COM 531: Multivariate Statistical Methods

Spring 2007
4-6 pm, Monday/Wednesday
MU 204/222

Prof. Kim Neuendorf
Office hrs.: 1-3:00 pm Wed. & 2-4:00 pm Thur.
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COURSE OBJECTIVE: Building on the foundation of COM 512, this course will cover more advanced quantitative analysis, with an emphasis on multivariate statistics. Inasmuch as the goal of the course is to develop your skills as designers, commissioners, and interpreters of research, an emphasis will be placed on the use and interpretation of complex statistics, rather than on the mechanisms of their calculation by hand. In the class, we will make frequent use of the data analytic computer package SPSS for Windows (version 11.0 or 12.0). (NOTE: SPSS 13.0 and higher creates output that is not compatible with 12.0 and lower.)

COURSE MATERIALS:

The following text is required:


Other required readings:

* Many handouts prepared by your instructor will be distributed in class or posted on the class website throughout the term.

* It’s recommended that students have available a manual or textbook on the use of SPSS. The following are recommendations:


SPSS manuals–check out the SPSS website.

The following texts are recommended for backup, and for additional information on selected topics. Some will be on reserve at the CSU Library:


**COURSE REQUIREMENTS:**

Further information on each of these assignments will be discussed in class as the term progresses:

1. A midterm and a final exam. The midterm will have both take-home and in-class components, and the final exam will be take-home. The midterm take-home and the final exam both will include the requirement of some SPSS analyses. The final will include the critique of at least one published research article. The full midterm is worth 20% and the final exam 15% of your course grade. The in-class midterm will be held on Wednesday, March 7, and the take-home component will be due on the same day. The final exam will be due at 4:00 pm on Monday, May 7.

2. Data handling assignments--each student will be required to perform a number of data-handling tasks. Each student will be asked to conduct a variety of analyses on the data, including scale construction and the running of multivariate statistics that are not included in the exams, presentation, or final project. These activities are worth 30% of your course grade.

3. In-class presentation on one multivariate statistic--each student will be assigned a technique to learn in detail, with one or two other students. The small-group presentation will include sample SPSS commands and output exemplifying the statistic as derived from a class data set. It will also include the findings correctly tabled, with a short written description of the findings. Each presentation is worth 20% of your grade. All presentations will be reviewed with the instructor prior to presentation.

4. A research report--this paper will include the development and testing of hypotheses using multivariate statistics, using a class data set and the SPSS program. Specific details on this assignment will be distributed in class. Students should plan on handing in both output and a complete, written analysis, worth 15% of your grade.

To summarize:

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<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
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<tbody>
<tr>
<td>MIDTERM (2 parts)</td>
<td>40 pts.</td>
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<tr>
<td>FINAL</td>
<td>30 pts.</td>
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<tr>
<td>DATA HANDLING</td>
<td>60 pts.</td>
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<td>(various tasks)</td>
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<tr>
<td>PRESENTATION</td>
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<tr>
<td>REPORT</td>
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<td>200 pts.</td>
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COURSE OUTLINE:

1. A review of univariate and bivariate statistics  
   Hair et al., Chs. 1, 2  
   [George Chs. 6-12]

2. SPSS & data handling and Scale construction  
   [George Chs. 1-5, 18]

3. Factor analysis  
   Hair et al., Ch. 3  
   [George Ch. 20]

4. Multiple regression  
   Hair et al. Chs. 4, 4A  
   [George Chs. 15, 16, 28]

5. Discriminant analysis  
   Hair et al. Ch. 5 (D.A. sections)  
   [George Ch. 22]

6. Logistic regression  
   Hair et al. Ch. 5 (L.R. sections)  
   [George Ch. 25]

7. Multivariate analysis of variance (MANOVA) and covariance (MANCOVA)  
   Hair et al. Ch. 6  
   [George Chs. 13, 14, 23, 24]

8. Conjoint analysis  
   Hair et al. Ch. 7

9. Canonical correlation  
   ???

10. Cluster analysis  
    Hair et al. Ch. 8  
    [George Ch. 21]

11. Multidimensional scaling and Correspondence analysis  
    Hair et al. Ch. 9  
    [George Ch. 19]

12. Structural equation modeling  
    Hair et al. Chs. 11, 12

13. Emerging techniques in multivariate analyses  
    ???