ERSH6300 APPLIED STAT MTH ED 03 CR
01-587 9:30A-10:45A TR KIM 1060-581 T 30

Educational Research and Measurements 6300
Applied Statistical Methods in Education
Fall Semester 2004
Instructor: Sukwoo 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* 2003-2004). 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. (2003). *Using SPSS for Windows and Macintosh: Analyzing and understanding data* (3rd 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 (1994). *Publication manual of the American Psychological Association* (4th 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 28 (Tuesday, 9:30–10:45 am) and on November 4 (Tuesday, 9:30–10:45 am), and a final examination on December 16 (Thursday, 8:00–11:00 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 Sukwoo Kim, 407 Aderhold from 11:00 am to noon on Tuesday and Thursday or by appointment. For appointments or replies to brief questions, send email to `sukkim@uga.edu` or call me at 372-2748 (cell) or 310-1737 (home). You may also call and leave a message at 542-4110 (i.e., the main office of the Department of Educational 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 (228 Aderhold) has been scheduled for this class on every other Thursday (9:30–10:45 am). There are a total of eight computer sessions, and we will meet at the computer lab.

Course Outline

August 19
: Chapter 1. Picturing Distributions with Graphs

August 24
: Chapter 2. Describing Distributions with Numbers

August 26
: Computer Lab 1. Units 1–2, Chapter 1H (Huck)

August 31
: Chapter 3. Normal Distributions

September 2
: Chapter 4. Scatterplots and Correlation

September 7
: Chapter 5. Regression

September 9
: Computer Lab 2. Unit 5, Chapter 2H

September 14
: Chapter 6. Two-Way Tables

September 16
: Chapter 7. Producing Data: Sampling

September 21
: Chapter 8. Producing Data: Experiments

September 23
: Computer Lab 3. Unit 8, Chapter 3H

September 28
: **Midterm 1**: Chapters 1–8

September 30
: Chapter 9. Introducing Probability

October 5
: Chapter 10. Sampling Distributions

October 7
: Computer Lab 4. Unit 3, Chapter 5H

October 12
Chapter 11. Probability in Detail

October 14
Chapter 12. Binomial Distributions

October 19
Chapter 13. Confidence Intervals: The Basic

October 21
Computer Lab 5. Unit 4, Chapter 6H

October 26
Chapter 14. Test of Significance: The Basic

November 2
Chapter 15. Inference in Practice

November 4
Computer Lab 6. Unit 6, Chapters 7H–8H

November 9
Midterm 2 : Chapters 9–15

November 11
Chapter 16. Inference About One Mean

November 16
Chapter 17. Comparing Two Means

November 18
Computer Lab 7. Units 7 & 10, Chapter 10H
(also portions of Chapters 11H, 12H, & 19H—optional)

November 23
Chapter 18. Inference About One Proportion
Chapter 19. Comparing Two Proportions

November 30
Chapter 20. Two Categorical Variables: Chi-Square

December 2
Computer Lab 8. APA
Chapter 21. Two Quantitative Variables: Regression

December 7
Chapter 22. Categorical Explanatory, Quantitative Response: ANOVA

December 9
Chapter 23. Nonparametric Tests

December 16
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	September 28
Set 2: 9.22, 10.9, 11.28, 12.22, 13.18, 14.26, 15.10	November 9
Set 3: 16.11, 17.42, 18.9, 19.20, 20.13, 21.6, 22.11	December 16

August 2004

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

September 2004

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

October 2004

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

November 2004

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

December 2004

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