APSY511 - Statistics II
Spring, 2018
Syllabus - Jan 19 version (check back on web page for updates)

Professor: Bruce Dudek Course Time: T-Th 10:15-1:05
Office: SS 327 Place: SS134
Hours: Tues: 1-2:30 pm, Wed 1:30-2:30 pm, by appt., and any time you need help and I am available.

Class meetings will typically be scheduled as they were last Fall for 510. Typically, we would begin at 10:15 and end at 12:20 (ish) - 4 lecture hrs/wk with remaining time for help sessions/review.
email: bruce.dudek@albany.edu
course home page: http://www.albany.edu/psychology/bcd/gradstat/511class.htm
The class web page will serve as the official syllabus for the course, with schedule changes, reading assignments, and any updates to this document posted there.

TA: Rae Drach, SS 318, rae DOT drach AT gmail DOT com
Hours: TBA
- also see the class web page for help session and extra office hrs

Exams and Grading:

A mid-term exam is *tentatively* scheduled for **either March 8 or March 20.** The numerical score on this mid-term will contribute 35% toward the course point total. Exam will probably be after we cover introductory aspects of two-factor designs - - subject to some adjustment as we see how we progress through the material.
A final Exam will be cumulative and will contribute 40% of the course point total. The exam will be given at the University-established date/time: **Mon May 14, 10:30AM.** The remaining 20% of points available for the course grade will come from a combination of graded(15%) and ungraded/computer (10%) assignments. The final exam is likely to have a take-home component.

Three graded assignments will be probably be due in Feb, Mar, and near the final and will probably be either be a full hand-done anova problems or a computer assignment, or a combination.

Ungraded and computer assignments will be given frequently (roughly ten total). All must be completed adequately and ***turned in on time*** for the ten course points available. Two point loss for the first ungraded assignment turned in late and full 10 point loss for two or more (very firm on this requirement). All ungraded assignments must be turned in in order to receive a passing course grade (even if some were late). These will typically be given with at least a weekend's time for completion, but shorter ones may be given and due the next class. Computer assignments must be redone if not correct.
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Final course grade is determined from the distribution of point totals summed from all exams and assignments. Historically I have not liked to use the +/- grading option, but will consider it to help in the B+ and A- areas. Typically, 75% of possible points are required for a grade of B, and 90% for an A(-).

During lecture, the instructor will regularly ask questions which will reflect the assigned reading. Assignment of final grades in the case of "borderline" point totals can be influenced by willingness and accuracy in answering these questions.

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Extra Lectures or Help Sessions may be scheduled upon demand in order to review material or work through exercises provided in the texts. Individual tutoring/assistance from the instructor is encouraged whenever a need arises. Don't be bashful about asking for help.
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A considerable fraction of the class will involve computer implementation of the analytical methods to be

covered. In-class demonstrations will be frequent. Students need to be skilled with usage of SPSS , including the composition of SPSS syntax to run specific procedures (typically REGRESSION, ANOVA, MANOVA, and GLM). We will also work with R in parallel to SPSS for most topics. The course will also have an emphasis on Scientific Graphing Practices.

Reading Materials

Texts:

Required:
Howell text from Fall semester.
Keppel, G. and T. D. Wickens. DESIGN AND ANALYSIS: A RESEARCHER'S HANDBOOK, 4th Ed. Prentice Hall, 2004.

Recommended (didn't order them for campus bookstore - obtain them online):

Cortina, Jose and Hossein Nouri. *Effect Size for Anova Designs* (Sage University Papers Series. Quantitative Applications in the Social Sciences, No 07129) / Paperback 1999
Fox, John. *Regression Diagnostics*. Thousand Oaks, CA: Sage University Press. Quantitative applications in the social sciences series #79, 1991.
Jaccard, J. *Interaction Effects in Factorial Analysis of Variance*. Thousand Oaks, CA: Sage University Press. Quantitative applications in the social sciences series #118, 1998.
Rosenthal, R., Rosnow, R. L., & Rubin, D. B. (1999). Contrasts and effect sizes in behavioral research: A correlational approach. New York: Cambridge University Press.

- *Computer Manuals* (also see section below):
  The basic SPSS USER manuals can be useful, but much of the material is in the online syntax guide available with the help function in the program. I recommend the following as a third-party SPSS usage manual:
  Field, A. (2000) Discovering Statistics Using SPSS for Windows : Advanced Techniques for Beginners. Sage Publications.
  Same as was available in the bookstore last Fall.

- The following recommended texts are in the library or my copies can be used in my office. Numerous other people in the department also own copies. A more extensive and up to date listing of these texts can be found in the "toolkit" bibliography on the class web page.

Analysis of Variance

Keppel, G. and Zedeck, S. DATA ANALYSIS FOR RESEARCH DESIGNS. Freeman, 1989.
Winer, B.J., Brown, D.R., and Michels, K.M. STATISTICAL PRINCIPLES IN EXPERIMENTAL DESIGN. 3rd Ed. McGraw-Hill, 1991 (or earlier editions).
Maxwell, Scott E. and Harold D. Delaney Designing Experiments and Analyzing Data : A Model Comparison Perspective. Wadsworth Press, 1990
Keppel, Saufley, and Tokunaga. Introduction to Design and Analysis: A student's handbook. Freeman, 2nd Edition, 1992
Snedecor, G.W. and Cochran, W.G. STATISTICAL METHODS, 7th Ed. Iowa State Univ Press, 1980.

Kirk, R.E. EXPERIMENTAL DESIGN: PROCEDURES FOR THE BEHAVIORAL SCIENCES. Brooks Cole, 3rd Ed, 1995 (or earlier editions). (I strongly recommend this one)

Myers, J.L. FUNDAMENTALS OF EXPERIMENTAL DESIGN, 3rd Ed. Allyn and Bacon, 1979.

Hocking, Ronald R. Methods and Applications of Linear Models : Regression and the Analysis of Variance. J. Wiley Series in Probability and Statistics. 1996.

Rosenthal, Robert and Ralph L. Rosnow . Essentials of Behavioral Research : Methods and Data Analysis. McGraw-Hill Series in Psychology. 1991.

Klockars, A.J. and Sax, G. MULTIPLE COMPARISONS. Sage, 1986.

Cortina, Jose and Hossein Nouri. Effect Size for Anova Designs (Sage University Papers Series. Quantitative Applications in the Social Sciences, No 07-129) / Paperback 1999.

Regression

Cohen and Cohen. APPLIED MULTIPLE REGRESSION FOR THE BEHAVIORAL SCIENCES. 2nd Ed. L. Erlbaum, 1983. (older edition, but still good)

Darlington, Richard. Regression and Linear Modules. McGraw Hill. 1990.

Fox, John. *Regression Diagnostics*. Thousand Oaks, CA: Sage University Press. Quantitative applications in the social sciences series #79, 1991.

Hamilton, Lawrence C. Regression With Graphics : A Second Course in Applied Statistics. Brooks-Cole, 1992

Draper, Norman R. and Harry Smith. Applied Regression Analysis. J. Wiley Series in Probability and Statistics. 3rd edition, 1999. A classic.

Weisberg, Sanford. Applied Linear Regression. J. Wiley Series in Probability and Mathematical Statistics) . 1985.

Neter, John (Editor), Michael H. Kutner and Christopher J. Nachtscheim. Applied Linear Regression Models (The Irwin Series in Production Operations Management). McGraw Hill, 1996.

Pedhauzer, E. MULTIPLE REGRESSION IN BEHAVIORAL RESEARCH: Explanation and Prediction. 3rd Ed. Holt, Rinehart & Winston, 1997. text.

Kleinbaum, Kupper, Muller. APPLIED REGRESSION ANALYSIS AND OTHER MULTIVARIABLE METHODS. PWS-Kent, Duxbury Press, 3rd edition, 1997.

Articles/Chapters:

An extensive series of journal articles and chapters will be assigned as the semester goes along. These articles would be found in the "Statistics Toolkit" document found on the course web page and pdf's are in the shared network drive. This is an "in-progress" reading list of texts and articles which are viewed as the foundation literature for the appropriately trained data analyst in the Behavioral Sciences.

Schedule

(Tentative, to be adjusted and supplemented as we go along)

Week of	Topic	Readings[a]
Jan 22	Multiple Regression	HW 9,10,15
29	Miscl. Regression Topics;	HW 15
Feb 5	Categorical IV's; 1-Factor Exptl Designs	K1-3 (HW11,H10)
12	Contrast Coding, More on 1-factor designs.	
19	Analytical Contrasts/Post Hoc Tests.	K4-9,10(HW12,H11)
26	Two-factor Experimental Designs	K11-13,HW13
Mar 5	More on Two-Factor Designs	K11-13, (H12)
12	***No class all week***	
19	More on Two-Factor Designs	K11-13, (H12)
26	Higher-Order Factorial Designs	K21-22
Apr 2	Fixed vs Random Effects, Exp Mean Squares	
9	Nested Designs, Repeated Measures	K14,26,25,(HW16)
16	Single Factor Repeated Measures Designs	K16-17 (HW14)
23	Higher order Repeated Measures Designs.	K18-20 (HW14)
30	ANCOVA, Full integration of GLM	K15 (HW16)
May 7	Categorical DV's and Non-parametrics	HW19,(H18)

May 8 is the last class day

[a] HW is Howell, K is Keppel/Wickens, H is Hays. Parenthesized chapters are recommended.

Additional Information:

- The reading schedule is constructed under the assumption that a first reading of assigned material will be done prior to the lecture on the respective topic. The best strategy is to get as far ahead in your reading as possible. Lectures are most beneficial when a first reading of the material is completed prior to the lecture. Second and third readings can then be used to reinforce, clarify and crystallize your understanding of the material after its lecture. Don't be hesitant about using other recommended textbooks. Other authors' presentations are almost always slightly different, and such differences may be quite helpful.
- Even though texts are assigned, the course structure is heavily reliant on handouts, lecture notes, computer demos and materials placed on the web page. The textbooks should be used to supplement the framework generated by these course materials.
- *A very useful strategy in studying experimental design is to closely examine the analyses presented in current literature in your own field. You should constantly be comparing the kinds of designs/analyses you read about in this literature to the ones being discussed in class. When you find a discrepancy in approaches that you cannot resolve or understand, then that is a good topic to discuss with the instructor or at help sessions.*
- There is, of course, no attendance requirement. However, since exams are largely conceptual/verbal in nature, adequate performance usually presupposes the conceptual framework generated in the lectures.
- Additional readings from the literature will be assigned as we go along, and probably will be provided in the form of pdf files.

Plagiarism

Assignments for this course are given with the assumption that students will **not** collaborate with classmates or with any other colleagues. This includes ungraded assignments, graded assignments, as well as computer assignments. For some assignments an exception to the collaboration rule might occur, but if so, will always be explicitly stated.

Plagiarism can be defined as taking credit for someone else's work as one's own. I expect you to read the University policy on academic integrity. It can be found in the graduate bulletin:
http://www.albany.edu/graduatebulletin/requirements_degree.htm#standards_integrity
read the full section, through the part on penalties....
(note that the University is implementing a web site revision and this URL may change. let me know if you cannot find it)

Plagiarism will result in automatic course failure.