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## About BITS PILANI-Hyderabad Campus

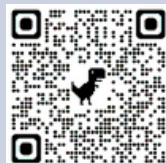
It was established by Birla Institute of Technology and Science, Pilani (Rajasthan) as one of its latest campuses in the year 2008 with the first batch graduating in the year 2012. BITS, Pilani is one of India's top technical and science universities. The Institute is committed to generating, disseminating, and preserving knowledge, and to working with others to bring this knowledge to bear on the world's great challenges. There is a culture of freedom coupled with a holistic environment for multidimensional growth of a student personality. Over the past few years, students have been placed at multinational companies, government organizations, and research institutes across the globe. The students of the campus are truly ready to become the innovators of tomorrow.

## About Civil Engineering Department

The Department of Civil Engineering offers UG, PG, and Ph.D. programs, emphasizing fundamental theory and practice in civil Engineering. In addition, to teaching the faculty is also engaged in active research with an aim to generate innovative concepts and ideas or apply the existing technologies to new applications. The department has a number of ongoing research projects and industrial consultancy work from various agencies. The department disseminates the knowledge gained from its high-quality research through training programs and interacts with world-renowned personalities through workshops and conferences.

## Location of campus

BITS PILANI, Hyderabad Campus  
Jawahar Nagar, Kapramandal  
Medchal District, Hyderabad - 500078  
Telanagana State, India



## Speaker

### Prof J.N. Reddy



Prof. JN Reddy is a pioneer in the field of FEA and currently working as a distinguished Professor, Regents' Professor, and the holder of the O'Donnell Foundation Chair IV in J. Mike Walker '66 Department of Mechanical Engineering at Texas A&M University, College Station, Texas. Dr. Reddy earned a Ph.D. in Engineering Mechanics (1974)

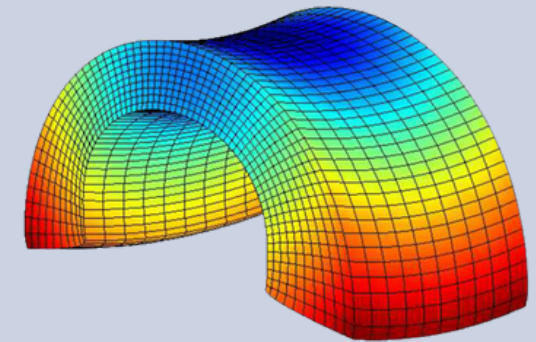
from University of Alabama in Huntsville. He worked as a Post-Doctoral Fellow in Texas Institute for Computational Mechanics at the University of Texas at Austin (1974), Research Scientist for Lockheed Missiles and Space Company, Huntsville (1974-75), and taught at the University of Oklahoma (1975-1980), Virginia Polytechnic Institute & State University (1980-1992), and at Texas A&M University from 1992 till now.

Prof. Reddy's research has involved the development of mathematical theory of finite elements, refined mathematical models of laminated composite plates and shells, penalty formulations of the flows of viscous incompressible fluids, and extensions and applications of FEA to a problems, including composite structures, numerical heat transfer, computational fluid dynamics, and biology and medicine. His shear deformation plate and shell theories and their finite element models and the penalty finite element models of non-Newtonian fluids have been implemented into commercial finite element computer programs like ABAQUS, NISA, and HyperXtrude. His current research deals with 7- and 12-parameter shell theories, a transformative non-parametric network based methodology to study damage and fracture (GraFEM), etc.

Prof. Reddy has published around 900 journal papers, authored 21 books and guided 72 PhD students. He is one of original top 100 ISI Highly Cited Researchers in Engineering around world. Some of his awards include the highly coveted Timoshenko medal, von Karman medal etc...

## A short course on Linear and Non-Linear Finite Element Analysis with programming (hybrid mode)

3<sup>rd</sup> - 7<sup>th</sup> July, 2023



Organized by  
Department of Civil Engineering



**BITS Pilani**  
Hyderabad Campus

## Contact

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Phone no: 040-66303773

<https://bits-pilani.ac.in/Hyderabad/fea/home>



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## Course Overview

Finite element method (FEM) is a prevalent numerical approach to obtain an approximate solution for various physical phenomena in science and engineering. It has become one of the most popular technique because of its diversity, flexibility to handle complex geometry and boundary conditions, and the ability to provide numerical solutions to various applications in solid mechanics, fluid mechanics, heat transfer, structural dynamics, and many other fields. FEM can also handle non-homogeneity and material anisotropy which are difficult to treat analytically.

First four days will be lectures by Prof Reddy and hands-on programming sessions by Prof Parimi and Dr Raghu will be on the last day along with the expert talks from industry.

## Course Objectives

Software packages based on FEA are extensively being used by engineers in industry and researchers. Hence it is imperative to have a sound theoretical knowledge on this subject. This course is aimed at benefitting students (undergraduate and graduate), research scholars, academic professionals, and industrialists who intend to get a theoretical and practical understanding of the Finite Element Method.

## Benefits of attending the course

The course participant will gain advantages in enhancing their background in the following areas:

- Conceptual understanding of the FEA
- Implementation aspects such as programming using MATLAB
- Understanding the linear and nonlinear formulations of FEA



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## Course Contents

Introduction to Finite element method, The basic idea, Mathematical preliminaries, elements of Calculus of variations. Introduction to 1-D finite elements : linear and nonlinear FE formulation of bar, beam ( Euler-Bernoulli and Timoshenko beam elements) and frame elements, applications to heat conduction and Fluid Mechanics problems. Introduction 2-D finite elements: Axisymmetric problems, Problems in plane elasticity, heat transfer and steady flows of viscous incompressible fluids and nonlinear FE analysis of time-dependent problems. FE formulation of nonlinear elasticity, linear and nonlinear FE formulations of plate bending problems, solution techniques to solve nonlinear equations.

Apart from theoretical aspects, basics of MATLAB software, and development of FE codes in MATLAB software will be taught. Linear and nonlinear FE codes will be supplied to participants during the course. There will be also sessions on using numerical software taught by industry experts.

## Target Audience

- 
- Birla Institute of Technology & Science, Pilani
- UG & PG Students, Research Scholars.
  - Faculties & Working Professionals in the domain of FEM.

## Facilitators of the course

**Dr. Raghu Piska, Department of Civil Engineering.**  
**Prof. Chandu Parimi, Department of Civil Engineering.**  
**Dr. Amol Vuppuluri, Department of Mechanical Engg.**



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## Important Dates

Last date for receiving applications: 15<sup>th</sup> June, 2023  
Intimation to Participants: 20<sup>th</sup> June, 2023  
Course Dates: 03<sup>rd</sup>- 07<sup>th</sup> July 2023

## Registration Fees

Registration Fee	Offline	Online
Students & Research Scholars	₹ 10000	₹ 8000
Faculty	₹ 12000	₹ 10000
Industry Professionals	₹ 15000	₹ 13000
Foreign Delegates	\$500	\$500

- **Registration fee is inclusive of GST. It includes lunch and course material to be provided during the course.**
- **Click here to make the payment on SBI Collect.**

(SBI collect>>Educational Institutions>>BITS-PILANI HYDERABAD CAMPUS>> FEA2-researchscholar/faculty/industry\_professional )

- Fill the Google form after making the payment.
- For more details, follow the instructions on the course website.

## Accommodation

Hostel accommodation for the candidates will be provided inside the campus on chargeable basis (₹300/night). A good number of hotels & resorts are located within 5-10 minutes reach from the campus. To book the accommodation inside the campus, please see the course website.