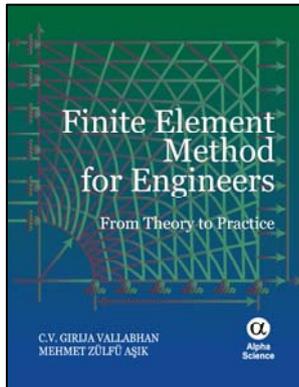


# Mechanical, Civil and Aerospace Engineering / Mathematics

Textbook



## Finite Element Method for Engineers *From Theory to Practice*

**C. V. Girija Vallabhan**

Emeritus Professor of Civil Engineering  
Texas Tech University  
Lubbock, Texas, U.S.A

**Mehmet Zulfu Asik**

Professor of Engineering Sciences  
Middle East Technical University (METU)  
06800 Ankara, Turkey

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**READERSHIP: Senior Undergraduate and Graduate Students, Researchers and Professionals in Mechanical, Civil & Aerospace Engineering**

*Finite Element Method for Engineers: From Theory to Practice*, while emphasizing problems in solid mechanics with numerous examples, explains the theory in four fundamental steps with a flow chart to develop equations for the finite element models and the associated computer programs. The theory is presented using energy principles in solid mechanics and towards the end, the methodology is explained using the weak-form of the Galerkin method so that the method can be used to solve flow problems and even some differential equations.

### KEY FEATURES:

- With basic knowledge of strength of materials, self-learn the finite element method.
- Simple subroutines given from which a beginner can write codes in a suitable computer language.
- One can write own finite element computer codes with the information provided.

**CONTENTS:** Preface / Abstract / A Special Acknowledgement / Introduction / Equations in Solid Mechanics / One-Dimensional Elements:  $C_0$ -Continuity / Two Dimensional Problems-I:  $C_0$ -Triangular Elements / Two Dimensional Problems-II:  $C_0$ -Quadrilateral and Curved Elements / Axisymmetric Problems / Three Dimensional Stress Analysis / One-Dimensional Elements (Beam Elements):  $C_1$ -Continuity / Application to Plate Bending Problems:  $C_1$ -Continuity / Steady State Flow Problem / Appendices / Index.

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