GEOG 516 APPLIED MULTIVARIATE ANALYSIS IN GEOGRAPHY 9:00-9:50 MWF
Spring 2007

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Office Hours: MWF 10:00-10:45 AM, 1:30-3:00 PM, and by Appt.

Purpose of the Course

This course will extend univariate concepts learned in GEOG 316 into the multivariate realm. The emphasis will be on the proper use of statistical techniques, although some understanding of the underlying mathematics will be necessary. (Prerequisite: You should have taken GEOG 316 or an equivalent introduction to statistics.)

Students with Disabilities

The staff of Services for Students with Disabilities (SSD), 135 Strong, 785-864-2620 (v/tty), coordinates accommodations and services for KU courses. If you have a disability for which you may request accommodation in KU classes and have not contacted them, please do so as soon as possible. Please also see me privately in regard to this course.

Supplies

Since we will be making use of the microcomputers in room 310, I recommend that you acquire a USB flash drive (or other storage device) appropriate for backing up data stored on these microcomputers. Also, if you don't already have a "statistics" calculator, you should buy one.

Readings

I. Required Texts

Rogerson, P. 2006. Statistical Methods for Geography. London: Sage Publications.

Mertler, C.A. and Vannatta, R.A. 2005. Advanced and Multivariate Statistical Methods: Practical Application and Interpretation. Third Edition. Los Angeles, California: Pyrczak Publishing.

II. Potential Texts

Clark, W.A.V. and Hosking, P.L. 1986. Statistical Methods for Geographers. New York: John Wiley & Sons.

Davis, J.C. 2002. Statistics and Data Analysis in Geology. Third Edition. New York: John Wiley & Sons.

Griffith, D.A. and Amrhein, C.G. 1997. Multivariate Statistical Analysis for Geographers. Upper Saddle River, New Jersey: Prentice Hall.

Robinson, G.M. 1998. Methods and Techniques in Human Geography. Chichester, England: John Wiley & Sons.

Stevens, J. 2002. Applied Multivariate Statistics for the Social Sciences. Fourth Edition. Mahwah, New Jersey: Lawrence Erlbaum Associates.

III. The following will be on reserve at Anschutz Library or available electronically:

Clark, W.A.V. and Hosking, P.L. 1986. Statistical Methods for Geographers. New York: John Wiley & Sons.

Fotheringham, A.S., Brunsdon, C., and Charlton, M. 2002. Geographically Weighted Regression. Chichester: John Wiley & Sons.

Slocum, T.A. 1990. The use of quantitative methods in major geographical journals, 1956-1986. The Professional Geographer 42:84-94. [Available at http://www.blackwell-synergy.com/toc/prog/42/1]

Stevens, J. 2002. Applied Multivariate Statistics for the Social Sciences. Fourth Edition. Mahwah, New Jersey: Lawrence Erlbaum Associates. [pp. 3-12 will be available in the lunchroom.]

Grading

Your grade in the course will be a function of:

1) 7 or 8 computer-based exercises (70% of your grade)

   The bulk of the credit (80-90%) for each exercise will be based on your responses to a series of questions associated with computer output.

2) A 7-10 page term paper (double-spaced) reporting the statistical analysis of a data set of your choosing (20% of your grade)

   A more detailed explanation of the paper is provided in the handout "Overview of the Term Paper". Papers are due Wednesday, May 16. A one-page statement concerning your plans for the term paper is due Friday, April 6.

3) Class attendance (10%)

Topics to be Covered

Topic	Readings
I. Introduction to the Course	Rogerson, Chap. 1-2, 97-101 Mertler Preface, Chap. 1 Slocum (1990)
II. Introduction to SPSS	
III. Data Screening	Mertler, 25-31, 34-50
IV. Type I and II Errors and Related Issues	Stevens 3-12

V. Univariate Analysis of Variance (ANOVA)	Rogerson, Chap. 6 Mertler 67-90
VI. Bivariate Correlation/Regression	Rogerson, Chaps. 7-8 Mertler 32-34
VII. Introduction to Matrix Algebra	Clark and Hosking 349-354
VIII. Multiple Regression	Rogerson, 192-209, 213-214 Mertler, Chap. 7, 51-65
IX. Spatial Autocorrelation	Rogerson, 231-241 Clark and Hosking 378-400
X. Spatial Aspects of Regression	Rogerson, Chap. 11 Fotheringham, Chap. 2, 4, 9
XI. Logistic Regression	Rogerson, 209-218 Mertler Chap. 11
XII. Multivariate Analysis Of Variance (MANOVA)	Mertler 119-136
XIII. Principle Components Analysis and Factor Analysis	Rogerson, 257-263, 270-271 Mertler, Chap. 9