Executive Master of Public Administration

QUANTITATIVE TECHNIQUES I
For Policy Making and Administration
U6310, Sec. 03

FALL 2002

INSTRUCTORS:

PROFESSOR: Stuart E. Ward
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MEETING TIMES:

LECTURE: Saturday 3 PM – 5 PM
Room 407 Lecture Room

LAB: Saturday: Group I - 5-6PM
Group II - 6-7PM
5th Floor Lab

REQUIRED TEXTS:
1. Statistical Analysis:
   An Interdisciplinary Introduction to Univariate and Multivariate Methods
   Sam Kash Kachigan; New York, Radius Press
2. Quantitative Methods for Public Administration:
   Techniques and Applications, Third Edition
   Susan Welch and John Comer; Florida, Harcourt College Publishers

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.
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.
FALL 2002 SYLLABUS:

Sept. 07: Fundamental Concepts - Course Overview & Introduction to Statistics
Required
  Kachigan- Chapters 1 & 2
  Welch- Chapters 1 & 2
Recommended
  Rice- Chapter 1

Sept. 14: Descriptive Statistics – Data Measurement & Reduction
Required
  Kachigan- Chapter 3
  Welch- Chapters 3 & 5
Recommended
  Rice- Chapter 2

Sept 21: Descriptive Statistics - Central Tendency & Variation
Required
  Kachigan- Chapters 4 & 5
  Welch- none
Recommended
  Rice- Chapter 3

Sept. 28: Basic Probability: Random Variables, Counting Methods & Independence
Required
  Kachigan- Chapters 6
  Welch- none
Recommended
  Rice- Chapter 4
FALL 2002 SYLLABUS, (continued):

Oct. 05: Advanced Probability: Permutations, Combinations & Distributions
Required
  Kachigan- Chapter 20
  Welch- none
Recommended
  Rice- Chapters 5 & 6

Oct. 12: Introduction to Statistical Inference – Sampling, Parameter Estimation
Required
  Kachigan- Chapters 7 & 8
  Welch- none
Recommended
  Rice- Chapters 7 & 8

Oct. 19: Introduction to Statistical Inference – Hypothesis Testing
Required
  Kachigan- Chapter 9
  Welch- Chapter 7
Recommended
  Rice- Chapter 9

Oct. 26: MID-TERM EXAM

Nov. 02: No class

Nov. 09: Analysis of Categorical Data - Contingency Tables
Required
  Kachigan- none
  Welch- Chapter 6
Recommended
  Rice- Chapter 10
FALL 2002 SYLLABUS, (continued):

Nov. 16: Analysis of Categorical Data - Measures of Association
Required
   Kachigan- Chapter 13
   Welch- none
Recommended
   Rice- Chapter 13

Nov. 23: Introduction to Analysis of Variance – One-Way ANOVA
Required
   Kachigan- Chapter 12
   Welch- none
Recommended
   Rice- Chapter 12

Nov. 30: No class

Dec. 07: Introduction to Regression Analysis – Simple Linear Regression
Required
   Kachigan- Chapter 11
   Welch- Chapter 8
Recommended
   Rice- Chapter 12

Dec. 14: FINAL EXAM

(WINTER BREAK)

FALL 2002 GRADING SUMMARY:
Assignments: 20%
Computer Projects: 20%
Mid-Term Exam: 30%
Final Exam: 30%