td>
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<tr>
<td>Analysis Exercise II</td>
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<tr>
<td>Analysis Exercise III</td>
<td>10%</td>
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<tr>
<td>Scale Development prospectus</td>
<td>10%</td>
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<tr>
<td>Scale Paper presentation &amp; paper</td>
<td>25%</td>
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<tr>
<td>Class participation</td>
<td>5%</td>
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<tr>
<td><strong>Total:</strong></td>
<td><strong>100%</strong></td>
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Final Course Grades:
The + / - grading system will be used in this class.

<table>
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<tr>
<th>Point Range</th>
<th>Grade</th>
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<tbody>
<tr>
<td>97 – 100 pts.</td>
<td>A+</td>
</tr>
<tr>
<td>94 – 96 pts.</td>
<td>A</td>
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<tr>
<td>90 – 93 pts.</td>
<td>A‐</td>
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<tr>
<td>87 – 89 pts.</td>
<td>B+</td>
</tr>
<tr>
<td>84 – 86 pts.</td>
<td>B</td>
</tr>
<tr>
<td>80 – 83 pts.</td>
<td>B‐</td>
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<tr>
<td>77 – 79 pts.</td>
<td>C+</td>
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<tr>
<td>74 – 76 pts.</td>
<td>C</td>
</tr>
<tr>
<td>70 – 73 pts.</td>
<td>C‐</td>
</tr>
<tr>
<td>67 – 69 pts.</td>
<td>D+</td>
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<tr>
<td>64 – 66 pts.</td>
<td>D</td>
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<tr>
<td>60 – 63 pts.</td>
<td>D‐</td>
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<tr>
<td>Below 60 pts.</td>
<td>F</td>
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SCMS 8540 – Multivariate Analysis for Business Research
Course Schedule
Spring 2019
1. 1/15 – Introduction; Data editing; Dealing with outliers; Statistical Power; Ch. 1 & 2
2. 1/22 – Scale development; readings
3. 1/29 – Scale development; Exploratory factor analysis; Ch. 3; readings
4. 2/05 – Multiple regression; Chapter 4; readings; Exercise I assigned
5. 2/12 – Multiple regression; Interactions; Chapter 4; readings
6. 2/19 – Multiple regression; Categorical variables; Chapter 4; readings; Exercise I due
7. 2/26 – Scale prospectus presentations; Exercise II assigned
8. 3/05 – Spring break
9. 3/12 – Take-home Exam I (Ch. 1-4 + readings) handed out; Exercise II due
10. 3/19 – MANOVA; Chapter 7; readings; Take-Home Exam I due
11. 3/26 – MANOVA; Chapter 7; readings; Exercise III assigned
12. 4/02 – Structural Equation Models; Chapter 12 – 13; readings
13. 4/09 – Structural Equation Models; Chapter 14 – 15; readings; Exercise III due
14. 4/16 – Scale Paper presentations; Take-home Exam II (Ch. 7, 12-15 + readings) handed out
15. 4/23 – Take-home Exam II due
16. 4/30 – Final Exam period – Scale paper due electronically by 12:00pm
Reading List
Note: Readings are available as .pdf files on:
Link to UM drive SCMS 8540 public directory (opens in new window)

1/15 Class 1
Introduction; Data Editing; Outliers; Statistical Power
Hair et al., Chapter 1 & 2


1/22 – Class 2
Scale Development


1/29 – Class 3
Scale Development, Exploratory Factor Analysis
Hair et al. – Chapter 3

2/05 – Class 4 – Exercise I assigned
Multiple Regression - Basics
Hair et al. – Chapter 4

Psychological Research: Conceptual, Strategic, and Statistical Considerations,” Journal of
Personality and Social Psychology, 51(6), 1173-1182.


Models,” Journal of Management, 23 (6), 723-744.

Regression Models,” Journal of Marketing Research, 28 (1), 100-109

Nathans, Laura L., Frederick L. Oswald, and Kim Nimon (2012), “Interpreting Multiple
Regression: A Guidebook of Variable Importance,” Practical Assessment, Research &
Evaluation, 17 (9), 1-19.

2/12 – Class 5
Multiple Regression – Interactions
Hair et al., - Chapter 4

2/19 – Class 6 – Exercise I due
Multiple Regression – Categorical variables
Hair et al., - Chapter 4

2/26 – Class 7 – Exercise II assigned
Scale Prospectus presentations

3/05 – Spring Break

3/12 – Class 9 – Exercise II due
Take-Home Exam I (Chapters 1-4 + readings) handed out
3/19 – Class 10 – Take-Home Exam I due
MANOVA
Hair et al., - Chapter 7


3/26 – Class 11 – Exercise III assigned
MANOVA
Hair et al. – Chapter 7

4/02 – Class 12
Structural Equation Models (SEM) – Basics and CFA
Hair et al., - Chapter 12 & 13


4/09 – Class 13 – Exercise III due
Structural Equation Models – CFA & Model Testing
Hair et al., - Chapter 14 & 15


4/16 – Class 14 – Take-Home Exam II (Ch. 7, 12 – 15 + readings) handed out
Scale Paper presentations

4/23 – Class 15 – Take-Home Exam II due

4/30 – Final Exam Period
Scale paper due electronically by 12:00pm

Course Policies
E-MAIL:
All students are required to maintain and access their University of Memphis (@memphis.edu) email account. You will receive all official course correspondence at this email account. Any inability to receive incoming mail in a timely fashion (e.g., not regularly checking your email, having a “full mailbox” condition, etc.) is the student’s responsibility.

Attendance:
Success in mastering the content covered in this course is based on discussion and understanding of the concepts covered. This course requires active participation to master its content. Consequently, attendance is required. You are expected to stay active and engaged throughout the academic term and keep up with the schedule of activities. Your full engagement in the class begins on the first day of the semester and should be maintained until the last assignment is submitted.

Adding / Dropping:
If you have questions about adding or dropping classes, please refer to this page on the Registrar’s website (opens in new window).

Academic Integrity:
The University of Memphis has clear codes regarding cheating and classroom misconduct. If interested, you may refer to the Student Handbook section on academic misconduct for a discussion of these codes. Note that using a “Solutions Manual” is considered cheating. Should your professor have evidence that using a “Solutions Manual” has occurred, he/she may take steps as described on the campus’ Office of Student Conduct website (opens in new window).
If you have any questions about academic integrity or plagiarism, you are strongly encouraged to review the Fogelman College’s Website on Academic Integrity (opens in new window).

Participation:
To be successful in this course as a student, you must stay active and involved throughout the entire semester. Students are expected participate in all interactive aspects of the course. You should also regularly communicate with the instructor as part of your overall learning
experience and check into the course web site frequently for announcements (usually on the course home page).

**Classroom or Online Behavior:**
All participants in the course should be considerate of the other course participants and treat them (as well as their opinions) with respect. The class will operate under the assumption that any and all feedback offered is positive in nature and that the intentions of the person(s) providing feedback are strictly honorable. Insensitivity in this area will not be tolerated. If you have any questions about online communication, you should review the [Fogelman College’s Netiquette website](opens in new window).

**Late Assignments:**
Assignments and projects may be submitted anytime up to and including the date due. Please review all information in this syllabus and related “Course Activity Summary / Schedule” for all due dates for formally assessed work. If your work is not submitted on time, the instructor reserves the option to deduct up to 20% of the grade value for tardiness depending upon the circumstances and appropriate communication between the student and the instructor.

**Extra Credit:**
There is no extra credit offered in this course. Your final grade will be computed based on your work on the formal/assessed activities previously described in this syllabus.

**Reporting Illness or Absence:**
Due dates and deadlines have been established for each graded assignment. In this course, deadlines are taken very seriously. Please do not wait until the last day to submit assignments or to take quizzes and exams. If an emergency should arise, it is the student’s responsibility to contact the instructor prior to the deadline to discuss the matter. A deadline extension will be considered only if all of the following conditions are met: (1) Extreme emergency and (2) Instructor contacted prior to the due date.

**Inclement Weather:**
In the event that inclement weather requires the cancellation of classes at The University of Memphis, local radio and television media will be immediately notified. Additionally, The University of Memphis has established an Inclement Weather Hotline at 678-0888 as well as [TigerText](opens in new window), an emergency alert text messaging service to students, faculty and staff. This optional service is used in the event of an on-campus emergency, an unscheduled university closing, or a delay or cancellation of classes due to, for instance, inclement weather. Additional information on [TigerText](opens in new window).

**Syllabus Changes:**
The instructor reserves the right to make changes as necessary to this syllabus. If changes are necessitated during the term of the course, the instructor will immediately notify students of such changes both by individual email communication and posting both notification and nature of change(s) on the course bulletin board.
Student Services:
Please access the FCBE Student Services (opens in new window) page for information about:

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