

SYLLABUS

COURSE OBJECTIVES

Decision making for planning, policy, and management often relies on quantitative reasoning, which entails the collection, analysis and interpretation of quantitative data. Applied Quantitative Research I provides some key tools for *quantitative reasoning*. This course is designed to introduce students to quantitative principles and techniques of decision making and to their application in planning, policy, and public administration.

The course presents the logic of quantitative analysis by introducing basic techniques for data description and presentation to lay audiences, and by using a computer package for statistical analysis. It is hoped that the learning done in this course will expand the student's ability to reason quantitatively in the context of planning, policy, and public administration. Students will learn to:

- identify types of problems that lend themselves to quantitative analysis; ask questions that can be answered through quantitative reasoning; formulate hypotheses to be explored quantitatively;
- identify the means to test the hypotheses (logic, procedure, data);
- carry out analyses, understand the meaning of results and reapply results to similar problems;
- present the results to specified audiences;
- evaluate results of research carried out and reported by others;
- apply the new knowledge to decision making.

COURSE METHOD

The course consists of:

- Lectures on quantitative methods and procedures for data description, analysis and presentation;
- Class discussions of homework solutions;
- Group exercises;
- Computer lab work;
- Individual student project
- In-class exams

COURSE REQUIREMENTS

Students are expected to:

- Attend all classes;
- Participate actively in discussions and group exercises & ask clarifying questions;
- Use the computer (as frequently as possible) for solving homework sets and (always) for text editing.
- The individual student project

- Homework sets and project outputs should be handed in **ON TIME** (using wordprocessing where possible.) Since the homework sets serve the goal of sharpening communication skills that complement the analytic ones, pay attention to completeness, clarity and aspect. Grading is based on soundness of the analytical thinking, effectiveness of interpretation, and communication of results. Prepare for class sessions by reading text assignments and identifying topics that need clarification in class. Feel free to raise questions (even if you suspect you are the only one who does not know the answer) to ensure that you thoroughly understand and are able to apply discussed procedures in contexts outside the classroom.

TEXTS

Kachigan S. (1982). *Statistical Analysis*. New York: Radius Press.

Maier, M.H. (1999). *The Data Game: Controversies in Social Science Statistics, Third Edition*. Armonk, NY: M.E. Sharpe. (on Reserve at the University Library, also available as an eBook through netLibrary)

Other Useful Resources

Trochim, W. (1997). *The Knowledge Base, An Online Research Methods Textbook*, <http://trochim.human.cornell.edu/> (free on the WEB)

http://www.cas.lancs.ac.uk/glossary_v1.1/basicdef.html Basic definitions

<http://www.stat.sc.edu/webstat/>

EVALUATION PROCEDURE

Weekly homework assignments: 20%

Class participation (class time group exercises): 10%

Midterm 1 (during regularly scheduled class time): 15%

Midterm 2 (during regularly scheduled class time): 20%

Individual student project: 10%

Final (class time): 25%

- Late homework sets will **not** be accepted since solutions are discussed in class.
- The (open book) midterms and final will test accumulated knowledge as well as ability to respond to new problems. While focusing on the most recent lecture topics, exams have to rely on concepts covered earlier; in preparation, review earlier material and avoid falling behind in readings or homework assignments.
- Attendance at **all** exams is **required**. Makeup exams will be given **only** in emergency cases (proof required; vacation arrangements are not emergencies), and with advance notice.

OFFICE HOURS, LOCATION

Office: Urban Building, 232F & 217

Hours: 4:30-6:00pm M & W, and by appointment

LCUA Computer Lab hours: Consult the LCUA WEB page

GRADING SCALE

A: 95-100 A-: 90-94 B+: 85-89 B: 80-84 B-: 75-79 C: 70-74 D: 60-69 F: 0-59

IMPORTANT DATES

Classes begin: January 14, 2002
Spring Break: Sunday-Sunday, March 10-17, 2002 (**No classes**)
Final exam week: May 6-10, 2002.
In-class final exam: Monday, May 6, 2002

See page 2 of the *CSU Spring 2002 Bulletin* for drop/add deadlines

UNIVERSITY POLICIES

- Students requiring special accommodations should immediately inform the instructor.
- Refer to the CSU Bulletin for add/drop, withdrawal procedures, S/U, incomplete grading.
- For class cancellations due to weather, call CSU information (687-2000) before class, or access the Cleveland State University home page at www.csuohio.edu
- Academic misconduct: plagiarism or cheating will result in an "F" for the course.
- Grades cannot be changed after their issuance at the end of the Semester.

CLASS SCHEDULE

January 14

Introduction--class organization, discussion of course content

K Chapter 1: Fundamental Concepts: *Nature of Statistical Analysis*

K Chapter 2: Fundamental Concepts: *Objects, Variables and Scales*

January 21

Martin Luther King, Jr. Day (**no class**)

January 28

K Chapter 3: Data Reduction: *Frequency distributions*

K Chapter 4: Data Reduction: *Central tendency*

February 4

K Chapter 5: Data Reduction: *Variation*

February 11

MIDTERM 1 (class time, open book, chapters 1 -5)

February 18

Presidents' day (**no class**)

February 25

K Chapter 7: Inference: Sampling distributions

March 4

K Chapter 8: Inference: Parameter Estimation

March 10-17 Spring Break (no classes)

March 18

K Chapter 9: Inference: Hypothesis Testing

March 25

MIDTERM 2 (class time, open book, chapters 7-9)

April 1

K Chapter 10: Identification of Association: Correlation analysis

April 8

K Chapter 11, sections 1-7: Identification of Association: Regression analysis

April 15

K Chapter 13: Identification of Association: Categorical Data

April 22

K Chapter 19: Selected Subjects: Nonparametric Analysis

April 29

K Chapter 21: Decision Tools: Decision Analysis

Student Projects Due

Review for Final

May 6

FINAL EXAM (class time, open book)

HOMEWORK FORMAT

- **Make it useful to you:** although answers are given at the end of the textbook, try to solve the problems on your own; the correct answer is useless if you do not know how to obtain it.
- **Make it easy to find/read:** label your products with your name, the homework number and date, and page numbers.
- **Make it easy to understand:** explain the logic. Include computations, in preparation for tests. Have printouts at the end; briefly state and interpret results referring to them. **State conclusions** where appropriate--don't leave the reader

guessing, especially when using SPSS (restate in words what you believe your results mean in terms of the question).

- **Make it complete:** the (max) 2 points are given for effort & for tackling all questions, rather than for correct answers.

HOMEWORK SCHEDULE

(First batch of homework sets; future homework assignments will be given out in class. Homework is due on day of class, and late homework will not be accepted.)

DUE FROM KACHIGAN (NUMBERS REPRESENT CHAPTER.PROBLEM NUMBER):

(1/28) 1.5, 1.6, 1.8, 1.11; 2.2, 2.6, 2.11, 2.18, 2.19, 2.20.

(2/4) 3.1, 3.2, 3.3, 3.4, 3.5, 3.9, 3.10*, 3.11*, 3.12, 3.15*; 4.5, 4.10, 4.11, 4.16, 4.19, 4.21, 4.23, 4.25.

State your findings, and where appropriate provide interpretations.

*Enter the data of problem 3.10 in the spreadsheet. Answer questions of 3.10 and 3.11. Same for problem 3.15.

(2/11) 5.7, 5.8, 5.9, 5.15, 5.17, 5.21, 5.23, 5.25, 5.27, 5.29, 5.30, 5.31, 5.32

State your findings, and where appropriate provide interpretations.

Spreadsheet: create your own data

Create a sample of at least 25 observations on a variable of your choice (go on the WEB for ideas!) Produce and graph the frequency distribution of the sample; compute mode, median, mean, variance, standard deviation.

SPSS: Use GSS91 data. Produce and graph the frequency distribution of number of years of education (variable EDUC) in the sample.