Global Initiative of Academic Networks (GIAN)
176020G04: Short-term Course on
"Medical Imaging Techniques"
COURSE REGISTRATION FORM

Name (Block Letters) :.....
Age and Date of Birth :.....
Gender : Male Female Transgender
Educational qualification:.....
Designation :.....
Experience .. :.....
Institution:.....
.....
Address:.....
.....
.....
Mobile :.....E-mail :.....
GIAN Application ID :..... (Applica-
-tion ID generated during one time registration
at GIAN portal of IIT Kharagpur)

Payment should be made through:
Demand Draft, in favour of
"**The Director CTDT, Anna University**"
payable at Chennai.

DD no: ....., Date: .....

Amount: ..... Bank:.....

Date: ... Signature of Candidate

APPROVAL FROM INSTITUTION

Date: .....

Seal and Signature of the Principal/ Head
of the Department/Division

Foreign Faculties:

Prof. Usha Sinha is the Chair of Physics & Director of Medical Physics at San Diego State University, California, USA. She received her Ph.D from Indian Institute of Science, Bangalore in 1985. Her research interests are : Image processing , imaging informatics, diffusion tensor imaging etc. She has over 150 publications.
http://www.physics.sdsu.edu./usinha/

Prof. Shantanu Sinha Professor in Department of Radiology, School of Medicine, University of California San Diego, USA. He was awarded Ph.D from Indian Institute of Science, Bangalore in 1983. His research interests are: Novel methods of MR imaging, pulse programming and image processing etc. He has published over 200 peer-reviewed articles.
http://profiles.ucsd.edu/shantanu.sinha

Course Coordinators:

Dr. R. Vidya is Assistant Professor at Dept. of Medical Physics, Anna University. She has received Ph.D from University of Oslo, Norway in 2005. She has been studying various materials using density-functional theory based computations. She has published 50 papers in international journals.

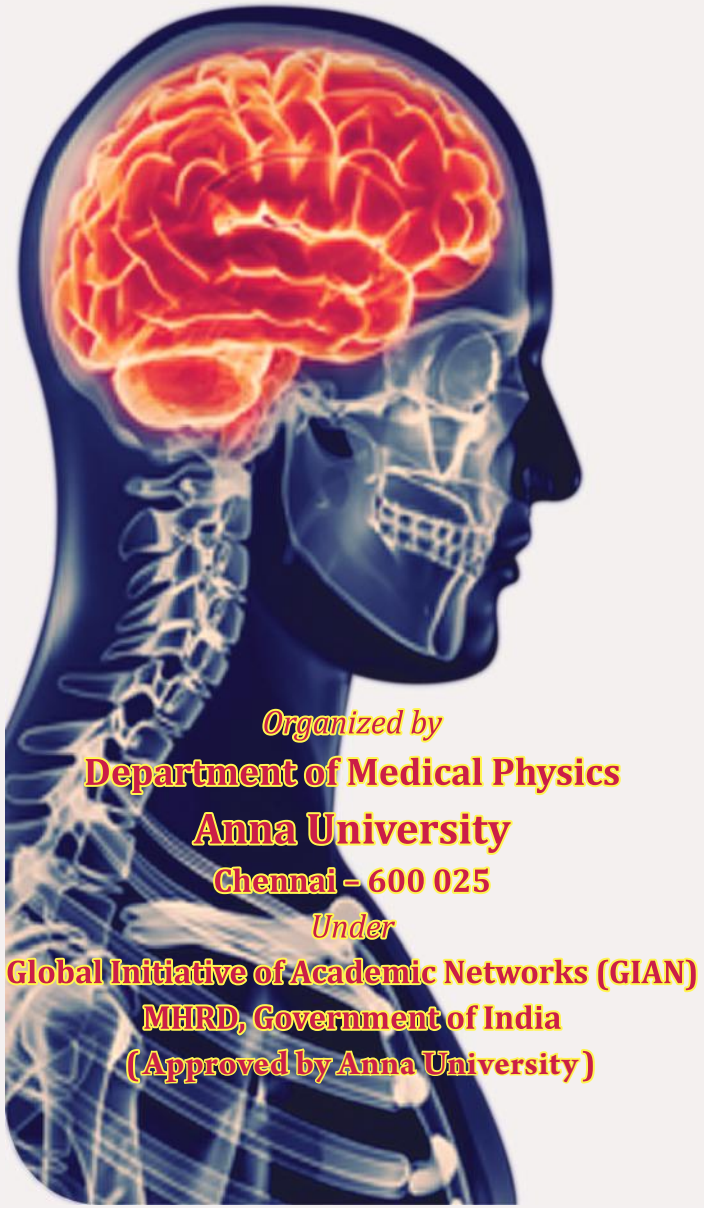
Prof. P. Aruna is the Head, Dept. of Medical Physics, Anna University, She has received Ph.D degree from Anna University in 1991. Her research interests are : fluroscopy and spectroscopy based techniques for cancer diagnosis. She has published more than 68 papers in international journals.

GIAN GLOBAL INITIATIVE OF ACADEMIC NETWORKS
MHRD Ministry of Human Resource Development Government of India
ANNA UNIVERSITY PROGRESS THROUGH KNOWLEDGE

Short - term Course on

Medical Imaging Techniques

30 Oct. - 10 Nov. 2017
Venue: Physics Seminar Hall



Organized by
Department of Medical Physics
Anna University
Chennai – 600 025
Under
Global Initiative of Academic Networks (GIAN)
MHRD, Government of India
(Approved by Anna University)

Medical Imaging Techniques

(Short Term Course)
Under GIAN Program of MHRD, Govt. of India
30 Oct. – 10 Nov. 2017 at Anna University, Chennai.

Overview

Medical imaging is perceived as the set of techniques to create visual representations of interior of the body non-invasively. Dramatic advances in medical imaging technologies have allowed physicians to detect, diagnose, and treat diseases earlier, more accurately, and at reduced costs, thus enabling a new and more powerful generation of diagnosis and intervention.

The course provides a scientific basis on the physical principles underpinning imaging in medicine and will provide the basic knowledge for the participants. The diagnostic imaging techniques such as projection radiography, mammography, fluoroscopy, computed tomography (CT), ultrasound and magnetic resonance imaging (MRI) are covered with equal emphasis on a problem-based approach (physics of diagnostic devices) and on details of real clinical systems (system specifications, performance, and quality control).

The primary objectives of this course are to:

- Build the physics background of interaction of radiation with matter and train them to assess image distortions, image attenuation for x-ray radiography systems.
- Introduce the concept of computed tomography, reconstruction and systems such as multi-scale and helical CT scanners.
- Divulge the image formation, image quality, and imaging hardware for ultrasound scanning.
- With the knowledge of imaging principles, derive the fundamental equation of MRI.
- Expose the participants to advanced MR techniques including fast spin echoes, MR angiography, echo planar imaging, magnetization prepared sequences, diffusion and perfusion theory and sequences.

Modules

Part I: 30 Oct. – 03 Nov.2017 by Prof. Usha Sinha

- Introduction - Signals and systems
- Linear imaging systems and the mathematical formalism to describe system output (image quality, resolution, accuracy)
- Problem solving related to linear systems and to characterize the output of such systems
- Physics & Projection of Radiography
- Mammography & Fluoroscopy
- Computed Tomography
- Ultrasound

Part II: 06 Nov. – 10 Nov. 2017 by Prof. Shantanu Sinha

- Overview of MRI, T1 and T2 relaxation
- Spatial Encoding, and Imaging Principles
- Image Resolution and Contrast Optimization
- Introduction to the family of MRI pulse sequences
- Enabling participants to design imaging pulse sequences in order to optimize image contrast.
- Cardiac MRI, MR angiography, Velocity Encoding, Artifacts
- Advanced Imaging (Fast Scans, Diffusion, Perfusion, fMRI)
- Tools will be provided so that participants can design pulse sequences for specific imaging situations.

Who Can Attend

- Graduates, Post -graduates, and doctoral students of Medical Physics, Bio Physics, Bio-Medical Engineering, and Physics.
- Science and Engineering faculty interested in the area of medical imaging. (Treated as Equivalent to UGC Refresher Course).
- Researchers and personnel in industry/hospitals and academia in the areas of medical imaging, image processing and imaging informatics.

Registration

Step1: GIAN Registration:
The participants should pay a one-time non-refundable payment of Rs.500 at http://www.gian.iitkgp.ac.in/GREGN/index which is valid for lifetime.

Step2: Course Registration:
The GIAN registered candidates are requested to submit the filled-in course registration form along with the course fees through demand draft, drawn in favour of **The Director, CTDT, Anna University** payable at **Chennai**,
To:
Professor & Head,
Department of Medical Physics,
Anna University,
Sardar Patel Road, Guindy,
Chennai –600 025.

Fees:

Students:	***Rs. 2000/-***
Academic Staff/faculty:	***Rs. 4000/-***
Hospital/Research Institute:	***Rs 10,000/-***
Participants from abroad:	***US $ 700/-***

The envelope may be superscribed with "Application for GIAN course: Medical Imaging Techniques" .

Course participants should make their own arrangement for travel and accommodation..

For any queries, contact: vidyar@annauniv.edu (Mobile: 8903253749), hod.medphy@gmail.com+91-044-2235 8721.

Please visit www.gian.iitkgp.ac.in and www.annauniv.edu/gian/ for more details.