

AICTE Sponsored

**On-line Short Term Course on
Advanced Finite Element Analysis
of Solids and Fluids**

25 - 30 March 2021

Organized by



**Department of Ocean Engineering
Indian Institute of Technology Madras
Chennai (TN) - 36, PIN - 600 036, India.**

www.doe.iitm.ac.in/

Sponsored by



AICTE, New Delhi - 110 070, India

www.aicte-india.org

Course Coordinator

Prof. R. Sharma, Professor, Department of Ocean Engineering, Indian Institute of Technology Madras, Chennai (Tamil Nadu) - 600 036, India.

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Research gate profile: www.researchgate.net/profile/R_Sharma3

About the institution

IIT Madras is a premier centre for teaching, research and industrial consultancy in the country. IIT Madras is one of the old IITs, that were established in keeping with India's vision to become a world leader in Science and Technology and to usher in a new revolution immediately after gaining independence. Our institute offers different courses in Engineering, Management, Basic Sciences, and Humanities and Social Sciences.

About the course

This course will present finite element theory and methods for general linear and nonlinear analyses. Reliable and effective finite element procedures that are practically applicable will be discussed with their direct applications to the solution of general problems in solid, structural, and fluid mechanics, and fluid-structure interactions. Governing continuum mechanics equations, conservation laws, virtual work, and variational principles will be used to establish effective finite element discretizations and the stability, accuracy, and convergence will be discussed in depth.

Practical lab sessions and short term project using the general-purpose finite element analysis program will be key of this course.

To build a research and knowledge base in the advanced area of 'Finite Element Analysis' and to initiate first concrete effort in continuous educational training, we are operating this short term course on 'Advanced Finite Element Analysis of Solids and Fluids' with financial support from the AICTE, India.

Objectives and Scope

Objective is to teach in a unified manner the fundamentals of finite element analysis of solids, structures, and fluids. Our approach will include the theoretical foundations and appropriate use of finite element methods through computer lab sessions.

Course Contents

- Introduction: why to study FEA?, FEA process, Analysis of solids/structures and fluids,
- Principle of virtual work, FE formulation, FE solution process, Nonlinear FEA of solids and structures,
- Solution of dynamic equilibrium equations, Modeling for dynamic analysis and solution, Wave propagation response,
- Solution of the generalized eigenvalue problems,
- Large displacement analysis of solids/structures,
- FE structures and fluids, Convergence issues, Iso-parametric elements, Convergence of displacement-based FEM,
- Total Lagrangian formulation, FEA of Navier-Stokes fluids, and
- Slender structures, Beams, plates, and shells.

Important dates

Last date of registration: March, 23, 2021

Intimation of selection: March, 24, 2021

Course dates: 25 - 30 March 2021

Participation certificate

Certificate of participation will be issued to all the participants only after successful completion of the course.

How to apply?

- By e-mail: Scanned copy of the filled in application form duly endorsed by the forwarding authority to be mailed at rajivatri@gmail.com and cc to the rajivatri@yahoo.com by March 23, 2021.
- By post: Prof. R. Sharma, Professor, Department of Ocean Engineering, Indian Institute of Technology Madras, Chennai (Tamil Nadu) - 600 036, India.
- Application format is given in this brochure.

Note 1: Please send your duly filled-in application form to the course coordinator at the earliest.

Course notes

Course notes and other supplementary materials will be provided to all the selected participants.

Course teachers

This course will be taught by world renowned subject area experts drawn from IITs, Bhabha Atomic Research Center (BARC), DRDO, and other national/international industries.

Course Fee

The course is mainly organized for the faculties of engineering and polytechnic colleges approved by the AICTE, India.

No course fee will be charged to the participants sponsored by the AICTE, India approved institutions.

Interested participants from other government departments and industries will need to pay a fee of Rs. 4000/- and Rs. 8000/- respectively. For students the registration fee is: 3000 Rs.

This fee is to be paid by a demand draft drawn on any of the nationalized/private banks in favor of 'Indian Institute of Technology Madras'.

Course assistants

The following course assistants can be contacted for any clarification needed on doubts or in case any other detail or information is needed:

- Mr. B. K. Tiwari, e-mail: trybktiwari@gmail.com
- Mr. P. P. Sahoo, e-mail: patit.lucky@gmail.com

Also, the course coordinator can be contacted.

AICTE Sponsored Short Term Course on "Advanced Finite Element Analysis of Solids and Fluids (AFEASF)", 25 - 30 March 2021

REGISTRATION FORM

1. Name (block letter):
2. Designation & pay scale:
3. Organization:
4. Address for communication:
-
- Ph. No.: Fax No.:
- E-mail:
5. Highest Academic Qualification:
6. Specialization:
7. Experience (in years):
(a) Teaching:
- (b) Industrial:
8. Mastery in Matlab™: Novice/Medium/Expert user

Please register me for the course on "(AFEASF)" to be held at IIT Madras, India.

Place:
Date:

(Signature of the applicant)

SPONSORSHIP

Prof./Dr./Mr./Ms./Mrs. _____ is an employee of our institute and his/her application is hereby sponsored. The applicant will be permitted to attend (on-line) the short term course on "AFEASF" at IIT Madras during the duration of STC, if selected.

Date: (Signature of Sponsoring Authority)

Designation:

Official Seal: