

# Preface

Operations research uses analyses and techniques from a variety of branches of mathematics, statistics, and other scientific disciplines. Certain analytical results arise repeatedly in applications of operations research to industrial and service operations. These results are scattered among many different textbooks and journal articles, sometimes in the midst of extensive derivations. The idea for a handbook of operations research results came from a need for frequently used results to be readily available in one reference source.

This handbook is a compilation of analytical results and formulas that have been found useful in various applications. The objective is to provide students, researchers, and practitioners with convenient access to a wide range of operations research results in a concise format.

Given the extensive variety of applications of operations research, a collection of results cannot be exhaustive. The selection of results included in this handbook is based on experience in the manufacturing industry. Many are basic to system modeling, and are likely to carry over to applications in other areas of operations research and management science.

This handbook focuses on areas of operations research that yield explicit analytical results and formulas. With the widespread availability of computer software for simulations and algorithms, many analyses can be easily performed numerically without knowledge of explicit formulas. However, formulas continue to play a significant role in system modeling. While software packages are useful for obtaining numerical results for given values of input parameters, formulas allow general conclusions to be drawn about system behavior as parameter values vary. Analytical results and formulas also help to provide an intuitive understanding of the underlying models for system performance. Such understanding is important in the implementation of operations research models as it allows analysts and decision makers to use models with confidence.

**Dennis E. Blumenfeld**

*Happy is the man that findeth wisdom, and the man that getteth understanding.*

— Proverbs 3:13