

Sanjay Gandhi Post-graduate Institute of Medical Sciences, Lucknow

PDCC (GI-Radiology)

Department of Radiodiagnosis

1. Course Offered:

One Year Certificate course in Gastro-radiology

2. Introduction of the department of Courses:

Sanjay Gandhi Postgraduate Institute of Medical Sciences was established in late eighties by the State of Uttar Pradesh to create a centre of excellence for providing medical care, education and research of high order. It is chartered to function as University under State Act.

The Institute provides extensive investigative facilities. Its department of Radiodiagnosis is equipped with 128 and 64 Slice Multi-detector CT Scan, 3 Tesla MRI Computerized Radiography, Digital Radiography, DSA and Automatic Positioning GI Table, besides several routine and Mobile X-ray units and Ultrasound equipments.

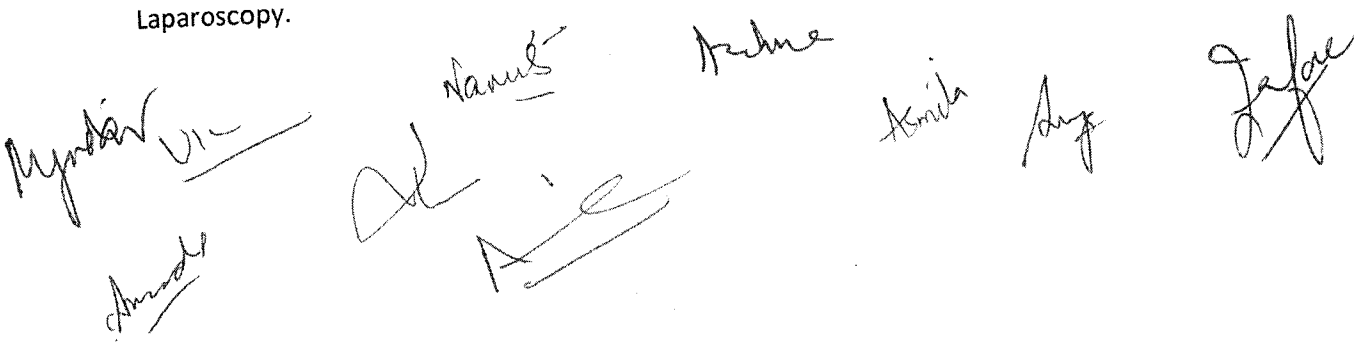
The institute fulfils the objective of creating a centre of excellence for providing tertiary medical care and teaching and research of the highest order. At the same time there is also great need of producing dependable super specialist also in diagnostic radiology, who can act as a key figure for that super specialty radiology such Neuro-radiology, Cardiovascular Radiology and GI radiology. An expert in these radiological superspecialities will contribute in having problem oriented approach, better and uniform patient care and will avoid errors in the interpretation of various radiological procedures and will have better research capabilities.

With the unique facilities already created and the excellent infrastructure of the Institute, the department of Radiodiagnosis can offer teaching and training programme of the highest level and conduct need oriented research.

The training programme shall aim to provide sound knowledge of the diagnostic & investigative aspects of Gastro -radiology along with brief knowledge of applied clinical sciences & basic sciences and training in all the procedures related to Gastro-radiology with particular emphasis on Barium Studies, Computerized radiology, Ultrasound, CT and MRI. The candidate will also have a brief review of other diagnostic modalities. e.g. radionuclide imaging, pathology, Encoscopy, Manometry & Laparoscopy.



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Needs: Local : Pink, National : Orange, Regional: light blue, International: Green

Colour Coding

International
Regional
National
Local (State)

GREEN
BLUE
ORANGE
PINK

In addition to the sufficient exposure in radiology department the candidate will also have the opportunity to be in the clinical department of Gastroenterology (Surgical/Medicine) for a brief period to have a closely interrelated view point of clinical approach. In addition the candidate will also have the knowledge of basic physics/principles of diagnostic imaging equipments. The candidate will have the relevant knowledge of the allied basic sciences. The over all aim of the programme is to have a dependable super specialist who can integrate the allied sciences and act as the key figure in the Gastro -radiological imaging field.

3. Faculty Associated:

Dr. Archana Gupta, MD- Professor and Head, Radiodiagnosis

Dr. Rajanikant R. Yadav, Additional Professor, Radiodiagnosis.

Dr. Anil Kumar Singh, Associate Professor, Radiodiagnosis.

4. Eligibility Criteria: M.D. (Radiodiagnosis) or M.D. (Radiology) or DNB

5. Selection Procedure:

All India open entrance examination as required by the Institute similar to Senior Resident entrance examination.

Duration of the course – 1 year

6. Syllabus Gastrointestinal-radiology:

a. Basic Sciences: with stress on application to imaging

Anatomy:

Embryology & Anatomy of Gastrointestinal and hepatobiliary and pancreatic system, Circulation, Cross Sectional & Saggital/coronal Anatomy of mediastinum abdomen and pelvis in relation to CT & MRI & US.

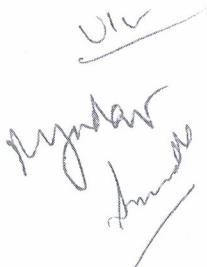
Physiology:

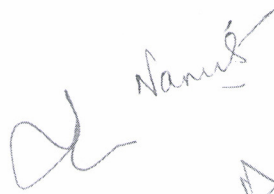
Gastrointestinal motility, sphincter studies of the GIT, liver pathophysiology, tumor pathophysiology, liver spectroscopy, portal hypertension.

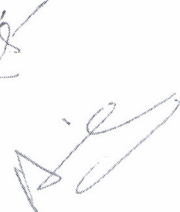
Pathology:

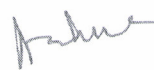
Gastrointestinal tract and hepatobiliary and pancreatic congenital, trauma, tumors, inflammatory and infective diseases.


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Colour Coding

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Regional	BLUE
National	ORANGE
Local (State)	PINK

Contents:

- Gastrointestinal (including liver, pancreas and spleen)
- Gastrointestinal anatomy and clinical practice relevant to clinical radiology.
- Radiological manifestations of disease within the abdomen on conventional radiography, contrast studies (including ERCP), ultrasound, CT MRI, radionuclide investigations and angiography
- Knowledge of the applications, contraindications and complications of relevant interventional procedures.
- Performing and reporting the following contrast examinations:
 - Swallow and meal examination
 - Small bowel studies
 - Enema examinations
- Performing and reporting transabdominal ultrasound of the gastrointestinal system and abdominal viscera
- Supervising and reporting Computed Tomography and Magnetic Resonance Imaging of the abdomen
- Performing:
 - Ultrasound-guided biopsy and drainage
 - Computed tomography-guided biopsy and drainage
- Performing and reporting the following contrast medium studies:
 - Cholangiography (T-tube)
 - Sinogram/fistulogram/ loopogram
 - GI video studies
- Experience of the current application of radionuclide investigations to the gastrointestinal tract in the following areas:
 - Liver
 - Biliary system
 - Gastrointestinal bleeding (including Meckel's diverticulum)
 - Abscess localization
- Assessment of inflammatory bowel disease
- Knowledge of the application of angiography and vascular interventional techniques to this subspecialty
- Observation of ERCP and other diagnostic and therapeutic endoscopic techniques
- Performing Percutaneous cholangiography
- Observation of Percutaneous Gastrostomy

Course:

Anatomy and diseases of

- Salivary glands / Pharynx / esophagus
- Stomach & duodenum
- Small intestine

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- Colon
- Acute abdomen
- Biliary Tract
- Liver & Spleen
- Pancreas
- Pediatric abdomen
- Knowledge of the strengths and weaknesses of radio nuclide investigations compared to other imaging modality
- PET CT

(b) **Clinical Sciences:**

Gastro-Medicine:

Role of Radiology in clinical gastrointestinal diseases and correlation of clinical information with the radiological results. Problem oriented approach with a viewpoint to select the most appropriate radiological investigation of choice in order of preference. Observation of ERCP and other diagnostic and therapeutic endoscopic techniques.

Gastro-surgery:

Pre & Post operative follow up of the Gastro-surgery patients with provisional clinico-radiological diagnosis correlation of clinical information with radiological investigation results, problem oriented approach to select the most appropriate radiological investigation of the choice, Emergency treatment & knowledge of outline of management of acutely ill patients during and after investigative procedures.

(c) **Gastro-radiology:**

Conventional:

Interpretation of plain x-ray of chest and Abdomen, various special views and their interpretation. Radiology of acute abdomen and post operative abdominal X rays.

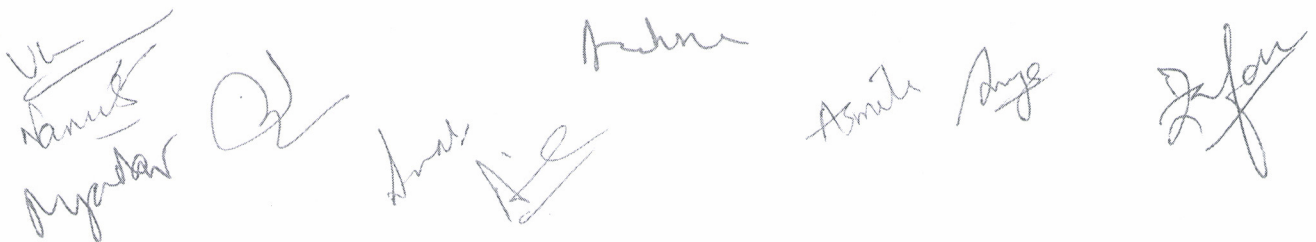
Radiography/ Contrast technique:

Conventional Radiology, including plain radiography of chest/ bones/and plain radiography of abdomen, performing all conventional radiography and contrast studies related to gastrointestinal tract such as Ba swallow/ Ba meal follow through/ Ba Enema/ small bowel enema, T-tube cholangioraphy, Sinogram/fistulogram/ loopogram and GI video studies.

Ultrasound:

Performing routine USG of abdomen, pelvis, Experience of performing Doppler ultrasound imaging (e.g. abdominal arteries and splenoportal


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axis, portal vein, IVC and hepatic veins), Performing ultrasound-guided interventional procedures (e.g. biopsy and drainage)

Computed Tomography:

Technical aspects of performing computed tomography (CT), including the use of contrast media, Knowledge of the cross-sectional anatomy as visualized on computed tomography

Practical experience in supervision including making requests, determining protocols, the examination and post processing and reporting of the examination in gastrointestinal disease, Experience and specialization in performing computed tomography-guided procedures, e.g. biopsy and drainage

Vascular Intervention

Knowledge of vascular anatomy and clinical practice relevant to clinical radiology, Familiarity with the indications, contraindications, pre-procedure preparation (including informed consent), sedation, patient monitoring during procedures and post-procedure patient care

Familiarity with procedure and post-procedure complications and their management, Femoral artery puncture techniques, and the introduction of guide wires and catheters into the arterial and venous system, Specialization in performing and assisting various diagnostic and interventional abdominal vascular procedures including:

- Interventional radiological management of non-variceal gastrointestinal bleeding,
- Balloon retrograde transvenous obliteration of Gastrointestinal Varices
- Trans arterial chemoembolization of HCC,
- TARE for HCC,
- Trans jugular Liver Biopsy,
- HVPG measurement,
- Trans jugular Intrahepatic Portosystemic shunt,
- Interventional management of Budd Chiari Syndrome (Hepatic vein and IVC angioplasty and stenting, Direct Intrahepatic Portosystemic shunt).

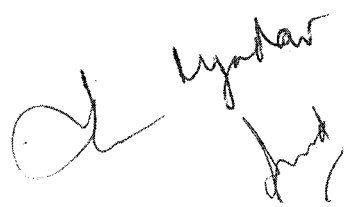
Magnetic Resonance Imaging:

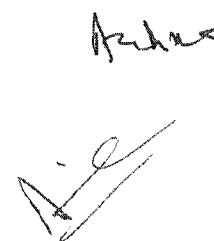
Understanding of current advice regarding the safety aspects of magnetic resonance imaging (MRI), Knowledge of the basic physical principles of magnetic resonance imaging, including the use of contrast media, Knowledge of the cross-sectional anatomy in orthogonal planes, and the appearance of normal structures on different pulse sequences,

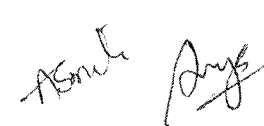


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Nanik


Lyndar


Arjun


Anshu


Zafar

Experience in supervision including requests, determining protocols, the examination, and post processing and reporting of the examination of Abdomen and Pelvis, Experience of the application of MR angiography and venography, Familiarity with post imaging acquisition processing.

Non Vascular Intervention:

Knowledge of the equipment and techniques used in vascular, hepato biliary, and pancreatic interventional procedures. Knowledge of the indications, contraindications, pre-procedure preparation including informed consent, patient monitoring during the procedure and post-procedure patient care, Knowledge of procedure and post-procedure complications and their management, performing and assisting interventional procedures including.

- Ultrasound-guided biopsy and drainage
- Computed tomography-guided biopsy and drainage.
- Percutaneous Cholecystostomy
- Percutaneous Gastrostomy and Jejunostomy
- Percutaneous Transhepatic biliary drainage.
- Balloon dilatation of Benign biliary and hepaticojejunostomy strictures.
- Metallic stenting for malignant biliary strictures and obstructions.
- Radiofrequency and Microwave ablations for HCC, colorectal and neuroendocrine tumor metastases to Liver.

Radionuclide Radiology:

Knowledge and understanding of the principles and indications of the more commonly performed radio nuclide investigations and how these relate to other imaging modalities, in particular knowledge of the radio nuclide investigations in Gastroenterology and Hepato-biliary diseases. Understanding the significance of normal and abnormal results

7. Training Programme:

Seminars in basic sciences and clinical sciences, (Anatomy Physiology, Pharmacology, Gastro-medicine, Gastro-surgery)

Barium + Plain X-Ray	-	1 month
C.T. Scan	-	1 1/2 months
Ultrasound & Doppler	-	1 1/2 months
Intervention + GI Angiography	-	5 month
MRI	-	1month
Nuclear Medicine + Abdominal Doppler	-	7 days
Pathology	-	7 days
Gastroenterology	-	7 days

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Anubha Singh

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Gastro surgery - 7 days
Trauma and emergency imaging - 1 month

Candidate is required to attend the entire emergency related to the diagnostic and interventional gastro-radiology.

8. Academic/Teaching:

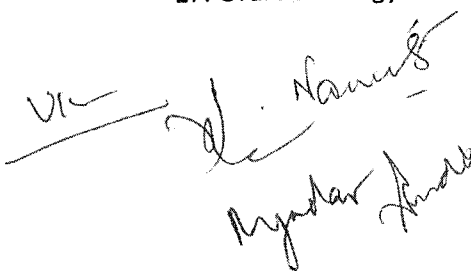
1. Seminars to be presented by candidate (1)/ month.
2. Journal club once a month.
3. Gastro-radiology conference once a week.
4. Candidates will participate in the research/training program of the department.
5. Publication of 1 research papers in national / international journals is desirable.
6. Project work along with faculty associated.

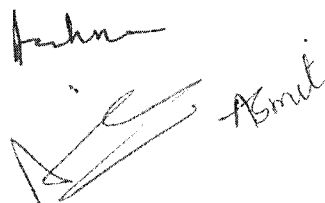
Students will be required to maintain a logbook of the postings, Seminars and Case discussions. Assessment will be made from time to time and feedback will be given to the student for improvement

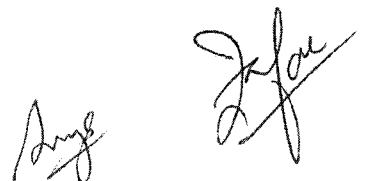
9. BOOKS

1. Textbook of Gastrointestinal Radiology by Richard M Gore, Marc S Levine, Igor Laufer (W B Saunders & Company) 4th Ed. 2014
2. Alimentary tract Radiology by Alexander R Margulis-4th Ed.-1989, H Joachim Burhenne (Mosby)
3. CT and MRI of the whole body by John R Hagga, Daniel/ T. Bolt 6th Ed.
4. Textbook of Radiology and imaging by David Sutton (Churchill Livingstone).
5. Diagnostic Radiology by Grainger & Allison's (Churchill Livingstone).
6. Radiology Review Manual by Wolfgang Dahnert (Lippincot Williams & Wilkins).
7. Clinical imaging. An atlas of differential diagnosis by Ronald L Eisenberg (Lippincot Williams & Wilkins).
8. Gastrointestinal radiology by Robert D Halpret (Mosby Elsevier).
9. Small bowel obstruction by Roberto di Mizio, Mariano Scaglione (Springer).
10. Diseases of the abdomen and pelvis by J Hodler, G K von Schulthess, Ch L Zollikofer (Springer).
11. Advanced imaging of the abdomen by Jovitas Skucas (Springer).
12. Abdominal ultrasound. How, when and why by Jane Bates (Churchill Livingstone).
13. MRI of the liver by G Schneider (Springer).
14. Liver MRI by Shahid M Hussain (Springer).
15. Diagnostic imaging Abdomen by Federle, Jeffery, Desser, Anne, Eraso (Amirsys).
16. Fundamentals of Diagnostic Radiology by Willian E Brant, Clyde A Halmes (Lippincot Williams & Wilkins).
17. Oral Pathology. Principles and Interpretation by White, Pharoh (Mosby).


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Dr. Nandini
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Dr. Anand
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Journals

1. Abdominal Radiology
2. American Journal of Roentgenology
3. Radiographics
4. Radiology
5. Applied Radiology
6. Pediatric Radiology
7. Indian Journal of Radiology and Imaging
8. Radiology Clinics of North America
9. Journal of Computer Assisted Tomography
10. British Journal of Radiology
11. Journal of Radiology Case Reports
12. European Journal of Radiology
13. Diagnostic and Interventional Radiology
14. Investigative Radiology
15. Journal of Vascular and Interventional Radiology
16. Seminars in Interventional Radiology
17. Seminars in ultrasound, CT and MRI

E learning resources

1. www.RSNA.org
2. www.RCR.AC.UK
3. www.sor.org

Resources available in SGPGI

4. Clinical Key which gives access to various Radiology journals

<https://www.clinicalkey.com>

5. BMJ
6. Uptodate
7. Ermed.in

SGPGI Library SGPGI (record of books and journals till 2020) may be seen on following ip address : 172.25.0.53.

Radiology books 803, 31 foreign journals and 1 Indian journal

10.Evaluation:

Evaluation Scheme:

Exam pattern is same as adopted for other PDCC courses – by the institute.

11. Number of candidates

Two candidates per year

U.K.

Dr. Nand

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Joshi*

*Arjun
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