

Numerical Analysis with Applications in Mechanics and Engineering / Petre Teodorescu, Nicolae-Doru Stanescu, Nicolae Pandrea. Author

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Abstrak

Annotation. A muchneeded guide on how to use numerical methods to solve practical engineering problemsBridging the gap between mathematics and engineering, Numerical Analysis with Applications in Mechanics and Engineering arms readers with powerful tools for solving realworld problems in mechanics, physics, and civil and mechanical engineering. Unlike most books on numerical analysis, this outstanding work links theory and application, explains the mathematics in simple engineering terms, and clearly demonstrates how to use numerical methods to obtain solutions and interpret results.Each chapter is devoted to a unique analytical methodology, including a detailed theoretical presentation and emphasis on practical computation. Ample numerical examples and applications round out the discussion, illustrating how to work out specific problems of mechanics, physics, or engineering. Readers will learn the core purpose of each technique, develop handson problemsolving skills, and get a complete picture of the studied phenomenon. Coverage includes:How to deal with errors in numerical analysisApproaches for solving problems in linear and nonlinear systemsMethods of interpolation and approximation of functionsFormulas and calculations for numerical differentiation and integrationIntegration of ordinary and partial differential equationsOptimization methods and solutions for programming problemsNumerical Analysis with Applications in Mechanics and Engineering is a oneofakind guide for engineers using mathematical models and methods, as well as for physicists and mathematicians interested in engineering problems.

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