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Nota di contenuto	Planning, Construction, and Statistical Analysis of Comparative Experiments; Contents; Preface; 1. Introduction; 1.1 Role of Statistics in Experiment Design; 1.2 Organization of This Book; 1.3 Representativeness and Experimental Units; 1.4 Replication and Handling Unexplained Variability; 1.5 Randomization: Why and How; 1.6 Ethical Considerations; Review Exercises; 2. Completely Randomized Design; 2.1 Introduction; 2.2 Completely Randomized Design; 2.3 Assumption of Additivity; 2.4 Factorial Treatment Combinations; 2.5 Nested Factors; Review Exercises 3. Linear Models for Designed Experiments3.1 Introduction; 3.2 Linear Model; 3.3 Principle of Least Squares; 3.4 Parameterizations for Row-Column Models; Review Exercises; Appendix 3A: Linear Combinations of Random Variables; Appendix 3B: Simulating Random Samples; 4 Testing Hypotheses and Determining Sample Size; 4.1 Introduction; 4.2 Testing Hypotheses in Linear Models with Normally Distributed Errors; 4.3 Kruskal-Wallis Test; 4.4 Randomization Tests; 4.5 Power and Sample Size; 4.6 Sample Size for Binomial Proportions; 4.7 Confidence Interval Width and Sample Size 4.8 Alternative Analysis: Selecting and ScreeningReview Exercises; 5.

Methods of Reducing Unexplained Variation; 5.1 Randomized Complete Block Design; 5.2 Blocking; 5.3 Formal Statistical Analysis for the RCBD; 5.4 Models and Assumptions: Detailed Examination; 5.5 Statistical Analysis When Data Are Missing in an RCBD; 5.6 Analysis of Covariance; Review Exercises; Appendix 5A: Interaction of a Random Block Effect and a Fixed Treatment Effect; 6 Latin Squares; 6.1 Introduction; 6.2 Formal Structure of Latin Squares; 6.3 Combining Latin Squares
6.4 Graeco-Latin Squares and Orthogonal Latin Squares6.5 Some Special Latin Squares and Variations on Latin Squares; 6.6 Frequency Squares; 6.7 Youden Square; Review Exercises; Appendix 6A: Some Standard Latin Squares; Appendix 6B: Mutually Orthogonal Latin Squares; Appendix 6C: Possible Youden Squares; 7 Split-Plot and Related Designs; 7.1 Introduction; 7.2 Background Material; 7.3 Examples of Situations That Lead to Split-Plots; 7.4 Statistical Analysis of Split-Plot Experiments; 7.5 Split-Split-Plot Experiments; 7.6 Strip-Plot Experiments; 7.7 Comments on Further Variations
7.8 Analysis of Covariance in Split-Plots7.9 Repeated Measures; Review Exercises; 8 Incomplete Block Designs; 8.1 Introduction; 8.2 Efficiency of Incomplete Block Designs; 8.3 Distribution-Free Analysis for Incomplete Block Designs; 8.4 Balanced Incomplete Block Designs; 8.5 Lattice Designs; 8.6 Cyclic Designs; 8.7 -Designs; 8.8 Other Incomplete Block Designs; Review Exercises; Appendix 8A: Catalog of Incomplete Block Designs; 9 Repeated Treatments Designs; 9.1 Introduction; 9.2 Repeated Treatments Design Model; 9.3 Construction of Repeated Treatments Designs
9.4 Statistical Analysis of Repeated Treatments Design Data

Sommario/riassunto

A valuable guide to conducting experiments and analyzing data across a wide range of applicationsExperimental design is an important component of the scientific method. This book provides guidance on planning efficient investigations. It compiles designs for a wide range of experimental situations not previously found in accessible form. Focusing on applications in the physical, engineering, biological, and social sciences, Planning, Construction, and Statistical Analysis of Comparative Experiments is a valuable guide to designing experiments and correctly analyzing and interpreting the re