

CEP 932 Quantitative Methods in Educational Research I Spring 2009

Instructor: Dr. Kim Maier

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Class time: MW 10:20 – 11:40 AM Office: 451 Erickson
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Course Content

This course provides an introduction to data analysis and statistical inference. Students learn to describe data (quantitatively and graphically), to select and compute statistical estimates and hypothesis tests, to use computer packages to accomplish these tasks, and to interpret and write about the results of the estimates and tests. Knowledge of basic algebra is needed. Higher mathematics (e.g., trigonometry, calculus) is not used.

Grading

Grades are criterion-referenced. That is, grades will be assigned based on the percent of the total possible points that you receive on the examinations and the assignments [4.0 > 90%, 3.5 > 80%, 3.0 > 70%, 2.5 > 65%, 2.0 > 60%]. The scores for exams and assignments are weighted as follows:

Quizzes (8)	40%
Homework Assignments (8)	40%
Final	20%
Extra Credit	<u>5%</u>
	105%

Quizzes are take-home, open-book, and open-note. You are expected to work individually on the quizzes. Make-up quizzes will only be permitted at the discretion of the instructor. The homework will contain tasks and questions that will require you to use a statistical computer program; you will be using computer software (SPSS or SAS Enterprise) that is available on MSU microlab computers (use of other statistical programs must be approved by the instructor). You may work in groups of three or less on your homework assignments—teams of students should turn in a single copy of the group homework with all names listed; all group members will receive the same grade. Except at the discretion of the instructor (arranged prior to the due date), all assignments must be submitted at the *beginning of class* on the day that they are due. Hardcopies of assignments are to be turned in. Electronic copies will not be accepted unless you have received permission from the instructor. Homework submitted after class will be considered late and subject to the late assignment policy.

Late Assignment Policy

Assignments (homework or quiz) are due at the beginning of class. If you decide to hand in the assignment late, it will be penalized an additional 25% for each day it is late. This means that homework handed in after class starts will be penalized 25%. The homework will be penalized an additional 25% for each subsequent day it is late (e.g., homework that is handed in the day after it is due will be penalized 50%).

Textbook

Required: Ott, R.L. and Longnecker, M. (2001). *An Introduction to Statistical Methods and Data Analysis* (5th ed.). Pacific Grove, CA: Duxbury. [This book is denoted O in the readings list below.]

Computer Software

You will be required to use statistical analysis software to complete some assignments. Either SPSS or SAS software should be chosen. Both are available on MSU microlab computers. SPSS is a Windows package that is primarily menu-driven and is the software that will be used during lectures. SAS Enterprise can be used to provide a menu-driven environment for the command-driven SAS software. There are a number of resources that can be used to learn how to use SPSS:

Foster, J. J. (1998). *Data Analysis using SPSS for Windows*. Thousand Oaks, CA: Sage Publications.
George, D. & Mallery, P. (2005). *SPSS for Windows Step by Step: A Simple Guide and Reference* (5th ed. Covers SPSS 12.0; 4th ed. Covers 11th edition). Allyn and Bacon.
Norusis, M. J. (2004). *SPSS 12.0 Guide to Data Analysis*. Englewood Cliffs, NJ: Prentice-Hall.

There are also a number of on-line resources that you might find helpful. UCLA Academic Technology services offer exceptional webpages for SAS and SPSS:

For SAS: <http://www.ats.ucla.edu/stat/sas/>

For SPSS: <http://www.ats.ucla.edu/stat/spss/>

Additional Resources:

A number of students over the past semesters have recommended a number of books that they found helpful. Most of these books could be considered to be a 'more gentle' introduction to statistics. In general, these resources give a broad overview of the subject but do not go into any single topic deeply. While none of these resources would be a substitution for the course textbook, you may find them useful as additional sources. Many are available in the library, either as listed or as earlier editions.

Gonick, L. & Smith, W. (1994). *The Cartoon Guide to Statistics*. Harper Resource.

Kranzler, J.H. (2002). *Statistics for the Terrified* (3rd ed.). Prentice-Hall.

Levine, D.M. & Stephan D.F. (2004). *Even You Can Learn Statistics: A Guide for Everyone Who Has Ever Been Afraid of Statistics*. Prentice-Hall.

Please note: MSU seeks to ensure that its programs are accessible to all persons. Students in need of special assistance or an accommodation regarding any of the course requirements as outlined in the syllabus and discussed in class are advised to notify me immediately. We will meet privately to discuss a resolution of your issue, which may or may not include an appropriate referral. Confidentiality will be maintained regarding your special needs.

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SCHEDULE FOR CLASSES & READINGS

Dates	Topic	Readings	Overheads	Due
1/12	Introduction Collecting Data	O1, 2, 20	c1.pdf	
1/14	NO CLASS			
1/19	NO CLASS – MLK Day			
1/21	Introduction Collecting Data	O1, 2, 20	c1.pdf	
1/26	Descriptive Statistics	O3	c3.pdf	
1/28	Descriptive Statistics	O3	c3.pdf	Quiz #1 Homework #1
2/2	Descriptive Statistics	O3	c3.pdf	
2/4	Descriptive Statistics	O3	c3.pdf	
2/9	Probability & Probability Distributions	O4	c4.pdf	
2/11	SPSS – WELLS HALL B100A, B100C, 10:40am - 12:30pm	Handout, SPSS Module		Quiz #2
2/16	Probability & Probability Distributions	O4	c4.pdf	Homework #2
2/18	Probability & Probability Distributions	O4	c4.pdf	
2/23	Comparing means: z-tests and t-tests	O5	c5.pdf	Quiz #3
2/25	Comparing means: z-tests and t-tests	O5	c5.pdf	SPSS Module
3/2	Comparing means: z-tests and t-tests	O5	c5.pdf	Homework #3
3/4	Comparing means: z-tests and t-tests	O5, 6	c5.pdf	
3/9	NO CLASS – Spring Break			
3/11	NO CLASS – Spring Break			
3/16	Comparing means: z-tests and t-tests	O6	c6.pdf	Quiz #4
3/18	Comparing means: z-tests and t-tests	O6	c6.pdf	
3/23	Comparing means: z-tests and t-tests	O6	c6.pdf	Homework #4
3/25	Comparing means: z-tests and t-tests	O6	c6.pdf	
3/30	Comparing variances: Chi-square and F-statistics	O7	c7.pdf	Quiz #5

4/1	Categorical Data: Chi-square tests	O10	c10.pdf	
4/6	Categorical Data: Chi-square tests	O10	c10.pdf	Quiz #6
4/8	Categorical Data: Chi-square tests	O10	c10.pdf	Homework #5
4/13	Categorical Data: Chi-square tests	O10	c10.pdf	
4/15	Categorical Data: Chi-square tests	o10	c11.pdf	Homework #6
4/20	Correlation & Regression	O11	c11.pdf	Quiz #7
4/22	Correlation & Regression			
4/27	Correlation & Regression	O11	c11.pdf	Homework #7
4/29	Correlation & Regression	O11	c11.pdf	Homework #8 Quiz #8
5/4	FINAL EXAM 10am—12pm			