

Syllabus
Department of Health Services Research
Southwest Texas State University

Course Number & Name: HR 5339
Advanced Multivariate Health Data Analysis

Location & Time MITC, 6A, Fall 2002
Tuesdays 6:30PM to 9:15PM

Faculty: Dr. Ram Shanmugam
Office: Room 262, Health Sciences Center
Office Hours: Mondays, 4 - 6 PM [HSC, Rm 262 or MITC, Rm 11A]
Thursdays, 4 PM to 6 PM [HSC, Rm 262]

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Course Description: This course focuses on providing the student with skills to apply the more popular multivariate techniques to real world data. We will be using SPSS [PC version] extensively. I will be looking closely at the student's ability to explain complex multivariate results clearly and simply – as if to high level health care management. Likewise, I will evaluate the clarity of the written technical analysis of the data. *Prerequisite: HHR 5330, HR 5331, HA 5301, or equivalent.*

Course Rationale: In most of the time, health care management data come in multivariate format. Analyzing such data marginally one variable at a time will lose potential information. To capture the overall meaning and these interplay among the variables, one ought to use multivariate techniques. Several techniques such as measurement models, statistical power, sample size selection, multivariate regression, factor analysis, discriminate analysis, logistic regression, multivariate analysis of variance (MANOVA), and conjoint analysis will be exposed.

Course Objectives: At the end of the course, the student will have an excellent understanding and appreciation of:

- fundamental concepts of formulation of models for decision making,
- an assessment of the decisions made,
- how multivariate statistical techniques can be applied to do problem solving,
- interpretation of the results generated,
- The use of computing software SPSS to use apply multivariate ideas.

Course Sequence and Integration: It is recommended that the appropriate background courses be completed in sequence so that the student enrolling in this course will be familiar with statistics, computer applications, and research methodologies. *Prerequisite: HHR 5391, HR5330, HR 5331, HA 5301, or equivalent.*

Textbook: J. F. Hair, Jr., R. E. Anderson, R. L. Tatham, and W. C. Black [1998] *Multivariate Data Analysis*, fifth edition, Prentice Hall, Upper Saddle River, NJ
[ISBN: 0-13-894858-5]

ACADEMIC HONESTY

Expectation: We expect students to do their own work on all graded material submitted for departmental course requirements.

Department Policy:

Students guilty of knowingly using, or attempting to use, another person's work as though that work were their own, and students guilty of knowingly permitting, or attempting to permit, another student to use their work, will receive a grade of "F" for the course. Such conduct may also constitute grounds for dismissal from the University. Students who are unfamiliar with the University's policy on plagiarism should consult the most recent edition of Hill Hints. Students who are uncertain regarding what actions constitute plagiarism should consult the instructor.

METHOD OF EVALUATION:

1. HOMEWORK and QUIZZES:

Homework is essential to this course. Homework will be assigned, collected and reviewed by the instructor. Homework and quizzes constitutes 50% of the final grade. The purposes of the homework assignments are: a.) insure students are exposed to a representative selection of problems that both demonstrate and illustrate the concepts, theories and methodologies presented in class and b.) insure students understand the material presented in class and are keeping up with the course material. Homework must be both COMPLETE AND NEAT – work that is either incomplete or sloppy will not be accepted. Work will be done on only one side of the page (8.5" by 11" paper only) and each problem will be started on a separate page. All work will be stapled together, do not use paperclips. Answers will be clearly identified and logically developed (showing all assumptions and supporting work). **LATE WORK WILL NOT BE ACCEPTED.**

2. EXAMINATIONS:

There will be two examinations during the course each counting for 20% of the course grade. The exam may be an in-class exam, take-home exam or a combination of in-class and take-home examination.

<u>Graded Requirements</u>	<u>Percentage</u>
Homework & Quizzes	40%
Mid-term Exam	20%
Written & Oral Project Presentation	20%
Final Exam	20%

ATTENDANCE POLICY: Students are expected to attend scheduled classes. If an absence is unavoidable the student should contact the instructor prior to the class. If a student is absent it is their responsibility to make arrangements with another student to get the notes and assignments for the class they miss. If a student misses more than two classes without prior approval they will be encouraged to drop the course. If a student misses more than four classes they will be dropped from the course.

CLASS PARTICIPATION POLICY: This course will require considerable out of class time working on the computer (either at SWTSU or on other computer resources.) As part of a student's class participation it is expected that they will familiarize themselves with standard Windows based software such as Excel Spreadsheets and the operation of Window based computers. Class time will be devoted to examining output and understanding the relationship between theory and computational methods. If you plan to use the computer resources in the School of Health Professions make sure that you become familiar with the operating hours and plan your assignments accordingly.

Several specific topics that are to be discussed with their Schedule are:

Date	Topics	Reading Assignment	Homework Problems	Due
Sep 3	Introduction, Basic concepts of measurements, importance of multivariate statistics as tools	Chapter 1, 2	HATCO data in the handout	Sep 10
Sep 10 – 17	Multiple Regression	Chapter 4, Appendix 4A	HATCO data in the handout	Sep 24
Sep 24 Oct 1	Factor Analysis	Chapter 3	HATCO data in the handout	Oct 8
Oct 8-15	Discriminant Analysis, Logistic Regression	Chapter 5	HATCO data in the handout	Oct 22
Oct 22	mid-term examination	From chapters	1,2,3,4,5	
Oct 29, Nov 5-12	Answers to mid-term examination, Multivariate Analysis of Variance	Chapter 6	HATCO data in the handout	Nov 19
Nov 19-26	Conjoint Analysis	Chapter 7	HATCO data in the handout	Dec 3
Nov 28	Thanksgiving	No class		
Dec 3- 10	Oral presentation of your project in class, Be prepared to ask or answer impromptu questions and comments	Take-home final exam is due on Dec 10	Written paper of your project is due on Dec-3	