

## Institute Lecture

### Numerical Simulations of Problems in Science and Engineering Using the Finite Element Method

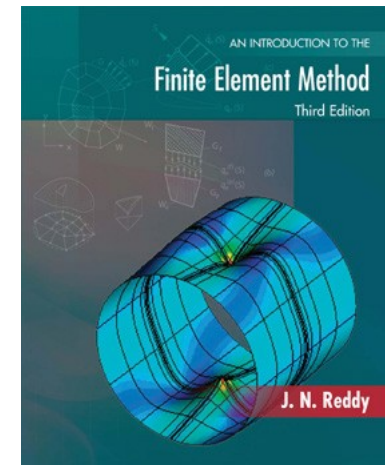
**Prof. J. N. Reddy, Department of Mechanical Engineering  
Texas A & M University**

**Wednesday, 2<sup>nd</sup> January 2013, Time: 5.00 PM, Venue: L-1, Lecture  
Hall Complex**

#### Abstract

Computational mechanics is an integral and major component in many fields of engineering, design and manufacturing. The finite element method (FEM) is a numerical and computer-based technique of solving a variety of practical engineering problems that arise in different fields. It is recognized by the users as one of the most powerful computational analysis tools ever devised to analyze complex problems of science and engineering. Major established industries such as the automobile, aerospace, atmospheric sciences, chemical, pharmaceutical, petroleum, electronics

and communications, as well as emerging industries such as biotechnology and information technology rely on the commercial softwares based on the finite element method to model and simulate complex systems for the analysis, design, and manufacturing of high-technology products. In this lecture, the basic idea of the finite element method will be reviewed and numerical simulations of problems in solid and fluid mechanics as well as biomechanics will be presented.



#### About the speaker

Prof. Reddy is a Distinguished Professor and inaugural holder of the Oscar S. Wyatt Endowed Chair in Mechanical Engineering at Texas A&M University, College Station, Texas. He has authored over 450 journal papers and 17 text books on theoretical formulations and finite-element analysis of problems in solid and structural mechanics (plates and shells), composite materials, computational fluid dynamics, numerical heat transfer, and applied mathematics. Professor Reddy is known for his research on mechanics of composite materials and for computational methods. The shear deformation plate and shell theories that bear his name are well known in the literature. Finite element models developed by him have been implemented into commercial software like ABAQUS, NISA, and HYPERFORM. Professor Reddy has had profound influence on the careers of many students and young researchers around the world through his teaching, research papers, and well-received textbooks. Dr. Reddy has earned numerous national and international awards, and is one of the few researchers in engineering who is recognized by ISI Highly Cited Researchers.

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**Tea at 4.45 PM**

**All interested are welcome.**

A. K. Chaturvedi  
Dean of Research and Development  
IIT Kanpur