

COURSE TITLE/SECTION: SOCW 8424 (17236) Statistics and Data Analysis I

TIME: Monday 1:00 – 5 p.m.

FACULTY: Patrick Leung, PhD

OFFICE HOURS: M 12p to1p; Tue 11:30a-12:30p

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I. Course

A. Catalog Description

Credit (3.0). Explores the utilization of descriptive and inferential statistics in behavioral science applications

B. Purpose

The purpose of this course is to provide a conceptual and applied understanding of biostatistics in behavioral science research.

II. Course Objectives

Upon completion of this course, students will be able to:

1. Describe data using descriptive and inferential statistics;
2. Describe data using graphs and charts;
3. Demonstrate a basic knowledge of applied statistical methods from basic to descriptive to advanced inferential approaches;
4. Compare and contrast different approaches to data analysis (parametric and no-parametric or inferential and descriptive methods);
5. Demonstrate an understanding of the relationship between research study design and data analysis;
6. Make informed decisions on selecting the appropriate analytic approach for behavioral science research data;
7. Make informed decisions on selecting the appropriate technique for describing and presenting data.

III. Course Content

Introduction for the doctoral level student to the use applications of statistics. Both descriptive and inferential statistics will be covered. Students will be expected to learn how to describe quantitative data sets and multiple ways of displaying data. This is an important process for one doing a quantitative dissertation, for instance. One should understand one's data thoroughly before attempting to perform any types of inferential analyses lest you chose the wrong approach for the data and be forced to start over again. You will also be introduced to the topic of inferential statistics. Inference allows one to make statements about a larger group of

individuals from data obtained from a subset of that larger group. This allows the testing of scientific hypotheses. You will therefore be expected to choose the appropriate statistical procedure for certain types of data analysis.

IV. Course Structure

The course will be taught using a combination of instructional methods including group and class discussions, lectures, exercises, assigned and recommended readings, and homework assignments. Computer technology for statistical analyses will also be included.

V. Textbooks

Abu-Bader, S. (2011). Statistical methods in social science research. Chicago, IL: Lyceum Books, Inc.

SPSS, Inc. (2015). SPSS 23.0 for windows brief guide. Chicago, IL: SPSS Inc (or the latest version).

SPSS, Inc. (2015). SPSS for windows graduate pack version, Version 23.0. Chicago, IL: (Author) (or the latest version).

RECOMMENDED TEXTS

American Psychological Association. (2009). Publication manual of the American Psychological Association (6th ed.). Washington, DC: Author.

Hedderson, J., & Fisher, M. (1993). SPSS made simple (2nd ed.). Belmont, CA: Wadsworth Publishing Company.

Kinnear, P.R., & Gray, C.D. (1999). SPSS for windows made simple (3rd ed). East Sussex UK: Psychology Press, Publishers.

Norusis, J Marija (2000). SPSS 10.0: Guide to data analysis. Upper Saddle River, NJ: Prentice Hall.

VI. Course Requirements

A. Reading Assignments

Please see Topical Outline and Reading Assignments.

B. Written Assignments

To assist students in completing the learning objectives for this course, there will be three graded homework assignments related to the course content.

C. Final Exam

A final exam will be required of all students to demonstrate their knowledge and competency in multivariate statistical analysis.

D. Class Participation

1. Class Attendance (5%)

One point will be deducted from the final grade for each absence from class. However, a student who is absent from class for more than five times (including both excused and unexcused absence) will be dropped from the course. In the case that the absence is approved by the instructor, half a point will be deducted from the final grade.

2. Class Participation (5%)

Students are expected to participate in class discussions and projects.

VII. Evaluation and Grading

Final course grades will be based on the following distribution:

Oct. 3rd	Homework Assignment #1 Due	20%
Oct. 24th	Homework Assignment #2 Due	20%
Nov. 14th	Homework Assignment #3 Due	20%
Nov. 28th	Final Exam	30%
	Class Participation	5%
	Class Attendance	5%

Grades:

The following standard grading scale has been adopted for all courses taught in the college.

A = 96-100% of the points	C+ = 76-79.9%
A- = 92-95.9%	C = 72-75.9%
B+= 88-91.9%	C- = 68-71.9%
B = 84-87.9%	D = 64-67.9%
B- = 80-83.9%	F = Below 64%

No "incomplete" grades will be given by any instructor without prior permission (excluding an unforeseen emergency) from the instructor.

VIII. Policy on grades of I (Incomplete):

The grade of "I" (Incomplete) is a conditional and temporary grade given when students are either **(a)** passing a course or **(b)** still have a reasonable chance of passing in the judgment of the instructor but, for non-academic reasons beyond their control have not completed a relatively small part of all requirements.

Students are responsible for informing the instructor immediately of the reasons for not submitting an assignment on time or not taking an examination. Students must contact the instructor of the course in which they receive an "I" grade to make arrangements to complete the course requirements. Students should be instructed not to re-register for the same course in a following semester in order to complete the incomplete requirements.

The grade of "I" must be changed by fulfillment of course requirements within one year of the date awarded or it will be changed automatically to an "F" (or to a "U" [Unsatisfactory] in S/U graded courses). The instructor may require a time period of less than one year to fulfill course requirements and the grade may be changed by the instructor at any time to reflect work complete in the course. The grade of "I" may not be changed to a grade of **W**.

IX. Policy on academic dishonesty and plagiarism

Students are expected to demonstrate and maintain a professional standard of writing in all courses, do one's own work, give credit for the ideas of others, and provide proper citation of source materials. Any student who plagiarizes any part of a paper or assignment or engages in any form of academic dishonesty will receive an "I" for the class with a recommendation that a grade of F be assigned, subsequent to a College hearing, in accordance with the University policy on academic dishonesty. Other actions may also be recommended and/or taken by the College to suspend or expel a student who engages in academic dishonesty.

All papers and written assignments must be fully and properly referenced using APA style format (or as approved by the instructor), with credit given to the authors whose ideas you have used. If you are using direct quotes from a specific author (or authors), you must set the quote in quotation marks or use an indented quotation form. For all direct quotes, you must include the page number(s) in your text or references. Any time that you use more than four or five consecutive words taken from another author, you must clearly indicate that this is a direct quotation. Please consult the current APA manual for further information.

Academic dishonesty includes using any other person's work and representing it as your own. This includes (but is not limited to) using graded papers from students who have previously taken this course as the basis for your work. It also includes, but is not limited to submitting the same paper to more than one class. If you have any specific questions about plagiarism or academic dishonesty, please raise these questions in class or make an appointment to see instructor. This statement is consistent with the University Policy on Academic Dishonesty that can be found in your UH Student Handbook.

X. Course Schedule and Reading Assignments

Class Session	Lecture Topic and Readings
August 22	Introduction Review of Course Syllabus Review of the Framework for Statistical Analysis Overview of Research Methodological Terms Abu-Bader Ch. 1
August 29	Creating SPSS Data Files Abu-Bader Ch. 2
September 5	Labor Day (no class)
September 12	Data Organization and Summary: Frequency Tables and Graphs Abu-Bader Ch. 3
September 19	Descriptive Statistics: Measures of Central Tendency, Variability and Percentiles Abu-Bader Ch. 4
September 26	Normality of Distributions Data Transformations, and Standard Scores Abu-Bader Ch. 5
October 3	Hypothesis Testing Abu-Bader Ch. 6
October 10	Bivariate Correlation Abu-Bader Ch. 7
October 17	Independent T-Tests Abu-Bader Ch. 8
October 24	Dependent T-Test Abu-Bader Ch. 9
October 31	K Group Comparisons: One-way Analysis of Variance and Covariance Abu-Bader Ch. 10
November 7	Chi-Square Tests Abu-Bader Ch. 11

November 14	Simple Linear Regression Analysis Abu-Bader Ch. 12
November 21	Multiple Regression Abu-Bader Ch. 12
November 28	Final Exam

XI. Bibliography-optional

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- Elifson, K.W., Runyon, R.P., & Haber, A. (1982). *Fundamentals of social statistics*. Reading, MA: Addison-Wesley.
- Guilford, J.P., & Fruchter, B. (1978). *Fundamental statistics in psychology and education* (6th ed.). New York: McGraw-Hill.
- Healey, J.F. (1984). *Statistics: A tool for social research*. Belmont, CA: Wadsworth.
- Hopkins, D.K., Hopkins, B.R., & Glass, G.V. (1996). *Basic statistics for the behavioral sciences*. Boston : Allyn and Bacon. *([HA29 .H734 1996](#))
- Kuehl, R.O. (2000). *Design of experiments : Statistical principles of research design and analysis*. Pacific Grove, CA : Duxbury/Thomson Learning. *([Q182.3 .K84 2000](#))
- Larsen, R.J., & Marx, M.L. (1981). *An introduction to mathematical statistics and its applications*. Englewood Cliffs, NJ: Prentice-Hall. *([QA276.L314](#))
- McPherson, G. (2001). *Applying and interpreting statistics : A comprehensive guide*. New York : Springer. *([Q180.55.S7 M36 2001](#))
- MacEachron, A.E. (1982). *Basic statistics in the human services: An applied approach*. Baltimore: university Park Press. *([HA29 .M174 1982](#))
- Ohrnstedt, G.W.B., & Knoke, D. (1982). *Statistics for social data analysis*. Itasca, IL: Peacock.
- Zeller, R.A., & Carmines, E.G. (1978). *Statistical analysis of social data*. Chicago: Rand McNally.

Multivariate Analysis: General

- Baxter, M.J. (1994). *Exploratory multivariate analysis in archaeology*. Edinburgh: Edinburgh University Press. *([CC80.6.B39 1994](#))
- Bernstein, I.H., Garbin, C.P., & Teng, G.K. (1988). *Applied multivariate analysis*. New York: Springer-Verlag. *([QA278.B457 1988](#))
- Berry, W.D., & Feldman, S. (1985). *Multiple regression in practice*. Beverly Hills, CA: Sage.
- Bray, J.H., & Maxwell, S.E. (1985). *Multivariate analysis of variance*. Beverly Hills, CA: Sage.
- Bryman, A., & Cramer, D. (1990). *Quantitative data analysis for social sciences*. London: Routledge.
- Busch, D.H. (1991). *The new critical path method: CPM: The state-of-the-art in project modeling and time reserve management*. Chicago: Probus Publishing Company. *([TS158.B87 1991](#))

- Bryne, B.M. (1989). *A primer of LISREL: Basic applications and programming for confirmatory factor analytic models*. New York: Springer-Verlag. *([HA32 .B97 1989](#))
- Carroll, J.D., & Green, P.E. (1997). *Mathematical tools for applied multivariate analysis*. San Diego: Academic Press. *([QA278 .C37 1997](#))
- Child, D. (1990). *The essentials of factor analysis* (2en ed.). London: Cassell.
- Christensen, R. (1990). *Log-linear models*. New York: Springer-Verlag. *([QA278.C49 1990](#))
- Cooley, W.W., & Lohnes, R.R. (1971). *Multivariate data analysis*. New York: Wiley. *([QA278.C65](#))
- Crowder, M.J., & Hand, D.J. (1990). *Analysis of repeated measures* (1st ed.). London: Chapman and Hall.
- Dunn, O.J., & Clark, V.A. (1987). *Applied statistics: Analysis of variance and regression* (2nd ed.). New York: Wiley. *([QA279.D87 1987](#))
- Dwyer, J.H. (1983). *Statistical models for the social and behavioral sciences*. New York: Oxford University Press. *([H61.25 .D85 1983](#))
- Edwards, A.L. (1985). *Multiple regression and the analysis of variance and covariance* (2nd ed.). New York: W.H. Freeman. *([BF39.E32 1985](#))
- Everitt, B.S., & Dunn, G. (2001). *Applied multivariate data analysis*. London : Arnold ; New York : Oxford University Press. *([QA278 .E88 2001](#))
- Fang, K., & Zhang, Y. (1990). *Generalized multivariate analysis*. Beijing: Science Press. *([QA278.F35 1990](#))
- Farrell, R.H. (1985). *Multivariate calculation: Use of the continuous groups*. New York: Springer-Verlag.
- Flury, B., & Riedwyl, H. (1988). *Multivariate statistics: A practical approach*. London: Chapman and Hall. (Available at the UH Downtown: [QA278.F58813 1988](#))
- Grimm, L.G., & Yarnold, P.R. (Ed.). (2000). *Reading and understanding more multivariate statistics*. Washington, DC : American Psychological Association. *([QA278 .R32 2000](#))
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- Girden, E.R. (1992). *ANOVA: Repeated measures*. Newbury Park, CA: Sage. *([HA29 .G567 1992](#))
- Goodman, L.A., & Magidson, J. (Ed.). (1985). *Analyzing qualitative/categorical data: Log-linear models and latent structure analysis*. Lanham, MD: University Press of America. *([QA278.2.G63 1978B](#))
- Green, P.E. (1978). *Mathematical tools for applied multivariate analysis*. New York: Academic Press. (Available at the UH Downtown: [QA278.G73 1978](#))
- Gupta, A.K. (Ed.). (1987). *Advances in multivariate statistical analysis*. Boston: Kluwer Academic Publishers. *([QA278.A28 1987](#))
- Harris, R.J. (2001). *A primer of multivariate statistics*. Mahwah, N.J.: Lawrence Erlbaum Associates. *([QA278 .H35 2001](#))
- Hagenaars, J.A. (1990). *Categorical longitudinal data: Log-linear panel, trend, and cohort analysis*. Newbury Park: CA: Sage. *([QA278.H33 1990](#))
- Hair, J.F., Anderson, R.E., & Tatham, R.L (1987). *Multivariate data analysis with readings* (2nd ed.). New York: Macmillan.
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- repeated measures: A practical approach to behavioral scientists*. London: Chapman and Hall. *([QA278.H345 1987](#))
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- Hayduk, L.A. (1987). *Structural equation modeling with LISREL: Essentials and advances*. Baltimore: Johns Hopkins University Press. *([QA278.3.H39 1987](#))
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Multiple Correlation/Regression

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Factor Analysis

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Discriminant Function Analysis

- Klecka, W.R. (1980). *Discriminant analysis*. Beverly Hills, California: Sage Publications. *([HA31.4 .K56](#))
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Meta-analysis

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Logistic Regression

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Loglinear

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XII. Americans with Disabilities Statement

The University of Houston System complies with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, pertaining to the provision of reasonable academic adjustments/auxiliary aids for students with a disability. In accordance with Section 504 and ADA guidelines, each University within the System strives to provide reasonable academic adjustments/auxiliary aids to students who request and require them. If you believe that you have a disability requiring an academic adjustments/auxiliary aid, please contact the UH Center for Disabilities at 713-743-5400.

XIII. Consultation

Individual appointments will be scheduled with any member of the class upon request. The instructor can be reached by calling (713) 743-8111 or contacting him in his office during office hours (Work Building Room 444), or by e-mail at PLEUNG@UH.EDU or by fax at (713) 743-8149.