
Executive Master of Public Administration

QUANTITATIVE TECHNIQUES I
For Policy Making and Administration
U6310, Sec. 01

FALL 2003

INSTRUCTORS:

PROFESSOR

Stu Ward
sew9@columbia.edu
212.854.5941 (o)
Office 407A

TEACHING ASSISTANTS

Mark Dodson - mjd2104@columbia.edu
Daniel Gaviria - dg2061@columbia.edu

MEETING TIMES & LOCATIONS:

LECTURE

Sat., 3 PM – 5 PM
Lecture Room 407

LAB

Group 1 – Fri., 6:30 PM - 8:30 PM
Group 2 – Sat., 5:00 PM -7:00 PM
5th Floor Lab

REQUIRED TEXTS (Same as Spring 2004 Semester):

1. {ISBN: 0942154991} Statistical Analysis:

An Interdisciplinary Introduction to Univariate and Multivariate Methods;
Sam Kash Kachigan; New York, Radius Press

2. {ISBN: 0155078631} Quantitative Methods for Public Administration:

Techniques and Applications, Third Edition; Susan Welch and John Comer
Harcourt College Publishers /South-Western Publishing/Thompson Learning

RECOMMENDED TEXT: (Discuss with Professor before purchasing.)

1. Mathematical Statistics and Data Analysis

John A. Rice; California, Duxbury Press

COURSE OVERVIEW:

The objective of this course is to provide professionals with the statistical resources necessary to make reasonable decisions about policy problems and business challenges, based on quantitative research. In order to accomplish this goal, a fundamental understanding of graduate-level statistics and its applications will be taught. During the first semester, students will learn the basics of probability and statistics. By the end of the second semester, students will be able to apply basic analytical techniques and, ultimately, will be qualified to make management decisions based on research conducted by professional analysts.

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COURSE OVERVIEW, (continued):

The prerequisites for this course are basic mathematics and high school algebra. No prior knowledge of statistics or calculus is necessary. However, performing well in the course requires attendance of all classes, completion of all assignments, and staying current with the required readings. Following these guidelines will result in being successful in this class.

Note that the syllabus contains both required readings and additional recommended readings. The required readings *must* be completed before the corresponding lecture. The recommended readings are designed only for those students who need or want a more in depth treatment of the subject matter.

The structure of the course is as follows. During the first semester, we will begin with the fundamental concepts of data collection and organization. We will progress to summarization and description of the data. After an introduction to probability, we will begin to focus on statistical methods, which will be applied to test hypotheses about the data. During the second semester, we will study and apply more advanced techniques, which will refine your analytical methods and improve the accuracy of your decisions. At every step, we will be focusing on the application of statistics to policy problems.

Finally, because today's statistical analysis is performed with computers, during this course you will become familiar with a popular statistical software package: SPSS. This software package is a key element to saving time while doing research. Doing the analysis by hand is very cumbersome, so I strongly advise you to follow the labs closely to avoid wasting this time.

In summary, we will begin with the basics of data collection and move quickly into probability and, finally, focus deeply on more and more advanced statistical methods. To help expedite your research, your readings, lectures and assignments will be complemented by significant exposure to SPSS. Throughout this time, your analytical skills will improve and, most importantly, your ability to make policy decisions will increase.

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FALL 2003 SYLLABUS:

Sept. 06: [LECTURE #01] Fundamental Concepts: Course Overview & Intro. to Statistics

Required

Kachigan- Chapters 1 & 2

Welch- Chapters 1 & 2

Recommended

Rice- Chapter 1

Sept. 13: [LECTURE #02] Descriptive Statistics: Data Measurement & Reduction

Required

Kachigan- Chapter 3

Welch- Chapters 3 & 5

Recommended

Rice- Chapter 2

Sept. 20: [LECTURE #03] Descriptive Statistics: Central Tendency & Variation

Required

Kachigan- Chapters 4 & 5

Welch- none

Recommended

Rice- Chapter 3

Sept. 27: [LECTURE #04] Basic Probability: Random Variables & Independence

Required

Kachigan- Chapters 6

Welch- none

Recommended

Rice- Chapter 4

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FALL 2003 SYLLABUS, (continued):

Oct. 04: [LECTURE #05] Advanced Probability: Combinations & Distributions

Required

Kachigan- Chapter 20

Welch- none

Recommended

Rice- Chapters 5 & 6

Oct. 11: [LECTURE #06] Intro. to Statistical Inference: Sampling, Parameter Estimation

Required

Kachigan- Chapters 7 & 8

Welch- none

Recommended

Rice- Chapters 7 & 8

Oct. 18: [LECTURE #07] Intro. to Statistical Inference: Hypothesis Testing

Required

Kachigan- Chapter 9

Welch- Chapter 7

Recommended

Rice- Chapter 9

Oct. 25: MID-TERM EXAM

Nov. 01: No Lecture

Nov. 08: [LECTURE #08] Analysis of Categorical Data: Contingency Tables

Required

Kachigan- none

Welch- Chapter 6

Recommended

Rice- Chapter 10

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FALL 2003 SYLLABUS, (continued):

Nov. 15: [LECTURE #09] Analysis of Categorical Data: Measures of Association

Required

Kachigan- Chapter 13

Welch- none

Recommended

Rice- Chapter 13

Nov. 22: [LECTURE #10] Intro. to Analysis of Variance: One-Way ANOVA

Required

Kachigan- Chapter 12

Welch- none

Recommended

Rice- Chapter 12

Nov. 29: No Lecture

Dec. 06: [LECTURE #11] Intro. to Regression Analysis: Simple Linear Regression

Required

Kachigan- Chapter 11

Welch- Chapter 8

Recommended

Rice- Chapter 12

Dec. 13: FINAL EXAM

(WINTER BREAK)

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ADDITIONAL RESOURCES

1. <http://groups.yahoo.com>
 - ➔ Requires Yahoo Account
 - ➔ Picker Center Administration will provide access

2. <http://courseworks.columbia.edu>
 - ➔ Requires Columbia Account
 - ➔ Columbia ACIS will provide access

FALL 2003 GRADING SUMMARY

1. Lecture Assignments: 20%
2. Lab Assignments: 20%
3. Mid-Term Exam: 30%
4. Final Exam: 30%