



Educational Research and Measurements 6300
Applied Statistical Methods in Education
Fall Semester 2006
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* 2006-2007). 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. (2007). *The basic practice of statistics* (4th 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: Pearson Prentice Hall.

Huck, S. W. (2003). *Reading statistics and research* (4th ed.). Boston: Allyn and Bacon.

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. (2003). *Introduction to the practice of statistics* (4th 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 '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 September 26 (Tuesday, 5:00–6:15 pm) and on November 7 (Tuesday, 5:00–6:15 pm), and a final examination on December 12 (Tuesday, 7:00–10:00 pm). 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. Make-up examinations are not administered.

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 95%), A⁻ (between 90% and 95%), B⁺ (between 85% and 90%), B (between 80% and 85%), B⁻ (between 75% and 80%), and C or worse (below 75%). Full attendance of lectures is required.

All academic work must meet the standards contained in "A Culture of Honesty." Students are responsible for informing themselves about those standards before performing any academic work. The link to more detailed information about academic honesty can be found at: <http://www.uga.edu/ovpi/honesty/acadhon.htm>

Advice

On any aspect of the course, see Seock-Ho Kim, 325U Aderhold from 4:00 pm to 5:00 pm on Tuesday and Thursday 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 & Instructional Psychology). 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 nearly every other Thursday (5:00–6:15 pm). There are a total of seven computer sessions, and we will meet at the computer lab.

Course Outline

August 17

Chapter 1. Picturing Distributions with Graphs

August 22

Chapter 2. Describing Distributions with Numbers

August 24

Computer Lab 1. Units 1–2, Chapter 1H (Huck)

August 29

Chapter 3. The Normal Distributions

August 31

Chapter 4. Scatterplots and Correlation

September 5

Chapter 5. Regression

September 7

Computer Lab 2. Unit 5, Chapter 2H

September 12

Chapter 6. Two-Way Tables

Chapter 7. Exploring Data: Part I Review

September 14

Chapter 8. Producing Data: Sampling

September 19

Chapter 9. Producing Data: Experiments

September 21
Computer Lab 3. Unit 8, Chapter 3H

September 26
Midterm 1: Chapters 1–9

September 28
Chapter 10. Introducing Probability

October 3
Chapter 11. Sampling Distributions

October 5
Computer Lab 4. Unit 3, Chapter 5H

October 10
Chapter 12. General Rules of Probability

October 12
Chapter 13. Binomial Distributions

October 17
Chapter 14. Confidence Intervals: The Basic

October 19
Computer Lab 5. Unit 4, Chapter 6H

October 24
Chapter 15. Test of Significance: The Basic

October 31
Chapter 16. Inference in Practice
Chapter 17. From Exploration to Inference: Part II Review

November 2
Chapter 18. Inference About a Population Mean

November 7
Midterm 2 : Chapters 10–17

November 9
Chapter 19. Two-Sample Problems

November 14
Chapter 20. Inference About a Population Proportion

November 16
Computer Lab 6. Unit 6, Chapters 7H–8H

November 21

Chapter 21. Comparing Two Proportions

November 28

Chapter 23. Two Categorical Variables: The Chi-Square Test

November 30

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

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

Chapter 24. Inference for Regression

December 5

Chapter 25. One-Way Analysis of Variance: Comparing Several Means

Chapter 26. Nonparametric Tests

December 12

Final: Chapters 18–25

Tentative Assignments

Exercises

Due Date

Set 1: 1.36, 2.46, 3.46, 4.24, 5.26, 6.30, 7.34, 8.42, 9.30

September 26

Set 2: 10.32, 11.36, 12.42, 13.30, 14.30, 15.36, 16.50, 17.26

November 7

Set 3: 18.44, 19.42, 20.28, 21.32, 22.16, 23.30, 24.26, 25.40

December 12

Note

The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.

August 2006

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

September 2006

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

October 2006

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

November 2006

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

December 2006

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