QMB 6755
Managerial Quantitative Analysis I

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Office Hours: **Monday and Wednesday 2:00-3:00 pm or by appointment**

Description

This course provides an introduction to the concepts and applications of Management Science. The primary goal of Management Science is to help you become an intelligent consumer of Management Science analyses. Another important goal is to encourage a more disciplined thinking process in the way you approach management situations. As a result of this course you will become more confident in understanding and using models, both in other courses and on the job.

Upon successful completion of this course, you will be able to:

1. Formulate and solve excel spreadsheet based analytic models;

2. Formulate linear programming problems from word descriptions;

3. Solve linear programs using computer-based techniques;

4. Interpret and apply LP shadow prices, reduced costs, and other sensitivity analysis data to economic and business problems;

5. Identify, formulate, and solve

   a. transportation problems,
   b. integer programming problems,
   c. etc.

6. Understand issues involved in the successful implementation of Management Science projects in actual practice.

Course Prerequisite

Most of the course example problems utilize spreadsheet analysis. Therefore, students are expected to have a basic knowledge of Excel prior to starting the class. If you are unsure of your spreadsheet skills, there is a tutorial available on the course website to help you get up to speed.

Resources

Optional Textbook: Balakrishnan, Render and Stair, Managerial Decision Modeling with Spreadsheets 3/E

Readings describe a number of successful Management Science applications. These articles will be available online, or handed out in class.

Homework Exercises provide opportunities to practice the skills of modeling and analysis introduced in the course. The homework emphasizes quantitative aspects of the course material and provides feedback on how well you have mastered the analytic techniques. The only way to learn Management Science is to work problems, and so the homework exercises are substantial. Homework will NOT be collected.

Examinations

There will be two exams which will involve solving problems similar to the homework problems. Exams will be a combination of closed-book portions without a computer, as well as open book portions with notes and computers. For the open book exams, students will be required to bring laptop computers to class for the exams with the necessary software loaded. Quizzes will also be given in class that reflect sample problems similar to those on the exams. Note that the quizzes will not be graded.

Cases

Cases provide descriptions of practical situations where modeling and analysis can play an important role. They provide opportunities to practice translating situations into problem structures and, in doing so, to adapt the general concepts of modeling to particular circumstances. The cases also provide an opportunity to consider the implications of an analysis for a specific organization.

We will discuss several cases in detail during the module. Students should work in groups, and will be expected to come to class having read and prepared the case. In addition, each group will have to turn in a case report which will be graded. Peer evaluations will also be taken into account when assigning individual grades for the case reports. If a student receives an average score of less than 90 on the peer evaluation, then the student's case grade will be downgraded accordingly.

Article Summaries

Each group will be responsible for finding an article related to management science techniques, such as linear programming, integer programming, queueing, simulation, etc. The article should be from a popular business related publication, such as Wall Street Journal, Business Week, etc. Alternatively, the article may be from a supply chain related website such as Interfaces,

supplychainbrain.com, etc. The following items are due with the assignment: (a) a copy of the article, (b) a 1-2 page written summary (double spaced) of the article (including the reference) and (c) a 2-4 page power point presentation summarizing the key points of the article. Students should turn in these items using the online submission link. In addition, each group should sign up for a date to give a short presentation to class (10 minutes) covering the highlights of the article.

Re-grade Requests
Any request to re-grade any component of your submissions (case or exam) must be submitted within a week after the grade has been published online. The only exception to this rule is a documented emergency.

Grading
Your grade will reflect your performance on two exams and two group deliverables in the following proportion:

Article Summary	10%
Case #1	20%
Exam #1	35%
Exam #2	35%
Total	100%

Class participation will count in borderline cases!

Overall letter grades will be *assigned by curve*. That is, the letter grade you receive will be determined by *your ranking among all students in your class*. The grade point average for the class will be no greater than a 3.5.

CLASS EXPECTATIONS
Students are expected to follow the performance guidelines established for the graduate school. In particular, students are expected to arrive for class prepared to meet classroom obligations and to devote full attention and commitment to the work of that class. Also, laptops and other electronic devices should be used with discretion and only as permitted by the instructor for work directly related to the class session. Emailing, accessing the internet, and working on matters unrelated to the work at hand are inappropriate behaviors because they are disrespectful and distracting to the class and to the instructor. Classroom discussion is an important part of the pedagogy of many Masters level courses. Students in these classes should be fully prepared to engage in class discussion, and they should use the opportunity to develop positive and professional communication skills. This includes according respect for differing perspectives and contributions to discussion, as well as building on the base for discussion laid by student colleagues and the instructor.

ACADEMIC HONESTY

For any academic class activity, students must follow the University of Florida Student Honor Code. Any violation of the honor code will automatically result in a grade of E (Fail) for this course and further sanctions that may include a suspension or expulsion from the University through the Dean of Students Office. All incidents will be reported to Student Conduct and Conflict Resolution at the University of Florida. In addition, students are expected to follow the guidelines established in the MBA Performance and Accountability document.

SCHEDULE (Please check the syllabus posted on the course website for the most current schedule)

PRELIMINARY COURSE SCHEDULE

Date   **Topic and Assignments**

8/21   **Introduction to Management Science: Modeling**

        Read: 1. Chapter 1 of Balakrishnan, Render and Stair textbook (after this abbreviated as BRS)

8/23   **Introduction to Management Science: Basic Spreadsheet Modeling**

        Read: 1. BRS Appendix B

8/28   **Linear Programming: Formulation**

        Read: 1.   BRS Chapter 3 (Skim for descriptions of the types of problems)

        Due: **Group Article Summary**

8/30   **Linear Programming: Formulation Continued**

9/4   **Labor Day**

9/6   **Linear Programming: Spreadsheet Applications**

        Read: 1. Linear Programming Terminology
                   2. (Optional) BRS Chapter 2

9/11   **Exam 1**

9/13   **Linear Programming: Solutions and Sensitivity Analysis**

        Read: BRS Chapter 4

9/18   **Sensitivity Continued and Case Day**

    Read and Prepare: Assigned Case to Discuss in Class

9/20   **Network Models**

    Read: BRS Chapter 5

9/25   **Integer Programming**

    Due: **Group Case Report**

    Read: BRS Chapter 6

9/27   **No Class- Career Showcase**

10/2   **Intro to other Models**
    Exam #2 Review

10/4   **Exam #2**