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Nota di contenuto	1 Experimental Research in Science: Its Name and Nature -- 2 The Importance of Definitions -- 3 Aspects of Quantification -- 4 The Purpose and Principles Involved in Experimenting -- Part II: Planning the Experiments -- 5 Defining the Problem for Experimental Research -- 6 Stating the Problem as a Hypothesis -- 7 Designing Experiments to Suit Problems -- 8 Dealing with Factors -- 9 Factors at More Than Two Levels -- Part III: The Craft Part of Experimental Research -- 10 Searching through Published Literature -- 11 Building the Experimental Setup -- Part IV: The Art of Reasoning in Scientific Research -- 12 Logic and Scientific Research -- 13 Inferential Logic for Experimental Research -- 14 Use of Symbolic Logic -- Part V: Probability and Statistics for Experimental Research -- 15 Introduction to Probability and Statistics -- 16 Randomization, Replication, and Sampling -- 17 Further Significance of Samples -- 18 Planning the Experiments in Statistical Terms -- 19 Statistical Inference from Experimental Data
Sommario/riassunto	The need to understand how to design and set up an investigative experiment is nearly universal to all students in engineering, applied technology and science, as well as many of the social sciences. Many schools offer courses in this fundamental skill and this book is meant to offer an easily accessible introduction to the essential tools needed, including an understanding of logical processes, how to use measurement, the dos and donts of designing experiments so as to

achieve reproducible results and the basic mathematical underpinnings of how data should be analyzed and interpreted. The subject is also taught as part of courses on Engineering statistics, Quality Control in Manufacturing, and Senior Design Project, in which conducting experimental research is usually integral to the project in question. * Covers such essential fundamentals as "definitions," "quantification," and standardization of test materials * Shows students and professionals alike how to plan an experimentfrom how to frame a proper Hypothesis to designing an experiment to accurately reflect the nature of the problem to "designing with factors." * Includes a separate section on the use of Statistics in Experimental Research, including overview of probability and statistics, as well as Randomization, Replication and Sampling, as well as proper ways to draw statistical inferences from experimental data