



Educational Research and Measurements 6300
Applied Statistical Methods in Education
May Session 2005
Instructor: Seock-Ho Kim

Syllabus

Course Description and Objective

Techniques for describing and summarizing data for educational research studies. Applications of the standard normal distribution and the use and interpretation of standard scores. Inferential statistics for one and two population studies including means, proportions, and correlations (*Graduate Bulletin* 2004-2005). Prerequisite: ERSH 4200/6200

The overall goal of the course is to present an introduction to statistics that emphasizes working with data and statistical ideas. The content of the course is divided into three parts:

1. Understanding data
2. Understanding inference
3. Application topics in inference

In order to achieve the overall goal, the course will involve readings of the textbooks, a series of assignments to reinforce the key concepts, a set of computer exercises, and three examinations.

Textbooks

Moore, D. S. (2003). *The basic practice of statistics* (3rd ed.). New York: W. H. Freeman and Company.

Green, S. B., & Salkind, N. J. (2005). *Using SPSS for Windows and Macintosh: Analyzing and understanding data* (4th ed.). Upper Saddle River, NJ: Prentice Hall.

Huck, S. W. (2003). *Reading statistics and research* (4th ed.). New York: Longman.

Suggested Supplementary Texts

American Psychological Association (2001). *Publication manual of the American Psychological Association* (5th ed.). Washington, DC: Author.

Hays, W. L. (1994). *Statistics* (5th ed.). Fort Worth, TX: Harcourt Brace College Publishers.

Marascuilo, L. A., & Serlin, R. C. (1988). *Statistical methods for the social and behavioral sciences*. New York: W. H. Freeman and Company.

Moore, D. S., & McCabe, G. P. (2006). *Introduction to the practice of statistics* (5th ed.). New York: W. H. Freeman and Company.

Rosenthal, R., & Rosnow, R. L. (1991). *Essentials of behavioral research: Methods and data analysis* (2nd ed.). New York: McGraw-Hill.

A copy of portions of ‘Solutions to Exercises’ from *Instructor’s Guide* will be distributed in class.

Assignments, Examinations, and Evaluation

A number of exercises will be assigned and each student is expected to complete the exercises independently. All work must be completed and turned in on time. All work should be lucid, orderly, and self-contained. A set of computer exercises will also be assigned. Specific requirements for the computer exercises will be distributed later.

There will be two midterm examinations on May 23 (Monday, 8:00–10:45 am) and on May 31 (Tuesday, 8:00–10:45 am), and a final examination on June 8 (Wednesday, 8:00–10:45 am). The final examination hours are based on the final examination schedule. The examinations will be administered in class. The examinations will be composed predominately short answer items. Copies of sample examinations will be distributed later.

Grades will be based on completion of the assigned exercises (15%), on the computer exercises (10%), and on the three examinations (25% each). Grades will be assigned as follows: A (above 90%), B (between 80% and 90%), C or worse (below 80%). Full attendance of lectures is required.

Advice

On any aspect of the course, see Seock-Ho Kim, 325U Aderhold from 11:00 am to noon on Monday to Friday or by appointment. For appointments or replies to brief questions, send email to shkim@uga.edu or call me at 542-4224 (office) or 310-1218 (home). If I am not available when you call 542-4224, you may also call and leave a message at 542-4110 (i.e., the main office of the Department of Educational Psychology and Instructional Technology). If you leave a message, I will probably reply by email, rather than call you back.

Class Procedures and Activities

The class will be conducted so as to maximize understanding of key statistical concepts. To facilitate this intention, most class sessions will include one or more of the following:

- Illustration of key concepts developed through assigned readings.
- Identification and discussion of these concepts in actual research settings.
- Analysis and discussion of selected problems involving these concepts.

The computer lab (618 Aderhold) has been scheduled for this class on every Friday (8:00–10:45 am). There are a total of three computer sessions, and we will meet in the computer lab.

Course Outline

May 17

- Chapter 1. Picturing Distributions with Graphs
- Chapter 2. Describing Distributions with Numbers

May 18

- Chapter 3. Normal Distributions
- Chapter 4. Scatterplots and Correlation
- Chapter 5. Regression

May 19

- Chapter 6. Two-Way Tables
- Chapter 7. Producing Data: Sampling
- Chapter 8. Producing Data: Experiments

May 20

- Computer Lab 1. Units 1–2, Chapter 1H (Huck)
- Computer Lab 2. Unit 5, Chapter 2H
- Computer Lab 3. Unit 8, Chapter 3H

May 23

Midterm 1: Chapters 1–8

May 24

- Chapter 9. Introducing Probability
- Chapter 10. Sampling Distributions

May 25

- Chapter 11. Probability in Detail
- Chapter 12. Binomial Distributions

May 26

- Chapter 13. Confidence Intervals: The Basic
- Chapter 14. Test of Significance: The Basic
- Chapter 15. Inference in Practice

May 27

- Computer Lab 4. Unit 3, Chapter 5H
- Computer Lab 5. Unit 4, Chapter 6H
- Computer Lab 6. Unit 6, Chapters 7H–8H

May 31

Midterm 2 : Chapters 9–15

June 1

Chapter 16. Inference About One Mean

Chapter 17. Comparing Two Means

June 2

Chapter 18. Inference About One Proportion

Chapter 19. Comparing Two Proportions

Chapter 20. Two Categorical Variables: Chi-Square

June 3

Computer Lab 7. Units 7 & 10, Chapter 10H

(also portions of Chapters 11H, 12H, & 19H—optional)

Computer Lab 8. APA

June 6

Chapter 21. Two Quantitative Variables: Regression

Chapter 22. Categorical Explanatory, Quantitative Response: ANOVA

June 7

Chapter 23. Nonparametric Tests

June 8

Final: Chapters 16–22

Tentative Assignments

Exercises

Due Date

Set 1: 1.26, 2.25, 3.25, 4.13, 5.18, 6.16, 7.2, 8.15

May 23

Set 2: 9.22, 10.9, 11.28, 12.22, 13.18, 14.26, 15.10

May 31

Set 3: 16.11, 17.42, 18.9, 19.20, 20.13, 21.6, 22.11

June 8

May 2005

SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17 Ch 1-2	18 Ch 3-5	19 Ch 6-8	20 Lab 1	21
22	23 Mid 1 Set 1	24 Ch 9-10	25 Ch 11-12	26 Ch 13-15	27 Lab 2	28
29	30	31 Mid 2 Set 2				

June 2005

SUN	MON	TUE	WED	THU	FRI	SAT
			1 Ch 16-17	2 Ch 18-20	3 Lab 3	4
5	6 Ch 21-22	7 Ch 23	8 Final Set 3	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		