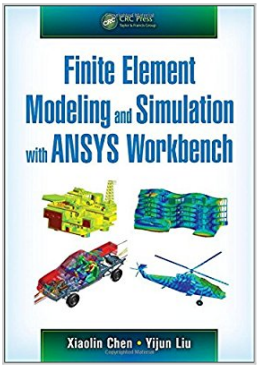

Finite Element Modeling and Simulation with ANSYS Workbench

By Xiaolin Chen, Yijun Liu

Finite Element Modeling and Simulation with ANSYS Workbench By Xiaolin Chen, Yijun Liu

Learn Basic Theory and Software Usage from a Single Volume

Finite Element Modeling and Simulation with ANSYS Workbench combines finite element theory with real-world practice. Providing an introduction to finite element modeling and analysis for those with no prior experience, and written by authors with a combined experience of 30 years teaching the subject, this text presents FEM formulations integrated with relevant hands-on applications using ANSYS Workbench for finite element analysis (FEA). Incorporating the basic theories of FEA and the use of ANSYS Workbench in the modeling and simulation of engineering problems, the book also establishes the FEM method as a powerful numerical tool in engineering design and analysis.

Include FEA in Your Design and Analysis of Structures Using ANSYS Workbench

The authors reveal the basic concepts in FEA using simple mechanics problems as examples, and provide a clear understanding of FEA principles, element behaviors, and solution procedures. They emphasize correct usage of FEA software, and techniques in FEA modeling and simulation. The material in the book discusses one-dimensional bar and beam elements, two-dimensional plane stress and plane strain elements, plate and shell elements, and three-dimensional solid elements in the analyses of structural stresses, vibrations and dynamics, thermal responses, fluid flows, optimizations, and failures. Contained in 12 chapters, the text introduces ANSYS Workbench through detailed examples and hands-on case studies, and includes homework problems and projects using ANSYS Workbench software that are provided at the end of each chapter.

- Covers solid mechanics and thermal/fluid FEA
- Contains ANSYS Workbench geometry input files for examples and case studies
- Includes two chapters devoted to modeling and solution techniques, design optimization, fatigue, and buckling failure analysis
- Provides modeling tips in case studies to provide readers an immediate opportunity to apply the skills they learn in a problem-solving context

Finite Element Modeling and Simulation with ANSYS Workbench benefits upper-level undergraduate students in all engineering disciplines, as well as researchers and practicing engineers who use the finite element method to analyze structures.

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Editorial Review

Review

"This book covers a wide range of engineering analyses using FEM with adequate theoretical background, illustrative examples, and detailed tutorials on using ANSYS Workbench for FEA. ... It covers both the theoretical and practical parts of FEM, which is very helpful to engineering students."
?Anh-Vu Phan, Universtiy of South Alabama, Mobile, USA

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?Dr. Mohammad H. Alimi, California State University, Fresno, USA

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?Gang Li, Department of Mechanical Engineering, Clemson University, South Carolina, USA

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?Daming Zhang, California State University, Fresno, USA

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Dr. Xiaolin Chen is an associate professor of mechanical engineering and director of the computer-aided

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