ERSH6300 APPLIED STAT MTH ED 03 CR
21-770 5:00P-6:15P TR KIM 1060-0520 T 30

Educational Research and Measurements 6300
Applied Statistical Methods in Education
Fall Semester 2008
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*). 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* (5th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Huck, S. W. (2008). *Reading statistics and research* (5th ed.). Boston: Pearson 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. (2005). *Introduction to the practice of statistics* (5th ed.). New York: W. H. Freeman and Company.

Rosenthal, R., & Rosnow, R. L. (2007). *Essentials of behavioral research: Methods and data analysis* (3rd 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 23 (Tuesday, 5:00–6:15 pm) and on November 4 (Tuesday, 5:00–6:15 pm), and a final examination on December 11 (Thursday, 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/honesty/`

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 706-542-4224 (office) or 706-310-1218 (home). If

I am not available when you call 706-542-4224, you may also call and leave a message at 706-542-4110 (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 (227/228 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 19
Chapter 1. Picturing Distributions with Graphs

August 21
Chapter 2. Describing Distributions with Numbers

August 26
Chapter 3. The Normal Distributions

August 28
Computer Lab 1. Units 1–2, Chapter 1H (Huck)

September 2
Chapter 4. Scatterplots and Correlation

September 4
Chapter 5. Regression

September 9
Chapter 6. Two-Way Tables
Chapter 7. Exploring Data: Part I Review

September 11
Computer Lab 2. Unit 5, Chapter 2H

September 16
Chapter 8. Producing Data: Sampling

September 18
Chapter 9. Producing Data: Experiments

September 23
Midterm 1: Chapters 1–9

September 25
Computer Lab 3. Unit 8, Chapter 3H

September 30
Chapter 10. Introducing Probability

October 2
Chapter 11. Sampling Distributions

October 7
Chapter 12. General Rules of Probability

October 9
Computer Lab 4. Unit 3, Chapter 5H

October 14
Chapter 13. Binomial Distributions

October 16
Chapter 14. Confidence Intervals: The Basic

October 21
Chapter 15. Test of Significance: The Basic

October 23
Computer Lab 5. Unit 4A, Chapter 6H

October 28
Chapter 16. Inference in Practice
Chapter 17. From Exploration to Inference: Part II Review

October 30
Chapter 18. Inference About a Population Mean

November 4
Midterm 2 : Chapters 10–17

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

November 11
Chapter 19. Two-Sample Problems

November 13
Chapter 20. Inference About a Population Proportion
Chapter 21. Comparing Two Proportions

November 18
Chapter 22. Inference about Variables: Part III Review
Chapter 23. Two Categorical Variables: The Chi-Square Test

November 20
Computer Lab 7. Units 7 & 10, Chapter 10H
(also portions of Chapters 11H, 12H, & 19H—optional)

December 2
Chapter 24. Inference for Regression

December 4
Chapter 25. One-Way Analysis of Variance: Comparing Several Means
Chapter 26. Nonparametric Tests

December 11
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 23
Set 2: 10.32, 11.36, 12.42, 13.30, 14.30, 15.36, 16.50, 17.26	November 4
Set 3: 18.44, 19.42, 20.28, 21.32, 22.16, 23.30, 24.26, 25.40	December 11

Note

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

August 2008

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 Chap 2	22	23
24/31	25	26 Chap 3	27	28 Lab 1	29	30

September 2008

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

October 2008

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

November 2008

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

December 2008

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