

IDS435: Operations Research I

Text : The Science of Decision Making: A Problem-Based Approach with Excel
by Eric V. Denardo, John Wiley & Sons, Inc., New York, N.Y.,2002.

Mathematical programming is a management science tool which is used to optimally allocate scarce resources. Many decision problems can be formulated as or approximated by mathematical programming problems. The course emphasizes both theory and applications. The ability to do calculations and to decide how to model a given real world situation are important. The course teaches the **Excel** that it employs. Furthermore, the lectures will present operations research models helpful in the analysis of various aspects of transportation, telecommunication, medicine and production systems. The assignments are chosen to illustrate the application of the operations research techniques, as well as to demonstrate their limitations. The challenge to the students is to appreciate these limitations but still use the insight generated from these models to analyze a wide range of issues in the areas of telecommunication and production systems. Attendance is mandatory. I expect all students to attend classes. There are regular assignments (both exercises and case write-ups) to be turned in. To master the material in this course, you are advised to digest, thoroughly, the portion of the text that are assigned and to work the assignment problems by yourself before seeking any help. But do form a *study group* and use it to puzzle out the material that perplexes you or other members of the group. You are likely to find that you and the other members of your group can help each other learn. It should also improve the quality of assignment preparation and write-up. Groups are limited to a maximum of 4 members. A single assignment can be turned in per group. There will be two pop quizzes, two midterms and a final examination. The grade in the course will be determined on the basis of two pop quizzes (10%), assignments (16%), two midterms (36%), and a final examination (38%).

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<i>Getting Started with Spreadsheets</i>	<i>Chapter 2</i>
<i>Analyzing Solutions of Linear Programming</i>	<i>Chapter 3</i>
<i>A Survey of Linear Programs</i>	<i>Chapter 4</i>
<i>Solving Linear Equations</i>	<i>Chapter 17</i>
<i>The Simplex Method</i>	<i>Chapter 18</i>
<i>Duality</i>	<i>Chapter 19</i>
<i>Integer Programs</i>	<i>Chapter 6</i>
<i>Networks</i>	<i>Chapter 5</i>
<i>Game Theory</i>	<i>Chapter 16</i>