TEQIP-III Sponsored
One week
Online short term course (e-STC)
on

Finite Element Method & Applications

28th Dec 20 – 1st Jan. 21

Chief Patron
Prof. Udaykumar R Yaragatti
Director, MNIT Jaipur

Patron
Prof. Murari Lal Mittal
HOD, ME

Convener
Dr. Dinesh Kumar

Course Coordinators
Dr. Gulab Pamnani
Dr. Naresh K Raghuwanshi
Dr. Tapas Bajpai

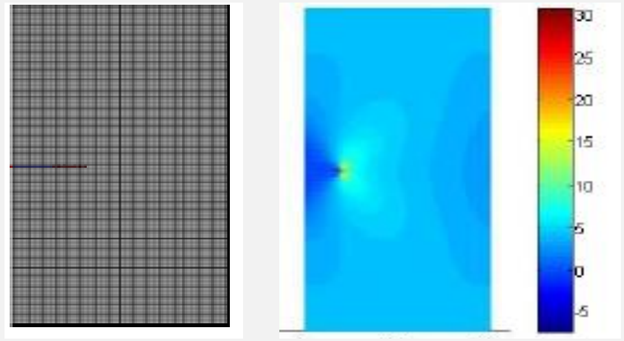
Organized by
Department of Mechanical Engineering
Malaviya National Institute of Technology Jaipur

About Short Term Course

The Finite Element Method (FEM) / Finite Element Analysis (FEA) is a numerical and computer-based technique of solving a wide range of practical engineering problems that arise in different fields and which are otherwise difficult to solve analytically. The FEM associated with high computing facilities and available commercial packages such as **ABAQUS®** has replaced the traditional method of validation of a design or theory and has drastically reduced the time and money spent on physical testing. FEA is now a vital and irreplaceable tool in almost all engineering industries including automotive, aerospace, defence and many others.

- At the end of the course, the participants are expected to have fair understanding of: FEM and other numerical methods
- Basics of linear finite element analysis procedures.
- Modelling and analysis of structural, thermal and flow problems using FEM and ABAQUS.
- Computational and programming aspects of finite element analysis.

Benefits of Attending the Course



Persons who would attend the course should benefit in strengthening their background in the following areas:

- Understanding of the formulative steps involved in the finite element model development from the governing equations of engineering and applied science, particularly, structural, heat transfer and fluid flow problems.
- Insights into the relationship between the physical data (e.g., loads, boundary conditions, constitutive behaviour, etc.) and the finite element model of a physical problem.
- Ready to use the commercially available FEA Packages via. ABAQUS to analyze basic engineering problems.
- Knowledge to teach the finite element analysis procedures to others.

Faculty

The course faculty include speakers from IIT's, NIT's, CFTI's and other reputed institutions.

Course Fee & Payments

1. **MNIT Jaipur participants:** ₹ 100 (including GST) **.**
2. **Participants from other institutes and industries**

- **Research Scholars**: ₹ 250 (including GST)
- **Faculty**: ₹ 500 (including GST)
- **Industry Participants**: ₹ 1000 (including GST)

Note: E-Certificate will be provided to all the participants.

Payment Mode: NEFT/IMPS only
Account Details: Registrar, MNIT, Jaipur (TEQIP-Phase III), A/C No. 36875887782, IFSC Code – SBIN0015921, State Bank of India, MNIT Jaipur Campus

Important dates

Last date for receiving registration fee: **25.12.2020**

Intimation of selection to the participants: **26.12.2020**

About MNIT Jaipur

Malaviya National Institute of Technology Jaipur (Deemed University) is one of the premier NITs, designated with the status of "Institute of National Importance" by MHRD. The institute was established in 1963, and its campus spreads over 325 acres of lush green area in the central location of Jaipur city. The institute offers undergraduate and postgraduate courses (B.Tech., M.Tech. /MBA / M.Sc. & Ph.D.) to about 4500 students, in leading fields of engineering, technology, architecture, management & sciences. Through the internationally renowned faculty, laboratories with state of art equipment and excellent infrastructure, the institute is actively engaged in research, consultancy and developmental activities, besides imparting regular teaching. MNIT Jaipur is ranked at 35th position in NIRF 2020 Ranking.

About Mechanical Engineering Department

The Department is one of the oldest departments of the institute, offering a fine blend of experience and innovation in teaching. Presently, offering undergraduate in Mechanical Engineering and post-graduate studies in Design Engineering, Thermal Engineering, Production Engineering and Industrial Engineering. The department is home to over 100 research scholars, pursuing Ph.D. in various fields of Mechanical Engineering. The department provides a life-long learning experience, through its state of art laboratories, vast pool of courses, and industry orientation.

Registration Link:
https://tinyurl.com/y3g3ktf2

Address for Correspondence

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Tentative Schedule

Day/Date	Session-I 9.30 AM - 11.00 AM	Session-II 11.30 AM – 1 PM	Break 1.00 PM to 2.00 PM	Session-III 2.00 PM – 4.00 PM
Monday 28.12.2020	Introduction to Numerical Methods **(Dr. Indrasen Singh, Assistant Professor, IIT Indore)**	Weak formulation and minimum potential energy principle/ FE formulations using different methods **(Dr. Dinesh Kumar, Associate Professor, MNIT Jaipur)**	Lunch Break	**Lab Session:** Introduction to FEM, ABAQUS Mechanical overview **(Mr. Varun, EDS Technologies)**
Tuesday 29.12.2020	Weak formulation and minimum potential energy principle/ FE formulations using different methods **(Dr. Dinesh Kumar, Associate Professor, MNIT Jaipur)**	One dimentsional element and their stiffness matrix **(Dr.Gulab Pamnani)**	Lunch Break	**Lab Session:** Basic Analysis procedure, Adding Material properties, Meshing **(Mr. Varun, EDS Technologies)**
Wednesday 30.12.2020	Two dimensional element and their stiffness matrix **(Dr.Gulab Pamnani)**	Applications of FEM to Solid Mechanics Problems **(Prof. V. K. Gupta IIITDM Jabalpur)**	Lunch Break	**Lab Session:** Static Structural Analysis **(Mr. Varun, EDS Technologies)**
Thursday 31.12.2020	Application of FEM to Modal Analysis **(Dr. Naresh Kumar Raghuwanshi)**	Heat transfer analysis using FE **(Dr. Tapas Bajpai)**	Lunch Break	**Lab Session:** Thermal-Structural (Coupled) Analysis using ABAQUS **(Mr. Varun, EDS Technologies)**
Friday 1.1.2021	Convergence and Error Estimation in FEM and Numerical Integration **(Dr. Dr. Akhilendra Singh, Associate Professor, IIT Patna)**	**Lab Session:** Modal Analysis using ABAQUS **(Mr. Varun, EDS Technologies)**	Lunch Break	**Quiz/Feedback and Valedictory Session**