FALL 2006 SCHEDULE: Mondays, 8/14/06 to 9/25/06, 12:30-3:15 p.m., 202 Bryan

DR. RICHARD EHRHARDT
Office: 480 Bryan
Office phone: 334-4986
Office hours: 10:30-11:30am MWR, 5:30-6:00 p.m. MW, or by appointment.
E-mail address: r_ehrhardt@uncg.edu
Inclement weather: call 334-5000 after 3:30 pm.

PRE/COREQUISITES MBA 600, 605 and 607 (prerequisites), and MBA610 (corequisite).

INTRODUCTION

Management science is a scientific approach to decision making which is appropriate when the important aspects of the decision making environment can be quantified. The basic idea behind the approach is to construct a mathematical model of a management situation which shows how outcomes depend upon decisions. Then mathematical problems can be solved to identify the best decision making alternatives.

Management science is a rather new field of study. Although there are a few examples of mathematical decision making models that date back to the early part of this century, military applications during World War II gave birth to management science as a field of study in its own right. The methods that were developed were so successful that industry rapidly adopted and extended them after the war. Since the early 1950s, management science has grown into an established discipline, supporting decisions in diverse applications as illustrated by the following questions.

Which factories should supply which warehouses?
Which bonds should be selected to form an investment portfolio?
How many teller lines should a bank operate?
Where should a firm locate its distribution center?
How large a plant should be built to manufacture a new product?
How much of each product should be made in each of the next 3 months?
How should the firm allocate its budget among various types of advertising?
What range of profits should we expect from a new product introduction?

MBA 608 introduces the student to several basic decision making tools that are used to help managers utilize a company's resources as efficiently as possible.
COURSE LEARNING OBJECTIVES

• To develop a disciplined, objective approach to decision making.
• To improve communication skills.
• To improve spreadsheet skills and learn spreadsheet tools for analyzing decision making problems.
• To develop an understanding of the basic ideas and common models of management science.

COURSE POLICIES

1. Course Format. This course will meet in 205 Bryan for 7 weeks of instruction, with some time devoted to lecture and discussion, and some time to computing exercises. If you are absolutely unable to attend a class, be sure to arrange ahead of time with the instructor and a classmate to get notes about the material covered and details of assigned problem sets.

2. Computer Files. Files for this course can be found at the course Blackboard site. You should download all the files and save them in their folders (Assignments, Spreadsheet Techniques, Optimization, Decision Analysis and Simulation) on your laptop. Then you will have all of them immediately available in class, regardless of the state of wireless access to our network.

3. Problem Sets and Final Project. Two Problem Sets and one Final Project will be assigned and graded. Problem Sets will be composed with a partner, while the Final Project will be an individual effort. The details of each assignment will be provided in class. In each case, you are to submit Excel workbooks with a separate worksheet for each part of the assignment. You are encouraged to transmit your file as an E-mail attachment, but you may submit it on flash memory or a CD if you prefer. Assignments are due on the dates listed on page 3. More guidance on the desired format is given on page 4.

4. Grading Policy. Your course average will be computed using the following weights:

   Problem Set 1  30%
   Problem Set 2  35%
   Final Project  35%

You may increase your course grade above your course average through good class participation.

5. UNCG Academic Integrity Policy. You are expected to be familiar with and abide by the UNCG Academic Integrity Policy. The Policy may be found at:
   http://www.uncg.edu/saf/studiscp/Honor.html

   Although you are encouraged to discuss assignments with classmates, you are not to share details of your work. Specifically, you are not to share computer files or printed output from your computer analysis. Prohibited actions also include working together side-by-side on separate computers. Violations of the Code will result in penalties ranging from an F on the assignment to an F in the course.
TENTATIVE CLASS SCHEDULE: OVERVIEW

8/14  First Class Meeting

Topics
Course Overview
Modeling & Spreadsheets: quick overview
Optimization Modeling
  Linear programming models
  Spreadsheet analysis: the Solver tool

Preparation
Read the Syllabus
Read the PowerPoint presentation and the Word document in the Spreadsheet Techniques folder.
Familiarize yourself with the DataTables and NPV.xls and DataTables and Goal Seek.xls files in the Spreadsheet Techniques folder.
Skim Chapters 1, 2, 3, 5, and read Chapter 8, pp. 191-198 and pp. 213-220

8/21  Second Class Meeting

Linear Optimization
Linear Optimization Applications
  Aggregate planning
  Cash flow planning
  Transportation and distribution
  Assignment applications

8/28  Third Class Meeting

Linear Optimization Applications
Transportation exercise
Financial planning
Cutting Stock optimization
Case study discussion: Red Brand Canners

9/5   Problem Set 1 due: Tuesday, 6:30pm

9/9  (Saturday) Fourth Class Meeting

Decision Analysis
Payoff tables
Decision trees
Simulation
Pseudorandom numbers
9/11  Fifth Class Meeting
    Spreadsheet simulation modeling

9/18  Sixth Class Meeting
    Additional Simulation Topics

9/25  Seventh Class Meeting
    Common stock portfolio analysis: the Markowitz model

10/2  Final Project due: Monday, 6:30pm
PROBLEM SETS AND FINAL PROJECT: FORM AND CONTENT

Two Problem Sets and a Final Project will be submitted for grading by the due dates listed on page 3. In each case, Excel workbooks will be transmitted to the instructor with the analysis of each problem or project part placed on a separate worksheet. The preferred mode of transmittal is as an attachment to an E-mail message, but Excel files may also be submitted on flash memory or a CD. You may be permitted to submit an assignment up to one week late if special circumstances arise. If so, a penalty of one letter grade will be assessed, and no other late submissions will be permitted.

Your worksheets should be organized and annotated so that they readily communicate your ideas and the results of your analysis. Remember when composing your worksheets that the point of the exercise is to demonstrate to your instructor that you understand the principles and techniques being studied. Your grade will be based upon (1) how well you conduct your analysis and (2) how professionally you present your results and communicate your ideas.

The analysis of each problem or project part should begin with a very brief overview of the essential elements of the model. This should not be a restatement of the problem or project, but rather a summary that casts the problem in terms that reveal its logical structure. The quantitative analysis should be sufficiently annotated so as to clearly communicate methods. Finally, the conclusions of the analysis should be explicitly stated. Be careful to briefly state the implications of your analysis and to answer any questions that were asked in the statement of the problem or project part.

BIOGRAPHY

Rich Ehrhardt is from New York City, and began his professional life in physics and engineering. He earned a BS in physics at The Cooper Union, in New York City, and an MS in physics at the University of Massachusetts at Amherst. He then began five years on the technical staff of the U. S. Atomic Energy Commission, during which he spent a year at the University of California at Berkeley earning an MS in nuclear engineering, and a year at Argonne National Laboratory performing safety systems research. His responsibilities at U.S.A.E.C. headquarters in Washington, DC were in the area of civilian electrical power generation, managing research and development contracts in advanced reactor systems design and nuclear reactor safety.

He returned to graduate studies in 1973, earning a Ph.D. in administrative sciences at Yale University in 1976. He was a member of the faculty of UNCCH, in the Department of Operations Research and in the School of Business, prior to joining the Bryan School faculty in 1982. His research interests are in stochastic models of operations research, materials management, and production control systems. He has consulted on materials management and project management issues with a number of firms and has lectured to executive groups. Professor Ehrhardt is a member of the Institute for Operations Research and the Management Sciences, the International Society for Inventory Research, and the Operations Management Society.