

# Statistics for Social Research

## SOC310/SWK310

Fall 2014

### Syllabus

**Professor:** Dr. Daniel C. Johnson  
Office: Frost 325A  
Extension: 4407  
E-mail: dan.johnson@gordon.edu  
Office hours: Mon., 12:30 – 2:00 pm;  
Wed., 2:00 – 4:15 pm;  
Thurs., 10:00 am – 12:00 pm;  
and by appointment.

**Class Meetings:** MWF, 11:25 am – 12:25 pm  
MacDonald 212

**Texts:** Agresti, Alan and Barbara Finlay. 2009. *Statistical Methods for the Social Sciences*, fourth edition.  
Upper Saddle River, NJ: Prentice-Hall.

**Other materials:** Basic pocket calculator

**Objectives:**

- 1) To reduce math and computer anxiety.
- 2) To give students the basic tools of statistical reasoning and analysis, laying a foundation for the study of more advanced statistical methods.
- 3) To provide standards for evaluating statistical analyses that commonly appear in scholarly journals and the media.
- 4) To facilitate student use of computers and computer applications, particularly the Statistical Package for the Social Sciences (SPSS).

**Other resources:** Feel free to come to me or the TA with any questions that you may have about the course materials. You may also want to make a habit of getting together with some of your classmates to go over your notes, talk through course concepts, carry out assignments in the computer lab, and work through homework problems. (Actually, I strongly encourage such collaboration when it comes to completing homework assignments. The only stipulations are that you look over the whole assignment on your own before getting together with others, and that each member of your team write up and submit his or her own copy of your answers.)

Should you need additional assistance, several other options are open to you:

- The Academic Support Center (Jenks 414) will offer walk-in mathematics tutoring throughout the semester. Watch your e-mail for a schedule of regular tutoring hours.
- Private tutoring arrangements can also be made.
- The library has a dated but excellent video series—entitled *Against All Odds* (QA276.A42)—that can supplement the readings and lectures.
- There are lots of web-based resources that might help if you are having a difficult time grasping certain concepts or procedures.

See me for details on any of these options.

## Course description

This course is designed to introduce you to the basic statistical procedures used in social scientific research. I do not assume that you have any specialized mathematical background beyond high school algebra, nor do I suppose that you have plans to become a statistician. As such, we will pay only slight attention to issues of statistical theory and will focus more exclusively on the computation and interpretation of various statistical measures. The course is divided into three parts: 1) Measurement, Samples, and Basic Descriptive Statistics; 2) Statistical Inference and Generalization (Univariate); and 3) Description and Inference for Multivariate Relationships. A more detailed outline of the course is provided below.

Regular attendance at lectures and lab sessions is essential for successful completion of the course. During lectures I will be introducing various statistical concepts—their definition, computation, application, and interpretation—and expounding upon the material covered in the readings. The lab work will teach you how to use the computer to perform statistical analyses. It will also provide you an opportunity to review important material from the readings and lectures.

## Assignments

Weekly homework assignments will be drawn from the text and from other sources. These are listed in the course outline that follows and will be due at the beginning of class on the dates indicated. Additional instructions in connection with each assignment may be given in lecture the class period before it is due. Late homework is not acceptable and will be graded **zero**, unless an extension is arranged in advance. Even then, you will be assessed a penalty of 1/3 of a letter grade for each day the assignment is late.

I will also assign special lab assignments on occasion. You will complete these during the lab session, and they will be checked at that time.

There will be two take-home examinations. Each will involve using SPSS to analyze a data set of your own and then answering a series of questions concerning those data. You will need to be familiar with text, lecture, and lab materials in order to answer the questions adequately. The mid-term will be due at the beginning of class on Friday, October 24. The final will be due by 5:00 pm on Thursday, December 18. We will use the regularly scheduled final exam time (Monday, December 15, 9:00 – 11:00 am) for an exam help session. **NO EXAMINATIONS WILL BE ACCEPTED LATE.**

## Grading

All homework assignments and exams will be graded on a 100 point scale. Lab assignments will be graded on a credit/no credit basis.

Your total lab assignment score (the number for which you received credit over the total number of assignments given) will contribute ten percent toward your final grade. Your mean homework score, with the lowest score dropped, will contribute another fifty percent. The remaining forty percent will be split evenly between your mid-term and final exam scores. Letter grades will be assigned according to the standard 90–80–70–60 scale, although I may make some slight adjustments, based on the performance of the class as a whole, when computing final grades.

You may appeal any homework or examination score. Appeals must be presented in writing within one week of the date the graded assignment or examination is returned to you.

## Students with Disabilities

Gordon College is committed to assisting students with documented disabilities. (See Academic Catalog Appendix C, for documentation guidelines.) A student with a disability who may need academic accommodations should follow this procedure:

- 1) Meet with a staff person from the Academic Support Center (Jenks 412, x4746) to:
  - a. make sure documentation of your disability is on file in the ASC,
  - b. discuss the accommodations for which you are eligible,
  - c. discuss the procedures for obtaining the accommodations, and
  - d. obtain a Faculty Notification Form.
- 2) Deliver a Faculty Notification Form to each course professor within the first full week of the semester; at that time make an appointment to discuss your needs with each professor.

Failure to register in time with your professor and the ASC may compromise our ability to provide the accommodations. Questions or disputes about accommodations should be immediately referred to the Academic Support Center. (See also Grievance Procedures in Student Handbook).

## Course outline

<i>Date</i>	<i>Topic(s)</i>	<i>Readings</i>	<i>Homework assignments</i>
-------------	-----------------	-----------------	-----------------------------

---

8/27 Introductions

### Part 1: Measurement, Samples, and Basic Descriptive Statistics

8/29 Statistics as a second language

1.1–1.4

9/3 Sampling

2.2–2.4

Handout #1

9/5 Measurement

2.1, 2.5

9/8 Describing data in tables and graphs

3.1

9/10 Measures of central tendency

3.2

pp. 8–9: 1.5, 1.8  
p. 25: 2.3

9/12 Measures of central tendency, continued

9/15 Measures of variation

3.3–3.4

9/17 Measures of variation, continued

Handout #2  
pp. 61–66: 3.2, 3.8, 3.35

9/19 **Introduction to SPSS (KOSC 118)**

9/22 **Descriptives in SPSS (KOSC 118)**

### Part 2: Statistical Inference and Generalization (Univariate)

9/24 Statistics, parameters and sampling distributions

3.6, 4.4

Handout #3  
pp. 62–68: 3.10, 3.56

9/26 Probability distributions; the normal distribution

4.1–4.3

9/29 The normal distribution, continued

10/1 The central limit theorem  
Point estimation and the need for inference

4.5–4.6, 5.1

Handout #4  
pp. 100–101: 4.4, 4.10, 4.11, 4.19, 4.20

10/3 Confidence intervals for means

5.3

10/6 Confidence intervals for proportions

5.2, 5.6

10/8 Hypothesis testing; large sample test for means

6.1–6.2

pp. 133–140: 5.2, 5.33, 5.7, 5.9, 5.70

10/10 Small sample test for means

10/13 Large sample test for proportions

6.3

10/15 Errors in hypothesis testing; significance

6.4–6.5, 6.8

Handout #5  
pp. 176–181: 6.25, 6.7, 6.21, 6.48, 6.50, 6.52

<i>Date</i>	<i>Topic(s)</i>	<i>Readings</i>	<i>Homework assignments</i>
<b>Part 3: Description and Inference for Multivariate Relationships</b>			
10/20	Cross-classification tables	10.1, 8.1	
10/22	<b>Cross-tabs in SPSS</b> ( <i>KOSC 118</i> )		
10/24	Chi-squared	8.2	Mid-term examination due
10/27	Residual analysis in cross-tabs	8.3	
10/29	Measures of association based on chi-squared	8.4	
10/31	PRE measures of association		Handout #6 pp. 248–249: 8.10, 8.14
11/3	Ordinal-level PREs	8.5	
11/5	Inference using PREs	8.6–8.7	
11/7	Testing differences of proportions	7.1–7.2	Handout #7 pp. 250–251: 8.25, 8.33
11/10	Testing differences of means	7.3, 7.5	
11/12	<b>MEANS and ANOVA in SPSS</b> ( <i>KOSC 118</i> )		
11/14	Analysis of variance	12.1	Handout #8 p. 214: 7.32
11/17	Hypothesis testing with ANOVA; the F-ratio	12.1	
11/19	Eta & eta-squared	12.1	
11/21	Linear regression	9.1	Handout #9 pp. 403–411: 12.6, 12.52
11/24	Ordinary least squares estimation	9.2–9.3	
12/1	Ordinary least squares estimation, continued		
12/3	<b>Regression in SPSS</b> ( <i>KOSC 118</i> )		pp. 289–290: 9.2, 9.6, 9.8
12/5	Correlation—Pearson's $r$ & $R^2$	9.4	
12/8	Hypothesis testing with regression	9.5–9.7	
12/10	Multiple regression	11.1–11.4	Handout #10
12/15	<b>Final exam help session</b> (9:00 – 11:00 am)		
12/18			Final examination due by 5:00 pm