

# Computational Simulation of Bio-fluid Systems

## Overview

India's health care system is currently being transformed. This transformation needs to be sustained over a long period for it to maintain its spectacular global position. Newer tools need to be continuously embedded into industrial and product development processes for better and efficient industrial healthcare outputs. Computational Fluid Dynamics is one such tool which is primarily used to analyse the flow fluid handling systems. There is a distinct lack of professionals who are adept at using the CFD tools in health care sector. This course aims to address this. This will enable structured and cost effective design management of healthcare products.

The optimal performance of any engineering system depends on thorough analysis and optimal design. By embedding CFD in these processes, it would be possible to attain twin objectives of lower costs and higher efficiency. In years to come, the trained professional will be able to bring much needed health care application aspect of CFD to the fore front as compared to scientific innovation aspects that predominates current discourse in CFD.

Internationally acclaimed academics, researchers and practitioners with proven knowledge, experience, and demonstrable ability in teaching, consultancy, research, and training in the field of computational simulation of Bio-fluid systems will deliver lectures and discuss industrial case studies in the course.

<b>Modules</b>	<ol style="list-style-type: none"><li>1. Overview of Bio-Fluids</li><li>2. Governing equations for fluid flow</li><li>3. Analytical solutions of governing equations</li><li>4. Introduction to computational methods</li><li>5. Computational investigations of flow through carotid bifurcations</li><li>6. Computational investigations of flow through human airways</li><li>7. Computational design of products for health care</li></ol> <p><b>Dates: December 01-12, 2016</b></p> <p><b>Number of participants for the course will be limited to 40</b></p>
<b>Who should attend</b>	<ul style="list-style-type: none"><li>• Executives, engineers and researchers from healthcare, manufacturing, service and government organizations including R&amp;D laboratories.</li><li>• Student at all levels (B.Tech./M.Sc./M.Tech./Ph.D.) or Faculty from reputed academic and technical institutions.</li></ul>
<b>Fees</b>	<p>The participation fees for taking the course is as follows:</p> <p><b>Participants from abroad : US\$250</b> <b>Industry/ Research Organizations: INR 4,000.00</b> <b>Faculty from Academic Institutions: INR 2,500.00</b> <b>Students: INR 1,000.00</b></p> <p>The above fees include all instructional materials, computer usage for tutorials and assignments, and free internet facility. The participants will be provided with boarding and lodging in campus on payment basis subject to availability.</p> <p>All course registrations will processed via the national GIAN portal (<a href="http://gian.iitgp.ac.in">gian.iitgp.ac.in</a>), where a Rs. 500/- one-time fee is payable in addition to the above amount.</p> <p>Registration fee can be directly deposited through NEFT to the designated account as given below or can be sent in the form of demand draft (D.D.) drawn on any nationalized bank in favor of "GIAN Bio-fluid System-2016" payable at Allahabad.</p> <p><b>Account Name:</b> GIAN-Bio-fluid System-2016 <b>Account No.</b> 718400301000208 <b>Bank:</b> Vijaya Bank, MNNIT Branch, Allahabad-211004, UP, INDIA <b>IFSC Code:</b> VIJB0007184 <b>Last Date of Registration:</b> 30 November, 2016</p>

# The Foreign Faculty



**Prof. Rakesh Mishra** is Professor of Fluid Dynamics at University of Huddersfield. Professor Mishra's main teaching area is Thermo-fluids and various modules taught by him include Aerodynamics, Thermodynamics, Automotive Power Units and Computational Fluid Dynamics. Professor Mishra leads the 'Energy Emission and the Environmental research

group' within the Centre of Efficiency and Performances Engineering of the University. Professor Mishra also contributes to highly successful IMechE accredited Mechanical, Automotive and Energy Engineering courses at different levels. These courses recruit students from all over the world. Professor Mishra is a chartered Engineer and a Fellow of Institution of Mechanical Engineers as well as a Fellow of Higher Education Academy.

Prof. Mishra is an active consultant to many Thermo-fluid industries and has run a number of knowledge transfer partnerships successfully. Prof. Mishra is very active in renewable energy research and is involved with many renewable energy organizations. Prof. Mishra is also a member the Fluid Mechanics & Fluid Power Society of India which promotes effective use of fluid power in developing economies. Prof. Mishra has published more than 150 papers in various journals and conference proceedings of repute and has been invited to give key note lectures in various conferences. Prof. Mishra has also organised and chaired a number of conference sessions dealing with green issues.



**Dr. R.P. Tewari** is Associate Professor in the Department of Applied Mechanics at Motilal Nehru National Institute of Technology, Allahabad, India. He is a life member of ISTE, New Delhi and Biomedical Society of India. His research interests include Biomechanics, Biomaterials, Bio-instrumentation and Rehabilitation Engineering.

## Course Coordinator

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