

Department of Mathematics
Baruch College
Math 2160 syllabus

Excursions in Modern Mathematics, Peter Tannenbaum & Robert Arnold. 5th Edition, Prentice Hall
ISBN 0-13-100191-4

Chapters 1 The Mathematics of Voting

Problems 1, 3, 4, 5, 9, 13, 23, Do 19, 20 by both the plurality method and the Borda Count Method, 27, 33 by Plurality with elimination and Coombs, 35, 37 by Pairwise, 41 Rank using both extended and recursive for all 5 methods, 45, 47, 50, 49, 51, 53

Chapter 2 Weighted Voting Systems

Problems 1, 3, 5, 7, 9, 11, 13, 15, 19, 23, 25, 27, 35, 37, 41, 45

TEST #1 Chapters 1 and 2

Chapter 3 Fair Division

Problems 1, 3, 5, 7, 9, 11, 13, 15, 17, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53

Chapter 4 The Mathematics of Apportionment

Problems 1, 3, 5, 7, 9, 11 Hamilton, Lowndes, 15, 17, 19 Jefferson, 25, 27 Adams, 27, 29, 31 Webster 42 Lowndes, Huntington Hill

Chapter 5 Euler Circuits

Problems 1, 3, 5, 7, 9, 11, 13, 15, 21, 23, 25, 29, 33, 37, 41, 43,

Chapter 6 The Traveling Salesman Problem

Problems 1, 3, 5, 9

TEST #2 Chapters 3, 4, 5

Chapter 6 The Traveling Salesman Problem

Problems 11, 17, 19, 23, 25, 31, 33, 37, 39 by cheapest link and Eliminate expensive link, 41, 43, 45

Chapter 7 The Mathematics of Networks

Problems 1, 3, 5, 7, 11, 15, 17, 19, 21, 23, 27, 29, 31, 37

Chapter 8 The Mathematics of Scheduling

Problems 1, 3, 5, 9, 12, 17, 19, 23, 25, 27, 29, 33, 34, 35 by CPA 37, 47, 48, 51

Test #3 Chapters 6, 7, 8

FINAL EXAM

Spring 2004

LEARNING GOALS OF COURSE: Upon completion of this course, students will be able to:

- Solve systems of linear equations.
- Describe in detail the predominant methods for establishing the will of an electorate through elections;
- Show that conditions exist that preclude defining any voting procedure that is at once fair and conclusive ("Arrow's Impossibility Theorem");
- Evolve for themselves apportionment strategies; Distinguish between Eulerian and non-Eulerian networks;
- Show the implications of the intractable "travelling salesman problem" for other situations, such as computer networks, utility-delivery engineering, and postal-mail distribution;
- Develop schedules and assignments to tasks in offices, schools, and other complex organizations.