

# Biomedical Imaging

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## Overview

Biomedical Imaging has evolved as a highly interdisciplinary field of interest to engineers, scientists and physicians. The in-vivo modalities of computed tomography (CT), Ultrasound and magnetic resonance imaging (MRI) are now widely available in most Indian cities for clinical diagnosis. This course provides a fundamental knowledge of the physical and mathematical principals underlying these imaging modalities. The knowledge thus gained can help train the next generation of engineers and scientists in applications as well as advancement of biomedical-imaging.

The course will provide attendees an overview to apply the fundamentals of mathematical techniques (convolution and fourier transform) to represent signals and images. Describe the physical principles of bio-imaging modalities and Identify typical applications and instrumentation for imaging modalities and their possible risks and limitations for human health.

<b>Modules</b>	<ol style="list-style-type: none"><li>1. Signals and Systems</li><li>2. X-rays radiography and CT</li><li>3. Ultrasound</li><li>4. MRI</li></ol> <p><b>Dates: July 04 – July 15, 2016</b></p> <p><b>Number of participants for the course will be limited to forty</b></p>
<b>Who should attend</b>	<ul style="list-style-type: none"><li>• Physical scientists, technicians, engineers and researchers involved with application or development of medical imaging modalities.</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 \$300</b></p> <p><b>Industry/ Research Organizations: INR 10,000.00</b></p> <p><b>Faculty from Academic Institutions: INR 5,000.00</b></p> <p><b>Students: INR 2,500.00</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 <b>"GIAN-Biomedical Imaging-2016"</b> payable at Allahabad.</p> <p><b>Account Name:</b> GIAN-Biomedical Imagine 2016</p> <p><b>Account No.</b> 718400301000198</p> <p><b>Bank:</b> Vijaya Bank, MNNIT Branch, Allahabad-211004, UP, INDIA</p> <p><b>IFSC Code:</b> VIJB0007184</p> <p><b>Last Date of Registration:</b> 24 June 2016</p>

## The Faculty



**Prof. Gunjan Agarwal** is an Associate Professor in the Department of Biomedical Engineering at the Ohio State University (OSU), in Columbus, OH. She has an active research program in extracellular matrix remodelling and nanotechnology. A bio-physicist by training, she heavily employs biomedical microscopy for her research. Dr. Agarwal has published over 40 journal articles and authored 4 invited book chapters. Her research has been funded by agencies such as the National Institutes of Health, National Science Foundation and the American Heart Association. She has developed and teaches the Biomedical Imaging course at OSU. Prof. Agarwal has been especially commended by her students for “teaching difficult topics with ease” on multiple occasions.



**Dr. Anuj Jain** is Professor in the Department of Applied Mechanics at Motilal Nehru National Institute of Technology, Allahabad, India. His research interests include fluid-particle dynamics in human respiratory tract leading to optimal deposition of inhaled drug delivery through inhaler. The study involves development of 3D geometric model of human respiratory tract from the CT/MRI images for further CFD analysis. His research in this area is funded by DST and CSTUP.



**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(s)

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