



Educational Research and Measurements 6300
Applied Statistical Methods in Education
Summer 2008, May Session
Instructor: Seock-Ho Kim

Syllabus¹

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 (*The UGA 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. (2007). *Using SPSS for Windows and Macintosh: Analyzing and understanding data* (5th ed.). Upper Saddle River, NJ: Prentice Hall.

Huck, S. W. (2003). *Reading statistics and research* (5th ed.). Boston: Allyn and Bacon.

¹The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.

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 May 20 (Tuesday, 9:30–10:45 am) and on May 28 (Wednesday, 9:30–10:45 am), and a final examination on June 4 (Wednesday, 9:30 am–12:15 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 1:00 pm to 2:00 pm on Monday to Friday 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 the class on every Friday. There are a total of three computer sessions, and we will meet in the computer lab.

Course Outline

May 13

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

May 14

- Chapter 3. The Normal Distributions
- Chapter 4. Scatterplots and Correlation

May 15

- Chapter 5. Regression
- Chapter 6. Two-Way Tables
- Chapter 7. Exploring Data: Part I Review

May 16

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

May 19

- Chapter 8. Producing Data: Sampling
- Chapter 9. Producing Data: Experiments

May 20

- Midterm 1:** Chapters 1–9
- Chapter 10. Introducing Probability
- Chapter 11. Sampling Distributions

May 21

Chapter 12. General Rules of Probability
Chapter 13. Binomial Distributions

May 22

Chapter 14. Confidence Intervals: The Basic
Chapter 15. Test of Significance: The Basic

May 23

Computer Lab 4. Unit 3, Chapter 5H
Computer Lab 5. Unit 4, Chapter 6H

May 27

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

May 28

Midterm 2 : Chapters 10–17
Chapter 18. Inference About a Population Mean
Chapter 19. Two-Sample Problems

May 29

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

May 30

Computer Lab 6. Unit 6, Chapters 7H–8H
Computer Lab 7. Units 7 & 10, Chapter 10H
(also portions of Chapters 11H, 12H, & 19H—optional)

June 2

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

June 3

Chapter 24. Inference for Regression
Chapter 25. One-Way Analysis of Variance: Comparing Several Means
Chapter 26. Nonparametric Tests

June 4

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

May 20

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

May 28

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

June 4

May 2008

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

June 2008

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