

SOC 470
Intermediate Social Statistics
Summer 2008 (July 2 –August 13)
M-F 9:35-10:50
Thomas 124

Lab
Wed. 12:45-2:00
Sparks 009

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Course description

This course provides an introduction to the basic concepts and skills involved in performing statistical analyses of quantitative social science data. The first part of the course will introduce descriptive statistics. Measures of central tendency, variation, and distribution allow social scientists to *describe* social phenomena. The focus will then proceed to inferential statistics, which are used by social scientists to *infer* types of relationships between two or more variables. The concepts and skills learned in this part of the course include calculation of measures of association, calculation of confidence intervals, and hypothesis testing, including an introduction to basic regression methods. Throughout the course, students will also learn how to use a statistical software package (SPSS) to perform and interpret statistical analyses of social science data.

Readings

- **Required text:** Healey, Joseph F. 2009. *Statistics: A Tool for Social Research*. 8th ed. Belmont, CA: Thomson Wadsworth.
 - All assigned readings refer to this text, and should be completed by the date indicated on this syllabus

Other Required Materials

- Scientific calculator (does not need to have graphing capabilities; an ordinary calculator will suffice)
 - Students are expected to bring a calculator to class every day

Course Objectives

- 1) The first goal of the course is to develop the tools needed to analyze and draw conclusions from quantitative social science data. Students will learn both the mathematical and theoretical foundations of basic descriptive and inferential statistics. Students will become familiar with the types of sociological research questions that can be answered using social survey data, as well as the limits of quantitative statistical analysis.
- 2) The second goal is to develop the computer skills needed to perform analyses using statistical software. While it is important for students to learn how to do many statistical calculations by hand, the use of computer software is absolutely necessary when analyzing large survey data sets. The data manipulation skills covered in this course will provide a necessary foundation for students who plan to enter a career in social science research or pursue graduate studies.
- 3) The final goal of the course is to prepare students to become knowledgeable “consumers” of statistical information. Students will be equipped to understand and evaluate statistical analyses used in contemporary social scientific research, which is essential to a career in the social sciences or to continuing studies at the graduate level. In a more general, yet no less important sense, the familiarity with statistics gained in this course will allow students to be better-informed, more engaged citizens.

Course Requirements

Daily Homework

Learning statistical concepts and skills requires continual practice. To that end, students will be given brief daily homework assignments, which will typically consist of problems from the end of the text chapters. *These assignments are due at the beginning of the following class period.* As solutions to homework problems will be provided and discussed at the time assignments are due, late assignments cannot be accepted. Graded assignments will be returned as soon as possible to provide students immediate feedback on difficulties they may be encountering. There will be 22 total assignments worth 10 points each, and students may drop their 2 lowest scores. Students should be sure to show all work for problems that involve calculation to receive full credit.

Weekly Labs

Ivy will lead 5 weekly labs over the course of the session in which students will learn how to use SPSS computer software to perform statistical analyses. The lab topics will correspond to the material being covered in lectures and homeworks that week. Students will analyze data from the General Social Survey (GSS), which is a national survey concerning the characteristics, opinions, and attitudes of the American public. The GSS will allow students to ask and answer social research questions, including those of personal interest. Students will complete 5 lab assignments over the course of the session worth 25 points each. *Lab assignments will be due at the beginning of the class period on the Monday following the lab.* Lab write-ups will be typed and should include print-outs of pertinent SPSS syntax and output.

Exams

There will be 3 exams worth 100 points each. Exams will not be cumulative; each exam will only evaluate students on the material introduced since the previous exam. However, as is the case with all mathematics-related courses, each bit of knowledge gained lays the groundwork for subsequent knowledge, so in order to do well on later exams, students will need to have a solid understanding of concepts and skills learned earlier in the course. The exams will not be open book, but students may copy formulas and notes onto one side of an 8.5" x 11" piece of paper for reference during the exam. The exams will consist of multiple choice questions and problems. There will be a review during the class meeting before each exam. *Make-up exams will only be given in the case of extenuating and unavoidable circumstances.*

Attendance Policy

While classroom attendance will not be directly factored into students' grades, it is important to consider the fact that daily homework assignments are only accepted up to the beginning of the following class period. In addition, students are reminded that summer courses are compressed, and therefore it is easy to fall quickly behind after even a single absence. Students are therefore expected to be present for every class and lab session.

Course grade

	#	Points	%	Points	Grade
Daily Homework	20	200	32	465-500	A
Weekly Labs	5	125	20	450-464	A-
Exams	3	300	48	435-449	B+
Total		625	100	415-434	B
				400-414	B-
				385-399	C+
				350-384	C
				300-349	D
				0-299	F

Academic integrity

Penn State defines academic integrity as the pursuit of scholarly activity in an open, honest and responsible manner. All students should act with personal integrity, respect other students' dignity, rights and property, and help create and maintain an environment in which all can succeed through the fruits of their efforts (Faculty Senate Policy 49-20).

Dishonesty of any kind will not be tolerated in this course. Dishonesty includes, but is not limited to, cheating, plagiarizing, fabricating information or citations, facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students. Students who are found to be dishonest will receive academic sanctions and will be reported to the University's Judicial Affairs office for possible further disciplinary sanction.

Student Access

The Pennsylvania State University encourages qualified people with disabilities to participate in its programs and activities. If you anticipate needing any type of accommodation in this course or have questions about physical access, please tell the instructor as soon as possible.

Course Schedule¹

Date	Day	Topic	Chapter	Problems
7/2	W	Course Overview		
7/3	R	Introduction to Statistics	1	1.4, 1.8(a,e,h)
7/4	F	NO CLASS: Have a Safe and Happy Fourth of July Weekend!		
7/7	M	Descriptive Statistics	2	2.2, 2.3, 2.9(a-c)
7/8	T	Central Tendency	3	3.1, 3.3, 3.8
7/9	W	Central Tendency <i>Lab 1</i>	3	3.10, 3.13, 3.15
7/10	R	Dispersion	4	4.2, 4.3, 4.6
7/11	F	Dispersion	4	4.7, 4.12, 4.15
7/14	M	Normal Curve	5	5.2, 5.3, 5.7
7/15	T	Normal Curve	5	5.10, 5.12, 5.13
7/16	W	Exam 1 Review <i>Lab 2</i>		
7/17	R	Exam 1		
7/18	F	Sampling	6	6.1, 6.2 (optional, worth 5 ex.cr. points)
7/21	M	Confidence Intervals	7	7.1, 7.9, 7.13, 7.14
7/22	T	Hypothesis Testing	8	8.1, 8.2, 8.4
7/23	W	One-Sample Hypothesis Testing <i>Lab 3</i>	8	8.11, 8.15, 8.18
7/24	R	Two-Sample Hypothesis Testing	9	9.1, 9.2
7/25	F	Two-Sample Hypothesis Testing	9	9.12, 9.13
7/29	M	ANOVA	10	10.1, 10.6, 10.8(b, d)
7/29	T	Chi Square	11	11.2, 11.13
7/30	W	Exam 2 Review <i>Lab 4</i>		
7/31	R	Exam 2		
8/1	F	NO CLASS: American Sociological Association Annual Meeting		

¹ Subject to change. Any changes will be announced via email and noted in an updated syllabus posted on Angel

8/4	M	Bivariate Association	12	12.2, 12.9, 12.11(a,c,e)
8/5	T	Nominal Level Variables	13	13.4, 13.7, 13.11
8/6	W	Ordinal Level Variables	14	14.11, 14.13
		<i>Lab 5</i>		
8/7	R	Bivariate Regression	15	15.1
8/8	F	Bivariate Regression	15	15.5
8/11	M	Bivariate Regression	15	15.8
8/12	T	Exam 3 Review		
8/13	W	Exam 3		