

PAD/PDD/UST 601, Spring 2007
Applied Quantitative Reasoning I
Maxine Goodman Levin College of Urban Affairs
Cleveland State University

Date/Time: Monday, 6:00 PM – 9:50PM

Location: UR 107 and UR 39 (SPSS Lab)

College of Urban Affairs

Instructor: Dr. Sugie Lee

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Office Hours (UR 346): Wednesday 2:00-5:00 PM or by appointment

Graduate Assistants:

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Uday Kandula, Ph.D. Student (SPSS Only)

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Class Description

This course includes basic quantitative methods designed primarily for graduate students in planning and public policy. Quantitative reasoning that entails the collection, analysis, and interpretation of quantitative data is increasingly important in planning and public policy fields. This course is intended to provide students with both a theoretical background of statistical analysis and technical components of statistical analysis using quantitative method tools (e.g., SPSS). This course is organized into four components—lectures, short quiz, homework assignment, and exams. Students are expected to learn quantitative methods and their theoretical concepts and quantitative data analysis and its interpretation using descriptive and inferential statistics.

Class Text and Materials

Required Textbook:

Kachigan S. (1982, 1986). Statistical Analysis. New York: Radius Press.

Required Material and Equipment:

Six university exam blue-books (Large format) and Calculator

Recommended:

Healey, Joseph F. (2004). Statistics: A Tool for Social Research (7th edition). Belmont, CA: Wadsworth Pub. Co.

Babbie, Earl R. (2003). The Practice of Social Research (10th edition). Belmont, CA: Wadsworth Pub. Co.

Other Class Materials

Class materials and articles will be available on the class website.

<http://urban.csuohio.edu/~sugie/ust601/index.htm>

Class Evaluation

15%	Exam I
30%	Exam II
30%	Exam III
20%	Short Quiz (5%) and Homework (15%)
5%	Class Participation

Class Policies

Missed Exams

The make-up exam will be given only in cases of extreme and documented circumstances or documented illness. You must make these arrangements in advance of the exam. The student must schedule the make-up exam within 7 days of the in-class exam. This is the responsibility of the student. The make-up exam will vary in form, content, and length from that given in class. Except in these extreme circumstances, students earn a score of zero on missed exams. In addition, all exam answers should include calculation procedures to get correct answers. If you fail to show all calculation procedures, you are not going to get full credit. All exams will be drawn from the text and lecture materials. Please keep in mind that all lecture materials does not originate from the textbook.

Homework Assignment

Late homework submissions will result in a penalty of 5 % of your grade per day late. If students submit their assignments after six days from the due date, students will get the 30% reduction of their grades on the assignments. Students will get a grade of zero on homework assignment if they delay more than 6 days. However, students are allowed only one time to delay their homework assignment without any penalty. In this case, they have to submit their home works within 6 days after the due date.

Most of the assignments in this class are individual works. Students are encouraged to work in groups to understand basic concepts on statistics, but they are not allowed to cooperate for class assignments and exams. As mentioned

earlier, students also must include all calculating procedures and correct answers for their homework questions.

All work must be handed in as a “hard-copy” (no e-mail, e-mail attachments, faxes, etc). When you put your homework in my mailbox or my office, you have to notify your submission through email.

Class Working Load

This class is four credit course. According to CSU’s recommendation regarding class working loads, students have to invest at least 12 hours (4 credits * 3 hours) per week except four hours for class.

Class Participation

Students are going to participate in homework solutions or short quiz solution on the class board at the beginning of class. Students will be randomly selected, but they will have equal chance to participate in this practice. If you miss your turn, you will have a grade of zero. You need to arrive on time to participate in the homework discussion.

Extra Credit

There are no “extra credit” opportunities to improve your grade in this class.

Communications

I will only use CSU email addresses when I need to communicate with students through email.

University Policies

Academic Misconduct

Academic misconduct of any type will result in an immediate grade of **F** for the course. Additionally, the Academic Misconduct Review Committee will be contacted for a hearing regarding your suspension from the University. If you have any further questions about academic misconduct, please see the CSU Student Handbook, available at:

<http://www.csuohio.edu/studentlife/conduct/StudentCodeOfConduct2004.pdf>

When dealing with homework or assignments completed in a lab setting, students often find it difficult to distinguish between “helping out” a fellow student, or “working together” on a project and academic misconduct. These guidelines may be helpful:

- Never share any of your written or electronic materials with another student. This includes your homeworks, data, tables, files, etc. This is academic misconduct.

- Work only at your own computer. Do not sit in front of a classmate's computer and "take control" by using the mouse, typing on the keyboard, etc. By doing so, you are actually doing the work that your classmate will hand in and take credit for. This is academic misconduct.
- Write independently. When assignments are graded, sentences that are duplicated, or even highly similar, in more than one assignment are blatantly obvious. Writing up your answers without consultation avoids this situation. Handing in an assignment containing verbatim passages from another student's work is academic misconduct.
- Reference your information sources. When you use a piece of information in your write up that you learned from another source (for example, your text book), that source must be referenced. Information taken verbatim must be quoted (to give the original author credit) and information that is paraphrased must be referenced. Failing to reference your sources is academic misconduct.

The Grade of "Incomplete"

Grades of Incomplete will be given in accordance with university policy, no exceptions. Please see section 3.1.5 in the student handbook for further details.

<http://www.csuohio.edu/studentlife/conduct/index.html>

Important Registration Information

- The last day to drop this course will be listed on the Registrar's website. <http://www.csuohio.edu/registrar/calendar.html>
- Be sure to check with the Office of Student Services when considering to drop a course to see if your financial aid, assistantship, or scholarship will be effected.

Cancellation of Class Due to Weather

Class will only be cancelled due to weather when the university is closed. CSU will cancel evening classes by 2 pm each day. Check www.csuohio.edu/csu_snow to see if class is cancelled.

Students with Special Needs

Students who will need special arrangements for exams or assignments must speak with the instructor by the end of the second week of class. This includes both physical handicaps and learning disabilities.

COURSE SCHEDULE

JAN. 15 NO CLASS

WEEK 1. MARTIN LUTHER KING DAY

JAN. 22

WEEK 2. INTRODUCTION TO STATISTICS AND DATA REDUCTION

- Nature of Statistical Analysis
- Variables, Scales and Levels of Measurement
- Proportions, Percentages, Ratios and Rates
- Introduction to Frequency Distribution
- Frequency Distribution: Tables, Charts, Graphs, and Histogram
- Central Tendency: Mode, Mean, Median, Weighted Mean
- Outliers on Central Tendency

Kachigan, Chapters 1-3

JAN. 29

WEEK 3. VARIATION, NORMAL DISTRIBUTION, AND Z-SCORES

- Variation: Range, Mean Absolute Deviation, Variance, Standard Deviation
- Range: Percentiles, Quartiles, Inter-Quartile
- Variance: Variances in Population and Sample
- Standard Deviation: Standard Deviation in Population and Sample
- Introduction to Normal Distribution Curve
- Standard Normal Distribution (Z Distribution)
- Z-Scores and Computing Probability using Z Scores

Kachigan, Chapters 3-5

FEB. 5

WEEK 4. INFERENCE STATISTICS

- Sampling and Sampling Techniques
- Random Sampling
- Sampling Distribution of the Mean
- Normal Distribution Sampling Theorem
- Central Limit Theorem in a Non-Normal Distribution

Kachigan, Chapter 7

FEB. 12

WEEK 5. EXAM I

FEB. 19 NO CLASS

WEEK 6. PRESIDENT'S DAY

FEB. 26

WEEK 7. PARAMETER ESTIMATION

- Point Estimation and Interval Estimation
- Interval Estimation of Mean and Other Parameters Estimation Procedures and Confidence Intervals
- Student's t Distribution, Degrees of Freedom
- Sample Size Selection for Limiting Error

Kachigan, Chapters 7-8

MAR. 5

WEEK 8. HYPOTHESIS TESTING I

- Introduction to Hypothesis Testing
- Hypothesis Testing Procedures
- One-Tailed and Two-Tailed Tests
- Confidence Intervals and Alpha Levels
- Type I and Type II Errors

Kachigan, Chapters 7-9

MAR. 12

WEEK 9. SPRING RECESS

MAR. 19

WEEK 10. HYPOTHESIS TESTING II

- Hypothesis Tests with Large and Small Samples
- Difference between One-Sample and Two-Sample Tests
- Hypothesis Tests of Other Parameters

Kachigan, Chapters 7-9

MAR. 26

Week 11. EXAM II

APRIL 2

WEEK 12. INTRODUCTION OF MEASURES OF ASSOCIATION

- Introduction to Correlation Analysis
- Scatter Diagrams and Their Interpretation
- Bivariate Correlation Coefficients
- Interpretation of Correlation
- Pearson's r and Spearman's rho
- Multivariate Correlation and Partial Correlation

Kachigan, Chapter 10

APRIL 7

WEEK 13. REGRESSION ANALYSIS

- Introduction to Regression Analysis
- Regression Equation: Slope and Y-Intercept,

- Assumptions of Regression Analysis
 - Regression Evaluation: Standard Error, R-Square, F-Test, and T-Test
- Kachigan, Chapters 10-11

APRIL 16

WEEK 14. MULTIPLE REGRESSION ANALYSIS

- Introduction to Regression Analysis
 - Multiple Regression Equation
 - Multiple Regression Output Interpretation
 - Assumptions of Multiple Regression Model
 - Variables, Multi-Collinearity and Autocorrelation
- Kachigan, Chapters 10-11

APRIL. 23

WEEK 15. THE ANALYSIS OF VARIANCE (ANOVA)

- Introduction to ANOVA
 - One-Way ANOVA and Two-Way ANOVA
 - F-Distribution
 - Limitation of ANOVA
- Kachigan, Chapter 12

APRIL. 30

WEEK 16. CATCH-UP SESSION AND REVIEW OF MATERIAL

MAY. 7

WEEK 17. EXAM III

Note: This class schedule may be slightly updated during the spring semester, so you will have to check the updated syllabus out on the class website.