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Book Reviews

Structural Modeling and Experimental Techniques, by Gajanan M. Sabnis, Harry G. Harris, Richard N. White, and M. Saeed Mirza, Prentice-Hall, Inc., Englewood Cliffs, N.J., 1983, 585 pages.

REVIEWED BY RICHARD E. KLINGNER[1]

Sabnis, Harris, White, and Mirza have produced a book with many useful attributes. In addition to presenting a clear and comprehensive treatment of the factors involved in testing reduced-scale structural models, the book is also a useful reference on many aspects of structural testing in general. Many concepts are illustrated using practical examples, providing a clear picture of the kinds of information that can advantageously be obtained from model tests.

The authors begin with a discussion of the usefulness of model studies vis-a-vis analytical studies, noting that well-designed models can in some cases provide more accurate information than that available from modern nonlinear structural analysis programs, and can also help the analyst concentrate on those aspects of structural response which are most significant for design purposes. The book then continues with a clear discussion of classical similitude (Buckingham's Pi Theorem), followed by a presentation of the specific factors involved in modeling elastic materials. An entire chapter each is devoted to inelastic models of concrete and masonry structures, and also of steel structures. These topics are particularly relevant, for example, to modern studies of the inelastic response of complex structures to earthquake loads.

The next portion of the book contains an informative description of loading and instrumentation principles, devices, and techniques. This section is of interest to any investigator of structural response, whether or not reduced-scale models are employed. The information is a useful introduction to experimental testing in general, explaining ways of loading specimens and measuring their response. The discussion of electrical resistance strain gages is very good, and provides sufficient background to enable an investigator to pursue the subject further if desired.

The next part of the book discusses some of the statistical tools involved in the interpretation of experimental data, and contains examples of the procedures used to assess the accuracy of such data. These last two topics (loading and instrumentation, and data analysis) are tremendously useful to all experimental researchers, and often hard to find in one convenient place.

The book closes with a presentation of numerous case histories involving experimental models, a review of additional factors involved in modeling for dynamic response, and a comprehensive, modern bibliography.

In summary, this book is a very useful resource for anyone interested in experimental structural research, and particularly so for those interested in research using reduced-scale models. It would be an excellent text or reference for a graduate or advanced undergraduate course on experimental methods in structural engineering.

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Structural equation modeling (SEM) encompasses such diverse statistical techniques as path analysis, confirmatory factor analysis, causal modeling with latent variables, and even analysis of variance and multiple linear regression. The course features an introduction to the logic of SEM, the assumptions and required input for SEM analysis, and how to perform SEM analyses using AMOS.Â Structural equation modeling is a flexible and powerful extension of the general linear model. Like any statistical method, it features a number of assumptions. These assumptions should be met or at least approximated to ensure trustworthy results. Structural equation modeling is a statistical technique for testing and estimating causal relations using a combination of statistical data and qualitative causal assumptions. This definition of SEM was articulated by the geneticist Sewall Wright, the economist Trygve Haavelmo and the cognitive scientist Herbert A. Simon, and formally defined by Judea Pearl using a calculus of counterfactuals.Â Structural equation modeling may also be defined as a multivariate statistical analysis technique that is used for analyzing structural relationships. This technique may better be explained as a combination of factor analysis and multiple regression analysis. Structural Equation Modelling is used to analyze the structural relationship between measured variables and latent constructs. Structural Modeling and E has been added to your Cart. Add to Cart. Buy Now. More Buying Choices. 3 new from $229.99. 6 used from $49.86. 9 used & new from $49.86.Â I recommend this book for graduate or undergraduate students of civil engineering. It contains theory and techniques for making structural models. Read more. Helpful. Report abuse. Bashar R. Behnam. 3.0 out of 5 stars It needs more. Reviewed in the United States on March 11, 2012. Path Model with Latent Factors Structural equations models can be quite complex, and incorporate both latent factors and observed variables, with either directed or undirected paths among them. Figure 4 is a. Introduction Structural Equation Modeling.Â We can calculate that the difference of 1.23 is 0.42 of the standard deviation, which is a difference Cohen (1982) puts between a small and a medium effect size. Critiques on SEM. Structural equation modeling contains a variety of powerful analysis techniques. Modern SEM software and inexpensive computers have made it increasingly easy to apply structural equation models to all sort of data. Structural Equation Modeling A Second Course edited by Gregory R. Hancock University of Maryland and Ralph 0. Mueller T Structural and Stress Analysis, Second Edition. Structural and Stress Analysis Second Edition Dr. T.H.G. Megson Senior Lecturer in Civil Engineering (now retired) Univ Optimal inventory modeling of systems: multi-echelon techniques, Second Edition. OPTIMAL INVENTORY MODELING OF SYSTEMS Multi-Echelon Techniques Second Edition Recent titles in the INTERNATIONAL SER GIS, Environmental Modeling and Engineering, Second Edition. GIS, Environmental Modeling and Engineering,