Advanced Marketing Research (MKTG 6413), Online Section 503, for MS Students

(Tentative Syllabus for Spring 2016)

Professor: Dr. Goutam Chakraborty

Office: 420A SSB, Phone: (405) 744-7644, Fax: (405) 744-5180

Class Materials: Most of the class materials will be distributed via the D2L web site for this class (https://oc.okstate.edu/). If you are a registered student for this class, you should be able to see this course when you log-in to D2L (the site becomes active one-week before classes begin). If you have problems accessing the D2L class site, please call OSU's IT help desk (405-744-4357) or (toll free) 1-877-951-4836). If you have problems viewing video lectures, please call Administrative/Video lecture support provided by the OSU's Distance Learning office (405, 744-4048, email: spearsdistance@okstate.edu).

Teaching Assistant (TA): Will be announced in the first week of class. The TA will be your primary point of contact for any **technical issues (such as working with SAS codes etc.)** related to this class. The TA (likely to be a MS student) will not be able to help you with conceptual issues. For conceptual issues, you will need to contact me.

E-mail: Please use the class discussion bulletin-board via D2L for any general questions, comments, clarifications about any of the class topic. Use the e-mail to me or my TA sparingly. *There is no need to copy me with your email to my TA – if my TA is unable to answer your question*, he will discuss with me and get back to you.

Class Discussion via D2L (https://oc.okstate.edu/): We will use this format extensively for communication among students as well as between students and the instructor. This will be a bulletin-board type system with specific folders for different aspects of this course. There will be multiple forums (folders) in this bulletin board. Please check these folders regularly. Please post your questions only in the **appropriate forums**. Please use appropriate subject line in your posting and use threaded discussion whenever possible. Do not ask direct questions bout how to solve an assignment (asking for clarification or software help is ok).

Recommended Text (for MS students)

- Multivariate Data Analysis, by Hair, Black, Babbin and Andersen. Prentice Hall, 2010 (**7th edition**).

Reference Materials

- Free text book by Wolfgang Hardle and Leopold Simar available on the web : http://www.stat.wvu.edu/~jharner/courses/stat541/mva.pdf
- Multivariate Analysis by Dillon and Goldstien (OSU Library call no. 519.535.D579m)
- Matrix Algebra for Social Scientists by Paul Horst (OSU Library call no. 300.18.H819m)
- Sage University Papers on Quantitative Applications in the Social Sciences (there are 120+ monographs on various multivariate data analysis topics from Sage – these are available in OSU library)
- SAS/STAT user's guide (version 9 or above)

Real Office Hours (to talk to me in person)

Tuesdays 10:00-11:00 AM, or by appointment

Virtual Office Hours (to get my opinion on any issue related to this class)

Please use the desire to learn (D2L) platform.

COURSE OBJECTIVES
This course has five major objectives that fit within five of the program learning goals.

Course Objective	Program Learning Goal
Students will be able to engage in analytical reasoning to break problems into their component parts; identify important patterns by analyzing data; and test for assumptions behind models.	• Critical Thinking
Student can apply science and business principles to analyze and interpret data, using analytic and computer-based techniques.	• Critical and Creative Thinking
Students will be able to present written results from their analyses by relating those back to the business issues that demonstrate a mastery of language and mechanics.	• Written Communication
Students will be able to present their results orally using a message that is well organized, concise and quickly understandable by business professionals.	• Oral Communication
Students will be able to use appropriate tools and technologies for data visualization and statistical model building	• Technology Skills

Course Description

The primary objective of this course is to prepare *Ph.D. and Advanced MS students* to *properly use* multivariate data analysis techniques. The focus of this course is on applications and not theory and therefore to the extent possible I will try to avoid discussions of vectors and matrix algebra. However, it is impossible to appreciate the multivariate techniques without any idea of vectors and matrix algebra. So, I will provide an overview of these topics but my primary goal is make you familiar with many different multivariate techniques so that given a data analysis problem, you will be able to choose a correct technique, use SAS to analyze the data, interpret what you get from the computer analysis and understand the implications of the results of your analyses.

Course Format:

Please note that this course has a unique format (a combination of all video lectures and class sessions for lab/discussion). Also, the class requirements are quite different for non-distance (non DL) learning and distance learning (DL) students.

Lectures: A video for each lecture will be streamed over the Internet. The link for each video lecture will be posted on the D2L. It is your responsibility to **watch the lecture video and do appropriate readings/work before coming to the class sessions for lab/discussions**. The class sessions (Mondays, 6:45-9:30 PM) will be primarily used as labs/discussions (see below). In all likelihood, we will finish by 830 PM or so. *All students (non distance learning or distance learning) will have access to lecture videos*.

Class Sessions (Lab/Discussion)

- *Distance learning students (must be advanced MS students)*: you do not have to physically attend any class session (lab). You will be doing the exercises/assignments on your own time and submit them by the date they are due. You may be given access to lab videos (where we may discuss solutions to assignments/exercises or handle Q&A on lecture topics or discuss assigned readings).

Course Prerequisites

Students are required to have good ideas of basic probability/statistics, inferential statistics (concepts of p-value and tests of hypotheses), common statistical tests (t-test, F-test, Chi-square test, etc.) and statistical models (such as regression, ANOVAs). No prior exposure to special software is required to attend this course although prior exposure to SAS will come in handy.

Finally, as an instructor I retain the right to modify this tentative syllabus based on how the class progresses. If I make changes, I will let you know via D2L and/or email.

Class Requirements for DL Section 503 (MS Students Only)

Exams: One comprehensive final exam (**20% of course grade**). All students in section 503 must make arrangements with the DL office (405, 744-4048, email: spearsdistance@okstate.edu) to complete final exam by Thursday of the Finals week.

Group Project: You will be asked to participate in the SAS data mining shootout in groups of 3-4 students (depending on number of students enrolled in the class). You will be allowed to form team with other MS students or, Ph.D. students in the non-DL section if they choose to participate in the shootout. The group project will be worth **40% of your course grade**.

Software: We will use a statistical package (primarily SAS and/or JMP) extensively in this course.

Exercises (Individual): Because of the emphasis on "hands-on learning" in this course, throughout the semester you will also be working on many individual exercises. **You must do these individual exercises alone and not seek help from others**. These individual exercises will count for **40% of the course grade**.

Semester Grades: The final grade will be based as follows: 90% or above will result in A, 80% or more will result in B, 70% or above will result in C, 60% or above will result in D. Those getting less than 60% will get an F. I will look at the distribution of the total scores and use any appropriate normalization as needed.

Late Assignments: Assignments or cases must be turned in by the class time on the due date via D2L drop box (not emails). All late assignments (*even 1-minute late*) must be turned in **via the Late Drop Box** and will be *penalized* as follows:

- One late assignment (within 1-hour of due date and time) – *no penalty*
- All other late assignments will carry following penalty structure:
  - Within 1 hour of due date and time – 15% penalty
  - More than 1 hour but less than 24 hours of due date and time – 30% penalty
  - More than 24 hours but less than 48 hours of due date and time – 50% penalty
  - More than 48 of due date and time – will not be graded (no credit)

I enforce this rule because I believe that part of effective functioning in business is the ability to complete projects on time. **Please do not email/call/contact me or my TAs with excuses (however valid they may be) about making exceptions to my late submission policy.**

Note: For all other issues such as add/drop policy, academic integrity etc., I will follow OSU guidelines as posted in the website (http://academicaffairs.okstate.edu/content/resources-faculty-staff)

Tentative Schedule of Topics

General: The schedule *below is tentative and subject to change* based on the pace of discussion of topics in class. All changes in the schedule will be communicated to you in labs and/or via email or D2L class site. The required readings are from the text book and you will find those useful in in understanding materials covered in each session. *I have also indicated some external readings. Those are primarily meant for Ph. D students. The MS students are encouraged to skim these external readings in order to learn how to write research articles, white papers using applications of multivariate statistics/models.* Exercises, assignments, projects, etc. will be assigned and posted on the D2L class site or via email. It is your responsibility to check D2L site every week for changes/announcements with respect to schedule/exercises/assignments etc.

Note about Exercise and Labs: Expect something to do (exercise, assignments, cases, etc.) in each week. In general, exercise/assignment corresponding to lecture topics covered in any week is due on **Monday of the next week by 1159 PM US CST** via appropriate drop box unless mentioned otherwise in the schedule or announced on D2L or communicated during the lab session. So, for example, Individual Exercise 1 mentioned in week 2 is actually due on Monday of week 3. Therefore, I will assume that before doing Individual Exercise 1, you must have reviewed lectures up to week 2 and attended the labs in week 1 and 2.

Week 1 (Week begins Jan. 11):

Video lecture 1: Course and faculty introduction, overview of multivariate analysis techniques, review of background statistical and measurement concepts, overview of basic concepts of matrices and vectors and overview of SAS Enterprise Guide interface.

Required Readings: Chapter 1 from text.

External Readings: posted on D2L class site under week 1 materials. To be discussed on Jan. 25.
 1. Loftus, Geoffrey (1996), "Psychology will be a much better science when we change the way we analyze data," *Current Directions in Psychological Science*, Volume 5, Number 6 (December), 161-171.

Exercise: Nothing is due this week but you are strongly encouraged to practice what I covered in the video lecture.

Lab: Demonstration by instructor on how to access SAS

Week 2 (Week begins Jan. 18):

Video lecture 2: More on vectors, matrices, Eigen values, Eigen vectors, missing data analysis.

Required Readings: Chapter 2 from text.

Lab (Jan. 18): **No lab this week due to MLK holiday.**

External Readings: available via OSU's library online access. To be discussed on Jan. 25
 1. Swayer, Alan and Dwayne Ball (1981) "Statistical Power and Effect Size in Marketing Research," *Journal of Marketing Research*, 18(August), 275-290.
 2. Fern Edward and Kent Monroe (1996), "Effect-size estimates: issues and problems in Interpretation," *Journal of Consumer Research*, Volume 23 (September), 89-105.

Exercise
Complete Individual Exercise 1 and upload your solution by Jan. 25, 1159 PM CST.

Week 3 (Week begins Jan. 25):

Video lecture 3: Multiple regression (basic and advanced topics).

Required Readings: Chapter 4 from text.

External Readings: available via OSU's library online access. To be discussed on Feb. 1
1. Mason, Charoltte, H. and William D. Perreault (1991), "Collinearity, Power, and Interpretation of Multiple regression Analysis," *Journal of Marketing Research*, 28 (August), 268-280.
2. Licata, Jane, John Mowen and Goutam Chakraborty (1995), "Diagnosing Perceived Quality in The Medical Service Channel," *Journal of Health Care Marketing,* Volume 15 (4), 42-49.

Lab (Jan. 25): Discussion of assigned readings from weeks 1 and 2 plus other activities as communicated via D2L or email.

Exercise
Complete Individual Exercise 2 and upload your solution by Feb. 1, 1159 PM CST.

Week 4 (Week begins Feb. 1):

Video lecture 4: Review of experimental design and ANOVA concepts, introduction to MANOVA.

Required Readings: Chapter 7 from text.

External Readings: available via OSU's library online access. To be discussed on Feb.8

1. Arias-Bolzmann, Leopoldo , Goutam Chakraborty, and John C. Mowen (2000), "Effects of Absurdity in Advertising: The Moderating Role of Product Category Attitude and the Mediating Role of Cognitive Responses," *Journal of Advertising*, Volume 29 (1), 35-49.

Lab (Feb. 1): Discussion of assigned readings from week 3 and other activities as communicated via D2L or email.
Exercise
Complete Individual Exercise 3 and upload your solution by Feb. 8, 1159 PM CST.

Week 5 (Week begins Feb. 8):

Video lecture 5: Advanced MANOVA topics (MANCOVA, Repeated Measures and Multivariate Regression).

Required Readings: Chapter 7 from text.

External Readings: available via OSU's library online access. To be discussed on Feb. 15.
1. Latour Stephen A. and Paul J. Minirad (1983), "The Misuse of repeated measures Analysis in Marketing Research," *Journal of Marketing Research*, 20 (February), 45-57.

2. Mandeep Singh; Siva K Balasubramanian; Goutam Chakraborty (2000) "A comparative analysis of three communication formats: Advertising, infomercial, and direct experience", *Journal of Advertising*; Armonk (0091-3367), Vol.29(4),59-75.
3. Anthony Allred; H Lon Addams; Goutam Chakraborty (2007), "Is Informal Planning Key to the Success of Inc. 500?' *Journal of Small Business Strategy*, 18(1), 95-104.

Lab (Feb. 8): Discussion of assigned readings from week 4 and other activities as communicated via D2L or email.
Exercise
Complete Individual Exercise 4 and upload your solution by Feb. 15, 1159 PM CST.

Week 6 (Week begins Feb. 15):

Video lecture 6: Principal Components Analysis (PCA) and Exploratory Factor Analysis (EFA).

Required Readings: Chapter 3 from text.

External Readings: available via OSU's library online access. To be discussed on Feb. 22
1. Stewart, David W. (1981), "The Application and Misapplication of Factor Analysis in Marketing Research," *Journal of Marketing Research*, 18 (February), 51-62.
2. Rittichainuwat, Bongkosh Ngamsom; Chakraborty, Goutam (2009), "Perceived travel risks regarding terrorism and disease: The case of Thailand," *Tourism Management,* Volume 30 (3), 410-418.

Lab (Feb. 15): Discussion of assigned readings from week 5 and other activities as communicated via D2L or email.
Exercise
Complete Individual Exercise 5 and upload your solution by Feb. 22, 1159 PM CST.

Week 7 (Week begins Feb. 22):

Video lecture 7: Canonical Correlation Analysis.

Required Readings (for DL and non-DL students): please visit the following site and read about canonical analysis (http://www.statsoft.com/textbook/canonical-analysis/) and read my notes.

Lab (Feb. 22): Discussion of assigned readings from week 6 and other activities as communicated via D2L or email.
Exercise
Complete Individual Exercise 6 and upload your solution by Feb. 29, 1159 PM CST.

Week 8 (Week begins Feb. 29):

Video lecture 8: Multiple Discriminant Analysis.

Required Readings: Chapter 5 from text.

External Readings: available via OSU's library online access. To be discussed on Mar. 7

1. Some problems in reporting use of discriminant analyses. Huberty, Carl J.; Hussein, Mohamed H.; *Journal of Experimental Education*, Vol 71(2), Win 2003. pp. 177-191.
2. Sukhdial, Ajay S., Goutam Chakraborty and Eric K. Steger, "The Contribution of Values and Attributes in Segmenting the Market for a Luxury Product: The Case of American, German and Japanese Luxury Car Purchasers," *Journal of Advertising Research*, Vol. 35 (1), 9-22.

Lab (Feb. 29): no lab this week (lab is reserved for mid-term exam of MS students in other classes)
Exercise
Complete Individual Exercise 7 and upload your solution by Mar. 7, 1159 PM CST.

Week 9 (Week begins Mar. 7):

Video lecture 9: Partial Least Squares Regression (PLS)

Required Readings: Chapter 3 from text.

External Readings (for non-DL PhD students): None (yippee!)

Lab (Mar. 7): Discussion of assigned readings from week 8 and other activities as communicated via D2L or email.

Exercise (Special Deadline)
Complete Individual Exercise 8 and upload your solution by Mar. 11, 1159 PM CST.

Week 10 (Mar. 14 – Mar. 18): SPRING BREAK WEEK (NO LECTURE or LAB)

Week 11 (Week begins Mar. 21):

Video lecture 10: Logistic Regression.

Required Readings: Chapter 6 from text.

External Readings (for non-DL PhD students): posted on class site. To be discussed on Mar. 21
1. Chakraborty, Goutam and Catherine Cole (1991), "Coupon Characteristics and Brand Choice," *Psychology and Marketing*, 8 (3), 145-159.

Lab (Mar. 21): Discussion of assigned readings from week 11 and other activities as communicated via D2L or email.
Exercise
Complete Individual Exercise 9 and upload your solution by Mar. 28, 1159 PM CST.

Week 12 (Week begins Mar. 28):

Video lecture: Preference Maps and MDS (Multi-Dimensional Scaling).

Required Readings: Chapters 10 and 11 from text.

External Readings: TBA. To be discussed on Mar. 28

Lab (Mar. 28): Discussion of assigned readings from week 12 and other activities as communicated via D2L or email.
Exercise
Complete Individual Exercise 10 and upload your solution by Apr. 4, 1159 PM CST.

Week 13 (Week begins Apr. 4):

Video lecture: Cluster Analysis.

Required Readings: Chapter 9 from text.

External Readings: available via OSU's library online access. To be discussed on Apr. 4
1. Punj, Girish and David Stewart (1983) "Cluster Analysis in Marketing Research: Review and Suggestions for Applications," *Journal of Marketing Research*, 20 (May) 49-65.
2. Eliminating Response Style Segments in Survey Data via Double Standardization before Clustering by Murali Krishna Pagolu and Goutam Chakraborty
3. Comparison of Probabilistic-D and k-Means Clustering in Segment Profiles for B2B Markets by Dipanjan Dey, Satish Garla, Goutam Chakraborty

Lab (Apr. 4): Discussion of assigned readings from week 13and other activities as communicated via D2L or email.

Exercise
Complete Individual Exercise 11 and upload your solution by Apr. 11, 1159 PM CST.

Week 14 (Week begins Apr. 11):

Video lecture: Conjoint Analysis.

Required Readings: Chapter 8 from text.

External Readings: available via OSU's library online access. To be discussed on Apr. 11
1. Chakraborty, Goutam, Richard Ettenson and Gary Gaeth (1994), "How Consumers Choose Health Insurance" *Journal of Health Care Marketing,* Vol. 14 (1), 21-33.
2. Chakraborty, Goutam, George Woodworth, Gary Gaeth and Richard Ettenson (1992), "A Procedure to Screen for Interactions Between Design Factors and Demographics in Choice-Based Conjoint," *Journal of Business Research*, Vol. 24 (2), 115-133.
3. Chakraborty, Goutam, Dwayne Ball, Gary J. Gaeth, and Sunkyu Jun, (2001) "The Ability of Ratings and Choice-Based Conjoint to Predict Market Shares: A Monte Carlo Simulation," *Journal of Business Research,* Volume 55, 237-249.

Lab (Apr. 11): Discussion of assigned readings from week 14 and other activities as communicated via D2L or email.
Exercise
Complete Individual Exercise 12 and upload your solution by Apr. 18, 1159 PM CST.

Week 15 (Week begins Apr. 18):

Video lecture: None – work on SAS shootout.

Lab (Apr. 18): None - work on SAS shootout.
Exercise: None – work on SAS shootout.

Week 16 (Week begins Apr. 25):

Video lecture: None

Lab (Apr. 25): Finish SAS shootout.
SAS Shootout:
Complete SAS shootout and upload your solution by Apr. 25, 1159 PM CST.

Week 17 (Week begins May 2):

Final Exam Week:

- All students in sections **0503** must take final exam by Wednesday, May 4. Details with respect to date/time will be announced in class. You will have to work with the DL office (405 744 4048) to get the exam scheduled during the finals week.