Prof. Singiresu S. Rao

Prof. Singiresu S. Rao is distinguished Professor in Mechanical and Aerospace Engineering at University of Miami, Coral Gables, Florida, USA.

He is internationally known for his pioneering contributions in the areas of finite element and meshfree methods, multiobjective optimization, uncertainty models in engineering analysis, design and optimization, reliability based design, optimization and reliability of renewable energy systems. He introduced new fields of research known as “cooperative game theory in design” (1978), “fuzzy optimization” (1987), “fuzzy finite element analysis” (1995), “fuzzy boundary element analysis” (2001) and “fuzzy mesh-free methods” (2012) by publishing the first papers in these areas. He presented the first applications of interval methods to engineering analysis and optimization in 1997 and 2002, respectively. Since 1995, Prof. Rao has been demonstrating the application of evidence theory (Dempster-Shafer theory) to optimization and uncertainty analysis of engineering systems. In 2009, he presented an evidence-based approach for the safety analysis of uncertain systems. Prof. Rao has authored over 200 journal papers (mostly in ASME and AIAA Journals) and 8 text books.

Such an eminent record of research has earned Prof Rao numerous national and international awards, including the Worcester Reed Warner Medal of American Society of Mechanical Engineers, Eliahu L. Jury Award for excellence in research from Design Automation Award from American Society of Mechanical Engineers. Prof. Rao has been contributing to the permanent literature of engineering through his highly popular books and numerous trendsetting research papers, Design Automation Award from American Society of Mechanical Engineers, Eliahu L. Jury Award for excellence in research from University of Miami, Distinguished Probabilistic Methods Educator Award from Society of Automotive Engineers (SAE) International.

Prof. Singiresu S. Rao can be contacted by email on srao@miami.edu

Prof. Hem Chander Garg

Prof. Hem Chander Garg is presently working as Professor in Mechanical Engineering at Guru Jambheshwar University of Science & Technology, Hisar, India. He served as Chairman of Mechanical Engineering Department of Guru Jambheshwar University of Science & Technology, Hisar during the period 2004-2014. Presently he is serving as Director of Centre for Industry Institute partnership. He has vast teaching & research experience.

Tokyo University of Science, Japan invited Prof. Garg as visiting Associate Professor in the year 2009. He has visited countries like USA, Germany, Japan and China for academic purposes. Prof. Garg's research interests include machine design, tribology & finite element method. Presently, he is working on two research projects “Development of Aerostatic Bearings for Ultraprecision Machining” and “Development of Water Lubricated Hybrid Bearings for Ultra-Precision Machine Tool Spindle”. He has authored several research papers which have been published in SCI journals. Prof. Garg is life member of Tribology Society of India and Malaysian Tribology Society of Malaysia.

E-mail: hcgarg@gmail.com, hcgarg@gjust.org
Mobile: +91 9991359271 | Ph. +91(1662) 263184,555
Fax (Office): +91(1662) 276240

GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY
HISAR-125001, HARYANA (INDIA)

About GJUS&T, Hisar

The University holds the pride of place being the first ever technical University in Haryana and has a glorious past of two years. The objectives of the University as enshrined in the University Act are to facilitate and promote studies and research in emerging areas of higher education with focus on new frontiers of Technology, Pharmacy, Environmental Studies, Non-conventional Energy Sources, Mass Media and Management Studies and also to achieve excellence in these and connected fields.

Right since its inception, the University has taken a number of steps to promote quality technical education and has already made a mark in definite academic areas that contribute to promote quality education in the present global competitive environment. As a result of these efforts taken together, this University was accredited with "A-Grade" by National Assessment and Accreditation Council (NAAC) in 2002, again in 2009 and third time in 2014. Therefore, this University is the one among few universities in India that have earned academic admiration by having three-times "A-Grade" University especially in the field of technical education.

Research is a culture among the faculty and students of GJUS&T. Qualified, dedicated and inspired faculty known for its research capabilities having an H-index equal to 65 enables it to be amongst top Indian Universities. This is evident from the several research projects that are ongoing at GJUS&T.

The University is housed in sprawling 372 acres where modern engineering meets exotic nature to create extremely beautiful, soothing and inspiring environment blending modernity with traditions not only in looks but in every walk of life. It is named after Guru Jambheshwar Ji Maharaj, a Saint and an Environmentalist of 15th Century. It is situated at Hisar which is about 167 Kms. from Delhi on NH-10 and is at a distance of about 231 Kms. from Chandigarh on NH-65.

http://www.gjust.ac.in

One Week Course on
The Finite Element Method In Engineering:
Basic Procedure, Applications and Current Research Topics

December 18-22, 2017

For details please contact

Prof. Hem Chander Garg
Coordinator-GIAN Course on FEM
Mechanical Engineering Department
Guru Jambheshwar University of Science & Technology
Hisar (Haryana) PIN-125001.
E-mail: hcgarg@gmail.com, hcgarg@gjust.org
Mobile: +91 9991359271 | Ph. +91(1662) 263184,555
Fax (Office): +91(1662) 276240
Overview

The finite element method is a numerical method that can be used for the solution of complex engineering problems. Over the past few decades, it had been perfected and so well established that today, it is considered to be one of the best methods for solving a variety of practical problems efficiently. Most of the users rely on commercial software for solving sophisticated engineering problems. The users do not often understand the finite element method as applied to engineering problems, especially in generating input data and interpreting the results.

This course is designed to understand the theory of the finite element method and its applications to solid and structural mechanics, aerospace structures, machine design, heat transfer, fluid mechanics, tribology and acoustics problems. In addition, an introduction to the current research topics of extended finite element method (XFEM), augmented finite element method (AFEM), Multi-scale finite element method, Stochastic and Fuzzy FEM, Mesh-free methods and their potential applications will be presented. The course will have strong emphasis on practical implementation aspects including hands-on experience with MATLAB FEM programs.

Course Objectives

The primary objectives of the course is to provide the participants fundamental understanding of Finite Element Method. At the end of the course, the participants are expected to have:

(i) A clear understanding of the formulation steps involved in the finite element model development of the equations of engineering and applied science, including certain solid and structural mechanics, aerospace structures, machine design, vibration, heat transfer, fluid mechanics, tribology and acoustics problems.

(ii) The ability of generation of finite element data, imposition of boundary conditions, post-computation, exploitation of problem symmetries, interpretation and evaluation of the results.

(iii) The ability to develop MATLAB finite element programs for solving engineering problems.

(iv) Exposure to current research topics of extended finite element method (XFEM), augmented finite element method (AFEM), Multi-scale finite element method, Stochastic and Fuzzy FEM, Mesh-free methods and their potential applications.

(v) Exposure to use commonly used commercial finite element software (such as ANSYS, ABAQUS and NASTRAN) and MATLAB-based finite element programs for solving engineering problems. Numerical examples

Methods of Deriving Finite Element Equations

• Derivation of finite element equations using equilibrium and variational methods (Including Rayleigh-Ritz, Galerkin and Least squares approaches)

• Strong and weak form formulations

Solution of Finite Element Equations

• Application of different types of boundary conditions

• Methods of solving finite element equations

• Solution methods for equilibrium problems

• Eigenvalue and propagation problems

MATLAB Programs for Finite Element Analysis

• Hands-on experience in developing the MATLAB finite element programs for the solution of linear system of equations and incorporation of boundary conditions

Applications to Solid and Structural Mechanics Problems

• Application to different types of solid mechanics and structures problems

• Analysis of stresses and frames

Applications to Aerospace Structures and Mechanical Design

• Analysis of aerodynamically induced stresses and flutter of thin walled structures

• Analysis of machine design and vibration problems

Solution of Solid and Structural Mechanics Problems Using MATLAB

• Hands-on experience in developing the MATLAB finite element programs for solving solid mechanics and structures problems

Applications to Fluid Flow Problems

• Application to fluid mechanics problems

• Analysis of fluid flow over bodies such as an airfoil and lubrication problems

Course Materials and Reference Book


Evaluation and Grading

There will be evaluations on the understanding of the concepts by the participant made during the course. Based on the evaluations finally a letter grade will be awarded to the participant. A completion certificate shall also be issued.

Important Dates

Last date for receiving applications: December 11, 2017
Intimation to short-listed participants: December 13, 2017
Course Dates: December 18-22, 2017

Registration

Step 1: One-Time Registration at GIAN Portal

In order to register for any course under GIAN, candidate will have to go for one-time registration at GIAN Portal of IIT Kharagpur using the following steps:

Login and complete the Registration Form

Step 2: Institute Registration

Institute registration process is an offline process. Interested candidates are requested to fill up the attached Registration Form.

Registration Fee (Non-refundable):

Foreign delegates: $ 500
For participants from academic institutions: ₹ 2500/-
For participants from industry: ₹10,000/-

The Registration Fee includes access to attend all the lectures/tutorials, registration kit with a hardbound copy of the course material.

Scan copy of the filled Registration Form along with the scan copy of Demand Draft in favour of Registrar, Guru Jambheshwar University of Science & Technology, Hisar payable at Hisar.

Accommodation

Limited accommodation in the University guest house & hostels would be available on payment basis on prior request, subject to the availability or otherwise participants will have to make their own stay arrangement.

Benefits of Attending the Course

A person on successful completion of the course would be benefited by strengthening his/her background in the following areas:

• A strong understanding of the formulation steps involved in the finite element model development of the equations of engineering and applied science, including certain solid and structural mechanics, aerospace structures, heat transfer and fluid flow problems.

• Generation of finite element data, exploitation of problem symmetries, and interpretation and evaluation of the results.
ONE WEEK GIAN COURSE
ON
The Finite Element Method in Engineering:
Basic Procedure, Applications and Current Research Topics
(December 18-22, 2017)
(Sponsored by: GIAN-MHRD, Govt. of India)

REGISTRATION FORM

Personal Information: (write in capital letters)

1) Name of the Participant: Mr./Ms./Mrs./Dr./Prof.___________________________________________________________
2) Gender:____________________________________________________________________________________________
3) Date of Birth: _______________________________________________________________________________________
4) Academic Qualification & Designation: ___________________________________________________________________
5) Institution/Organization: ______________________________________________________________________________
6) Address for Communication: ___________________________________________________________________________
7) E-Mail ID:___________________________________________________________________________________________
8) Mobile Number(s):___________________________________________________________________________________

Payment by Demand Draft in favor of Registrar, Guru Jambheshwar University of Science & Technology, Hisar payable at Hisar
Demand Draft details:

9) Demand Draft No.:________________________________________ Bank Name________________________________________
10) Amount Paid (in Rs. & words):_________________________________________________________________________
11) Date:_____________________________ Place: ________________________________________________________________

Accommodation Information:

12) Accommodation Required (Yes/No): ___________________________________________________________________

• I will pay the amount for food and accommodation during the course days.
  (Note: GIAN is not providing food and accommodation for the participants)

Signature of the Participant

Duly Filled Registration form along with original DD should be sent to following Address:

Prof. Hem Chander Garg
Coordinator-GIAN Course on FEM
Mechanical Engineering Department
Guru Jambheshwar University of Science & Technology
Hisar (Haryana) PIN-125001