
Executive Master of Public Administration

QUANTITATIVE TECHNIQUES I
For Policy Making and Administration
U6311, Sec. 003

SPRING 2003

INSTRUCTORS:

PROFESSOR

Stuart E. Ward

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TEACHING ASSISTANT

Nupur Kumar

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MEETING TIMES:

LECTURE

Saturday 3 PM – 5 PM

Room 407 Lecture Room

LAB

Saturday 5 PM – 7 PM

5th Floor Lab

REQUIRED TEXTS (Same as Fall 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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SPRING 2003 SYLLABUS:

Jan. 25: [LECTURE #01] More Analysis of Variance – One-Way ANOVA

Required

Kachigan- Chapter 12

Welch- Chapter 9

Recommended

Rice- Chapter 12

Feb. 01: [LECTURE #02] Advanced Analysis of Variance – Two-Way ANOVA

Required

Kachigan- Chapter 12

Welch- Chapter 9

Recommended

Rice- Chapter 12

Feb. 08: [LECTURE #03] More Regression Analysis - Simple Linear Regression

Required

Kachigan- Chapters 10 & 11

Welch- Chapter 8

Recommended

Rice- Chapter 14

Feb. 15: [LECTURE #04] More Regression Analysis - Multivariate Techniques

Required

Kachigan- Chapters 10 & 11

Welch- 9

Recommended

Rice- Chapter 14

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SPRING 2003 SYLLABUS, (continued):

Feb. 22: [LECTURE #05] Advanced Regression Analysis – Non-linear Techniques

Required

Kachigan- Chapters 10 & 11

Welch- 9

Recommended

Rice- none

Mar. 01: [LECTURE #06] Advanced Regression Analysis – Non-linear Techniques, continued

Required

Kachigan- Chapters 10 & 11

Welch- 9

Recommended

Rice- none

Mar. 08: [LECTURE #07] Advanced Regression Analysis – Exponential Techniques

Required

Mar. 15: [No Lecture]

Mar. 22: [MID-TERM EXAM]

Kachigan- Chapters 10 & 11

Welch- 9

Recommended

Rice- none

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SPRING 2003 SYLLABUS, (continued):

Mar. 29: [LECTURE #08] Time Series Analysis -

Required

Kachigan- 18

Welch- Chapter 10

Recommended

Rice- none

Apr. 05: [LECTURE #09] Probit and Decision Analysis - Introduction

Required

Kachigan- Chapter 21

Welch- 10

Recommended

Rice- none

Apr. 12: [LECTURE #10] App. of Chaid/Survival/ 6-Sigma/Bayesian/2ⁿFactorial (TBA)

Required

Kachigan- TBA

Welch- TBA

Recommended

Rice- none

Apr. 19: [No Lecture]

Apr. 26: [LECTURE #11] Factor Analysis -

Required

Kachigan- Chapter 15

Welch- none

Recommended

Rice- none

May 3: [FINAL EXAM]

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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

SPRING 2003 GRADING SUMMARY:

Policy Project: 20%

Computer Projects: 20%

Mid-Term Exam: 30%

Final Exam: 30%