



## METADATA

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**Authors:** Chasiotis, V., Academic Scholar, UOWM, Chalikias, M., Professor, UNIWA

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### Abstract

The book titled "Experimental Designs and Statistical Analysis" is a seven chapter one, that provides a thorough understanding of experimental designs and their statistical analysis. It serves as an essential resource for researchers, students and professionals seeking to master these critical topics. In Chapter 1, fundamental concepts and historical contexts are introduced, emphasizing the importance of experimental research in industrial production. Chapter 2 explores the fully randomized experimental designs with a single factor, covering key concepts, the analysis of variance, the confidence intervals and the multiple comparisons. Chapter 3 extends the discussion to the fully randomized designs within groups, addressing advanced topics like the analysis of variance, the confidence intervals and the residual analysis. Chapter 4 shifts the focus to factorial experimental

designs, detailing the analysis of variance for two-factor designs, the multiple comparisons and the residual analysis. Chapter 5 delves into two-level factorial designs, highlighting the full factorial design with two factors and the importance of the residual analysis. Chapter 6 introduces fractional factorial designs, providing the method of their grouping and the insights into half-fractions. Lastly, Chapter 7 explores experimental designs with factors at three levels, offering insights into their analysis, grouping methods and fractional factorial designs. The aforementioned book bridges theory and practice, equipping readers to design experiments rigorously, analyze data effectively and make decisions based on sound statistical principles. It is a useful resource for anyone seeking expertise in experimental designs and their statistical analysis.

