

Applied Operations Research: Syllabus

Instructor Information

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Course Description and Goals

This is an introductory course in operations research. You will be introduced to a number of management science techniques that you may need to use at various stages of your career in the industry, sometimes even in your own personal life. As a student of business you will learn to develop appropriate models for different business scenarios, to get answers from these models using various techniques, to analyze and interpret the results, and to use the information to make better business decisions. Materials covered in the course also will be used in upper-level courses in finance, marketing, management, economics, operations management, and computer information systems.

Course Objectives

This course will help you to develop skills in formulating, analyzing, and solving decision-making problems. It will provide background for conducting research or pursuing career in related areas.

Required Text

Introduction to operations research, 9th Edition, Author: Frederick S. Hillier; Gerald J. Lieberman, Mc Graw Hill.

Spreadsheet Modeling and Decision Analysis, 5th Edition, Author: Cliff T. Ragsdale, Thomson Learning Inc.

Total Lecture hours: 32 hours

Course Coverage

Basic Decision Tools:

- Excel

Optimization Topics:

- Linear Programming (LP) Model Formulation
- Solving LP Models Graphically
- Solving LP Models
- LP Sensitivity Analysis
- Modeling and Solving Network Problem
- Modeling and Solving IP Problem
- Modeling and Solving NLP Problem

Course Assessment

Homeworks (20%)

Class participation (20%)

Exam (60%)

General Advice

Your success in this course largely depends on your consistent effort. Even you are very intelligent, you ***need to practice*** to develop your quantitative skill. ***Only reading will not be sufficient.*** This course puts lot of emphasis on defining and solving problems, skills that most students find challenging to master. Hence, it will require a change in study habits. In particular, ***you cannot wait until the last minute to begin preparing for a test.*** The following guidelines are provided to help you to make your experience in this course easier and more worthwhile, and to enhance the chances of obtaining a better grade.

- Attend the class regularly. Take notes comprehensively and follow along the class exercises actively. Browse through the assigned readings before the class and read them thoroughly just after the topics have been covered in the class along with your class notes. Don't get frustrated if you do not understand everything on the first try. This is normal when working with quantitative material. In fact, since our class meets for a short duration, you will most likely not understand everything we cover in each class session, so you will need to take comprehensive notes in class, do the assigned readings, and attempt the practice problems to clarify your understanding and identify your questions.
- The only way to develop your quantitative skills is to solve problems on your own. You may feel that you understand the material after watching me work on examples in the class, but that is not the case. Unless you work on enough number of practice problems, soon you will realize during the tests and quizzes that you are not able to perform well and running out of time.
- Don't wait till the last moment. Start working on both the practice problems and graded homework assignments well in advance. This habit will give you time to think carefully about what you are doing, validate your work, and seek help as needed.
- Don't memorize to solve problems but understand the concepts involved. Memorizing how to do certain problems will not be sufficient, as you will need to develop your quantitative skills to analyze various business situations and apply the concepts to solve problems in the future.
- Get together with fellow students and form study groups. The opportunity to discuss the material and go over the practice problems with other students facilitates learning the concepts. However, remember that you are required to work individually on graded homework assignments. If you are interested in joining a study group and need help finding one, please let me know.
- If you do not understand any thing, don't be shy to ask questions. Remember, no question is a dumb question! Also utilize the office hours for further clarifications you may need. When you come to my office, bring your notes and related practice problems with you. Please e-mail any file you would like to show me prior to coming to the office. Try to identify specific questions that occurred when you were reading or working on problems. While I cannot repeat lectures in my office or work on your homework for you, I will make every effort to help you understanding the material.