Under the aegis of GIAN, NIT Patna
Short term course
on
"Meshfree Methods"
(December 21-25, 2015)

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Overview

Meshfree Techniques are relatively new computational techniques for stress analyses of solids, structures, as well as simulation of fluid flows and for many other different areas. Compared to the Finite Element Techniques, meshfree techniques demand much less on the type and quality of the mesh. This important feature of meshfree techniques allows fully automatic mesh generation and analysis for solids with complicated geometry. In addition, solutions from some meshfree methods have special properties, such as softening effects, upper bound, free from volumetric locking, and super-convergence. Meshfree techniques are still in the development stage, but are expected to play a significant role in the next generation of computational methods for automatic adaptive modeling and simulation of different systems. This course will cover basic concepts and techniques used in the meshfree methods. The objective is to provide the basic knowledge and formulation procedure of meshfree techniques to solve problems in various fields. Typical types of meshfree methods will be introduced, with detailed analysis on the features and properties of these methods.

Course participants will learn these topics through lectures and hands-on experiments. Also Examples and case studies will be presented to demonstrate the features of these meshfree methods to stimulate research motivation of participants.

Modules	**A: Introduction to Meshfree method :December 21, 2015** **C: Shape function construction :December 22, 2015** **D: Weakforms for meshfree methods : December 23, 2015** **E: Element-free Galerkin method :December 24, 2015** **F: Smoothed point interpolation method :December 25, 2015** **Number of participants for the course will be limited to fifty.**
You Should Attend If…	▪ Senior university students, postgraduate students, engineeringstudents, mathematics and science students. ▪ Engineers and researchers from industry, service, government organizations, and R&D laboratories. ▪ Any faculty and student from academic institutions and technical institutions.
Fees	The participation fees for taking the course is as follows: **Participants from abroad : US $250** **Industry/ Research Organizations: Rs. 5000** **Academic Institutions: For faculties: Rs.3000; For students: Rs.1000** The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. The fees include lodging free at NIT Patna campus. The fooding is available on paid basis.

The Faculty

Prof. G. R. LIU,

Professor G.R. Liu received PhD from Tohoku University, Japan in 1991. He was a PDF at Northwestern University, USA from 1991-1993. He is currently a Professor and Ohio Eminent Scholar at the Department of Aerospace Engineering and Engineering Mechanics, and the Director of the GR-Lab for Computations for Sustainability, University of Cincinnati. He served as the School Faculty Chair the School of Aerospace Systems, University of Cincinnati; a Deputy Head of the Department of Mechanical Engineering, the Director of the Centre for Advanced Computations in Engineering Science (ACES), National University of Singapore; and the President of the Association for Computational Mechanics. He was the President of the Asia-Pacific Association for Computational Methods, and now an Executive Council member of the International Association for Computational Mechanics. He authored or co-authored a large number of international journal papers and books including two bestsellers: "Mesh Free Method: moving beyond the finite element method" and "Smoothed Particle Hydrodynamics: a Meshfree Particle Methods." He authored recently a book on "Smoothed Finite Element Methods", "The Smoothed Point Interpolation Methods – G Space Theory and Weakened Weak Forms", and "Particle Methods for Multi-Scale and Multi-Physics". He is the Editor-in-Chief of the International Journal of Computational Methods, Associate Editor of the international technical journal Inverse Problems in Science and Engineering (IPSE), an Editor of Microfluidics and Nanofluidics, and served as an editorial member of five other journals including the IJNME. He is the recipient of numerous awards, including the Singapore Defence Technology Prize, NUS Outstanding University Researcher Award, the APACM Computational Mechanics Awards, the ICACM Computational Mechanics Awards, the JSME Computational Mechanics Awards from JSME, and the ASME Ted Belytschko Applied Mechanics Award. He is listed as a world top 1% most influential scientist (Highly Cited Researchers) by Thomson Reuters in 2014. Examples of his research projects are available at http://www.ase.uc.edu/~liugr..

Registration Process:

1. By Internet Banking:
   A/CNo.50306846783
   Allahabad Bank, NIT Patna
   IFSC:ALLA0212286

2. Demand Draft in favor of
   GIAN NIT PATNA
   Payable at PATNA

Venue:

National Institute of Technology Patna (An Institute under MHRD, Govt. of India), Patna,Patna-800005, INDIA

Course Coordinators

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