

Maryland in Europe Graduate Programs
Bowie State University

Management Statistics
MGMT 584

21 January 2003-13 March 2003
Kaiserslautern-Kapaun
Tu/Th 18:45-21:30

Instructor: Dr. David E. McNabb
Email Address: Mcnabbde@aol.com

Course Description: *Prerequisites: The equivalent of College Algebra or PUAD502.* Provides the knowledge necessary to interpret published research results and to permit elementary research in business and public administration. Content includes: descriptive statistics, probability, estimation, hypothesis testing, ANOVA, sampling, correlation, linear regression and multiple regression.

Course Goals: Upon completion of the course, students should have an understanding of:

1. Research methods as used in management settings
2. Quantitative research approaches
3. The of previous research and related literature
4. The process of hypothesis formulation and testing
5. Descriptive and inferential statistics
6. Data requirements for statistical procedures
7. Ethical considerations and constraints
8. The role of information technology in quantitative research and statistical analysis

Course Objectives: At the conclusion of this course the student will be able to:

1. Determine when quantitative approaches are necessary and appropriate
2. Interpret quantitative research
3. Apply various inferential statistical tests
4. Develop sampling and data collection techniques
5. Use descriptive statistics to report findings
6. Apply appropriate multivariate statistical techniques when called for
7. Present research findings in written and graphic or oral formats
8. Use probabilities in decision-making.
9. Use statistical techniques for forecasting and prediction
10. Define ethical and legal constraints on research
11. Analyze the application of information technology in research

Required Texts: NOTE: Some texts are used in multiple classes

American Psychological Association. (2001). *Publication Manual of the American Psychological Association*, 5th Edition. Washington DC: Author

Anderson, D.R., Sweeney, D.J. & Williams, T.A. (1998). *Statistics for Business & Economics*, 7th Edition. New York: South-Western College Publishing.

Weiss, C. (1997). *Evaluation*, 2nd Edition. Prentice Hall. Chapters 6, 7, 12 only

Recommended Journals:

The *Journal of Public Administration Research and Theory* is a high quality, peer-review journal. Full text articles from 1991-2000 are available, free of charge, at <http://bush.tamu.edu/research/cpg/pa-archive/functionpage.htm>

Grading Information: Grades for this course will be assigned as follows:

A	91% +	C	70 – 80%
B	81 – 90%	F	Below 70% F(a) or regular non-attendance F(n)

Grades of Incomplete or Withdrawal are governed by Maryland in Europe policies. Please refer to UMUC Maryland in Europe Graduate Catalog, available in your local Education Center or online at http://www.ed.umuc.edu/visit/pubs/catalog/grad_02-03.pdf, for further details.

Course Requirements and Evaluations:

Evaluations are built around examinations. These will all consist of applications problems. All examinations will include computer-assisted problem solving. Examinations will cover only the material covered in class. Homework will be assigned from the text.

Distributions of points are:

Examinations (3 @ 25 points each)	75 points
Homework Assignments	<u>25</u> “
TOTAL POINTS POSSIBLE	100 points

ALL HOMEWORK **MUST** BE HANDED IN ON THE DAY ASSIGNED (TDY OR DEPLOYMENT ARE THE ONLY APPROVE JUSTIFICATIONS FOR LATE COMPLETION OF ASSIGNMENT).

Course Discussion and Structure

This is not a replication of the undergraduate quantitative methods course. Rather, it is designed to help managers and administrators learn ways to use quantitative research

methods and statistical analysis tools to 1) reduce risk and uncertainty in decision making, 2) make population inferences with sample data, and 3) enhance administrative performance.

A key goal for the course is to help students become proficient with the use the statistical functions included in readily available software programs. Microsoft® Excel now contains most of the inferential statistical tests used by today's organizational managers and administrators; everyone should be aware of these tools and know how and when to use them. While we will examine and discuss scientific statistical notation and formulae in preparing to use these tools, students will be evaluated only on their skill development, not their ability to memorize formulas.

A comprehensive, scientific statistical textbook is required. Lecture topics and concepts follow much of this text, but not all. It is anticipated that students will treat this book as a reference work, referring to it regularly in their future careers. Lecture material will come from other practically oriented works, such as *Statistics for Those Who (Think They) Hate Statistics*, and *Learning Statistics with Excel*. Students are not required to purchase these additional texts. Additional lecture material will come from the instructor' book, *Research Methods* (2002).

A second goal for this course is to eliminate the stress and fear that too many students bring to the study of statistics. It bears repeating at this juncture that this is not a course in statistics for scientists or mathematicians. It is practical and applied in nature. It was developed to help management and information technology students learn how they can apply statistics as another management communication tool. Students will learn by solving problems

Course Schedule:

<u>DAY</u>	<u>DATE</u>	<u>TOPIC</u>	<u>READING</u>
1.	Jan 21	Introduction to quantitative research and statistical analysis; the nature of quantitative data. Introduction to statistical procedures in Excel.	Handout Chapter 1
2.	Jan 23	Communicating with tables, charts and graphs to summarize data; introduction to Excel's <i>Chart Wizard</i> . Histograms, bar charts and pie charts are included. Scatter plots will be introduced for later application.	Chapter 2
3.	Jan 28	Introduction to descriptive statistics; measurements of location and dispersion	Chapter 3
4.	Jan 30	Introduction to probability; some basic relationships of probability; conditional probability	Chapter 4

5.	Feb 4	Introduction to sampling concepts. One-sample hypothesis testing. This material introduces students to hypothesis testing—the fundamental concept underlying scientific research.	Chapter 7
6.	Feb 6	Examination 1: Chapters 1-4, 7	
7.	Feb 11	Hypothesis testing; Type I and Type II errors; 1-tailed hypothesis tests about a population mean This important chapter introduces students to the fundamental concepts behind all hypothesis testing—the probability of making a Type I (or a Type II) error.	Chapter 9
8.	Feb 13	Statistical Inference About Means and portions with two populations; applying the t-test The t-test is used to test hypotheses about the means of one or two samples. Two-sample t-tests are used in all types of social science applications. Three different models are available in Excel; we will look at all three.	Chapter 10
9.	Feb 18	Introduction to the Chi-Square statistic Tests of Goodness-of-Fit and Test for Independence. These are the two most-used non-parametric statistical procedures.	Chapter 12
10.	Feb 20	Analysis of variance and experimental design One-factor and two-factor ANOVA models are discussed and applied. The design of random experiments, which call for ANOVA procedures for data analysis, is also discussed.	Chapter 13
11.	Feb 25	Examination 2: Chapters 9, 10, 12, 13	
12.	Feb 27	Introduction to simple linear regression Linear regression is an extremely powerful and much used procedure in many administrative and managerial applications. It is a simple process to calculate and can be used in many ways. The idea of multiple regression—patterned on the same base—is also discussed.	Chapter 14
13.	Mar 4	Introduction to the creation and use of index numbers. Price and quantity methods are discussed, as are current and base-year approaches.	Chapter 15
14.	Mar 6	Introduction to forecasting techniques;	

- | | | | |
|-----|--------|---|------------|
| | | forecasting techniques included regression analysis, but focus primarily on time-series data. Included are concepts of trend, cyclical, seasonal, and irregular or random components. Moving averages and exponential smoothing procedures are discussed. | Chapter 18 |
| 15. | Mar 11 | Introduction to nonparametric statistics; differences tests and correlation statistics for nominal and ordinal data; an extension of material introduced in the chapter on Chi-Square. | Chapter 19 |
| 16. | Mar 13 | Examination 3: Chapters 14, 15, 18, 19 | |

Academic Policies: Please refer to the UMUC Maryland in Europe Graduate Catalog, available online at http://www.ed.umuc.edu/visit/pubs/catalog/grad_02-03.pdf or from your local Education Center, for information on the following:

Academic Integrity
 Course Load
 Exception to Policy
 Grade Appeal Process
 Make-up Examinations
 Nondiscrimination
 Students with Disabilities

Code of Civility

To promote a positive, collegial atmosphere among students, faculty, and staff, Maryland in Europe has developed the following Code of Civility:

Respect

Treat all students, faculty, and staff with respect and in a professional and courteous manner at all times and in all communications, whether in person or in written communication (including e-mail).

Kindness

Refrain from using profanities, insults, or other disparaging remarks.

Truth

Endeavor to cite only the truth and not knowingly misrepresent, mischaracterize, or misquote information received from others.

Responsibility

Take responsibility for our own actions instead of blaming others.

Cooperation

Work together with other students, faculty, and staff in a spirit of cooperation toward our common goals of seeking and providing quality education.

Privacy

Strive to uphold the right to privacy and not talk about others.

Nondiscrimination

Respect the differences in people and their ideas and opinions and reject bigotry.