



COURSE TITLE/SECTION: SOCW 8324/20476 BIOSTATISTICS

TIME: Mondays, 9:00a – 12:00 noon

FACULTY: Paul R. Swank, PhD **OFFICE HOURS:** After Class, GCSW 302

E-mail: paul_r_swank@yahoo.com **Phone:** (713) 502-5375 **FAX:** (713) 743-8149

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 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. This course will include the following topical (content) areas: Introduction for the doctoral level student to the use and application 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, such as when to use correlation or regression versus analysis of variance, and the like.

I realize that the typical graduate student is either indifferent or terrified of taking statistics. In many places, such a course is used to weed out students and trim the program. However, I have no reason to believe that there is any one of you who cannot master the material. It will mean that you need to apply yourself. If you cross your arms and say "I won't learn this and you can't make me", you probably won't learn it. That would be a terrible waste of time for both of us. And I don't want to waste my time anymore that you do. If you make a concerted effort, you can master this. Why should you want to?

First, you have a second course you are required to take, SOCW8325, multivariate statistics. That course builds off this one. If you fail to learn this material, you will be in a bad place relative to that other course. And I don't want the other instructor saying that the students weren't prepared for it. That reflects badly on me and you. Secondly, you may have need of this information when you do your dissertation. True, you may do a totally qualitative study, but that is doubtful, given the time required to do good qualitative research. And you don't want to be one of those students who have to steal their dissertation from the library to keep other students from seeing it! Thirdly, and even if you do a completely qualitative dissertation, you will still need to read the literature relevant to your area and likely at least some of this will include statistics. In order to judge the relative merits of any research study, you must understand the statistical analysis. There are many ways to lie with statistics and the only good defense against it is to understand the statistics so that people can't mislead you. Lastly, this will be helpful in life where statistics have become more and more important to much of what we do and read.

So, it's to your advantage to learn this material. It's my job to help you.

IV. Course Structure

This course will consist of lectures, applied assignments, multimedia demonstrations, and in-class activities. All students are expected to participate and contribute to all course activities to gain the full impact of the material presented.

V. Textbooks

Thompson, Bruce (2011). *Foundations of Behavioral Statistics*. New York: Guilford Press, 2006. ISBN: 978-1-59385-258-1

PASW Integrated Student Edition for SPSS 18.0 13 Month Term Version 18, Mac/Win.

OR

IBM SPSS Statistics Premium Version 19 Gradpack, 12 month license, Win/Mac.

VI. Course Requirements

Attendance: Attendance is expected. This is a doctoral level course and I do not teach from the book. If you miss class then you are likely to miss important information. If you are going to have to miss, and I know that it is sometimes unavoidable, please let me know so I can direct you to alternative sources of information. Excessive absences will reflect on your grade.

Class participation: I encourage students to ask questions. The only stupid question is the one that is **not** asked. And I know from my experience that whenever you have a question, half of the class has the same question but they are afraid to ask for fear of looking stupid. So do yourself and them a favor and ask the question if you have it. I also will ask questions. These will not be rhetorical questions as I will expect you to answer. This means you need to be prepared by reading any assigned material.

Assignments: There will be three computer assignments. In these I will give you data and ask you to run the statistics on the computer and write up your interpretation. I encourage students to work together to do the computer aspects of these assignments, but your written work should be your own, not copied from someone else.

Final exam: The most difficult thing about courses such as this is student evaluation. I prefer the project method in such courses since examinations can be difficult to construct and evaluate, particularly in small classes. Projects, on the other hand, give one real life experience with the subject matter and, if done with something that has worth to the student, it can be a useful learning experience. You will be given a set of data for the exam (each student will get a different set). The questions to be answered will be the same but, of course, the answers will vary. As you might guess from this, you will be expected to work independently on the exam.

And now some preparatory admonitions:

1. I do not like to take roll in doctoral classes but this does **not** mean that attendance is not important.
2. Plagiarism will not be tolerated. It will earn you an 'F' for the course and it may lead to expulsion.
3. Please do not ask for an incomplete without good reason. To request an incomplete, you will be required to sign a paper saying when you will complete the course.

Feel free to engage in any additional readings that you feel will help you in learning the material.

VII. Evaluation and Grading

10% attendance, 10% class participation, 30% assignments, and 50% for the final exam. 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%

VIII. Policy on grades of I (Incomplete):

Please refer to the UH Graduate and Professional Studies Bulletin for the university policy regarding a grade of Incomplete (I). Incompletes will be given only in accordance with this policy. Please plan accordingly so that you are able to complete and submit your assignments on time, and inform me ASAP should any problems arise.

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 & ASSIGNED READINGS

Date	Topic
8/25	Introduction and definition of terms Chapter 1
9/1	Labor Day Holiday Relax
9/8	Descriptive statistics: seeing your data Chapters 2, 3
9/15	Descriptive statistics: describing your data Chapter 3, 4
9/22	Descriptive statistics: putting it all together Chapter 5
9/29	Inferential statistics: basic concepts <u>(assignment 1 due)</u> Chapter 6
10/6	Inferential statistics: One sample tests Chapter 6
10/13	Inferential statistics: tests of association Chapter 7
10/20	Inferential statistics: tests of association Chapter 7
10/27	Inferential statistics: Correlation and regression <u>(assignment 2 due)</u> Chapter 8
11/3	Inferential statistics: Correlation and regression Chapter 8
11/10	Inferential statistics: Comparing two groups Chapter 9
11/17	Inferential statistics: Comparing two groups Chapter 9

<u>Date</u>	<u>Topic</u>
11/24	Inferential statistics: ANOVA <u>(assignment 3 due)</u> Chapter 10
12/1	Inferential statistics: ANOVA Course Wrap Up and Evaluation Chapter 10
12/8	<u>Final exam due</u>

XI. Americans with Disabilities Statement

Whenever possible, and in accordance with 504/ADA guidelines, The University of Houston will attempt to provide reasonable academic accommodations to students who request and require them. Please call 7143-743-5400 for more assistance.