

---

Executive Master of Public Administration

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

---

FALL 2004

**INSTRUCTORS:**

<u>LECTURE</u>	<u>LAB</u>	<u>SECTION</u>
Stu Ward	John Harnisher	Zembaba Ayalew
sew9@columbia.edu	To Be Announced	za2110@columbia.edu
212.854.5941 (o)	To Be Announced	To Be Announced
Office 407A	Lab 507	Office 407A

**MEETING TIMES & LOCATIONS:**

<u>LECTURE</u>	<u>LAB</u>	<u>SECTION</u>
Sat., 3 PM – 5 PM	1- Tue., 6:30 PM - 8:30 PM	Sat., 5 PM – 7 PM
<u>Lecture Room 407</u>	2- Sat., 5:00 PM -7:00 PM	<u>Office 407A</u>
	<u>Lab 507: 5<sup>th</sup> Floor Lab Area</u>	

**REQUIRED TEXTS:**

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 SOFTWARE:**

1. SPSS 12.0.1 (Grad version)
2. Excel 2000 or later (Ad-ins: Analysis ToolPak & Solver Ad-in)

**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.

---

## Executive Master of Public Administration

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

---

FALL 2004

#### **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.

---

Executive Master of Public Administration

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

---

FALL 2004

**FALL 2004 SYLLABUS:**

**Sept. 11: [LECTURE #01] Fundamental Concepts: Course Overview & Intro. to Statistics**

Required

Kachigan- Chapters 1 & 2

Welch- Chapters 1 & 2

**Sept. 11: [ Lab #01 Section I ]**

**Sept. 14: [ Lab #01 Section II ]**

**Sept. 18: [LECTURE #02] Descriptive Statistics: Data Measurement & Reduction**

Required

Kachigan- Chapter 3

Welch- Chapters 3 & 5

**Sept. 18: [ No Statistics Lab ]**

**Sept. 21: [ No Statistics Lab ]**

**Sept. 25: [LECTURE #03] Descriptive Statistics: Central Tendency & Variation**

Required

Kachigan- Chapters 4 & 5

Welch- none

**Sept. 25: [ Lab #02 Section I ]**

**Sept. 28: [ Lab #02 Section II ]**

**Oct. 02: [LECTURE #04] Basic Probability: Random Variables & Independence**

Required

Kachigan- Chapters 6

Welch- none

**Oct. 02: [ No Statistics Lab ]**

**Oct. 05: [ No Statistics Lab ]**

---

Executive Master of Public Administration

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

---

FALL 2004

FALL 2004 SYLLABUS, (continued):

**Oct. 09: [LECTURE #05] Advanced Probability: Probability Distributions**

Required

Kachigan- Chapter 20

Welch- none

**Oct. 09: [ No Statistics Lab ]**

**Oct. 12: [ No Statistics Lab ]**

**Oct. 16: [LECTURE #06] Intro. to Statistical Inference: Sampling, Parameter Estimation**

Required

Kachigan- Chapters 7 & 8

Welch- none

**Oct. 16: [ Lab #03 Section I ]**

**Oct. 19: [ Lab #03 Section II ]**

**Oct. 23: [LECTURE #07] Intro. to Statistical Inference: Hypothesis Testing**

Required

Kachigan- Chapter 9

Welch- Chapter 7

**Oct. 23: [ Lab #04 Section I ]**

**Oct. 26: [ Lab #04 Section II ]**

**Oct. 30: No Lecture**

**Oct. 30: [ No Statistics Lab ]**

**Nov. 02: [ No Statistics Lab ]**

**Nov. 06: MID-TERM EXAM**

**Nov. 06: [ No Statistics Lab ]**

**Nov. 09: [ No Statistics Lab ]**

---

Executive Master of Public Administration

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

---

FALL 2004

FALL 2004 SYLLABUS, (continued):

**Nov. 13: [LECTURE #08] Analysis of Categorical Data: Contingency Tables**

Required

Kachigan- none

Welch- Chapter 6

**Nov. 13: [ Lab #05 Section I ]**

**Nov. 16: [ Lab #05 Section II ]**

**Nov. 20: [LECTURE #09] Analysis of Categorical Data: Measures of Association**

Required

Kachigan- Chapter 13

Welch- none

**Nov. 20: [ No Statistics Lab ]**

**Nov. 23: [ No Statistics Lab ]**

**Nov. 27: No Lecture**

**Nov. 27: [ No Statistics Lab ]**

**Nov. 30: [ No Statistics Lab ]**

**Dec. 04: [LECTURE #10] Intro. to Analysis of Variance: One-Way ANOVA**

Required

Kachigan- Chapter 12

Welch- none

**Dec. 04: [ Lab #06 Section I ]**

**Dec. 07: [ Lab #06 Section II ]**

---

Executive Master of Public Administration

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

---

FALL 2004

**FALL 2004 SYLLABUS, (continued):**

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

Required

Kachigan- Chapter 11

Welch- Chapter 8

**Dec. 11: [ Lab #07 Section I ]**

**Dec. 14: [ Lab #07 Section II ]**

**Dec. 18: FINAL EXAM**

**Dec. 18: [ No Statistics Lab ]**

**Dec. 21: [ No Statistics Lab ]**

(WINTER BREAK)

**ADDITIONAL RESOURCES**

1. <http://courseworks.columbia.edu>
  - Requires Columbia Account
  - Columbia ACIS will provide access
2. <http://www.e-academy.com>
  - Use to purchase software with academic discount
  - Requires Columbia e-mail address for verification

**FALL 2004 GRADING SUMMARY**

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