1. **Name of the department:** Department of Radio Diagnosis and Imaging

2. **Introduction to the speciality equipment:** We have state of the art diagnostic facilities in our Department of Radiodiagnosis. Our department is well-equipped with 1.5Tesla MRI Scanner, 128-slice CT scanner, three high-end USG scanners with Color Doppler, Mammography machine, Digital Radiography & Computed Radiography System with 1000, 800, 600, 300 & 100 mA X-ray machines with multiple high-resolution laser camera. We have a high & efficient workflow and patient workload in our department with daily 15-20 MRI scans, 35-40 CT scans, 90-110 USG scans, 180-200 x-rays and multiple special investigations, USG / CT guided procedures. The patient is sympathetically counseled about the pre-procedural facilities, benefits of concerned investigation, investigation-related complications (major & minor) and remedial measures that can be taken in any untoward event.

3. **Research & academic activities:** We have a team of very experienced specialists serving not only the patients but also as Faculty members training our post-graduate students promoting them to present scientific papers & posters in CME / conferences. Besides this, our faculty is very active in the field of research with an overall publication list of more than 250 in multiple Journals of International Repute, out of which more than 160 are in last 3-4 years. More than 250 citations are there for these articles. Many of our Faculty members are Editorial Board Members and Reviewers to many International Journals. Many of them have
authored multiple chapters in multiple books of Radiology & other fields of Medicine. Few of them have Chaired Sessions and delivered Invited talks / Paper at State, National & International Level CME / Conferences.

4. Our vision is to provide the most-modern & state of the art diagnostic facilities including oncology-related patients with upgrade to 3T MRI scanner, 256-Slice CT scanner as well as CT-PET & MRI-PET.

**Department Profile**

1. **Name of the department:**

   Department of Radiodiagnosis

2. **Introduction to the Specialty:**

   **Conventional Radiology:**

   Conventional Radiology forms the backbone of the department of Radio-diagnosis. The majority of patients entering the department are referred for plain radiographs of the chest, abdomen and bones. The department has two 500 mA x-ray machines and two Mass Miniature Radiography (MMR) units for this purpose. In addition, there are four x-ray units equipped with Image Intensifier-TV systems on which fluoroscopy guided investigations are carried out. A large number of specialized contrast procedures such as Barium studies, intravenous Urography, Cystourethrogram, Myelograms and Angiograms are performed on these x-ray machines. The image intensifier TV systems used for performing these procedures enable more accurate diagnosis and significant reduction in radiation dose to patients.

   **Mammography:**

   Two dedicated Mammography units are available in our department. The Mammomat-2 has facilities both for Film Mammography and Xero Mammography. The new Senographe DMR Mammography Unit is a state-of-the-art unit equipped with senovision digital.
spot filming and stereotactic biopsy facilities. Both these machines allow high quality mammograms to be obtained for diagnosis of breast diseases. The Senovision digital stereotactic biopsy facility is perhaps the only such equipment in operation in the country. It enables quick and highly accurate needle biopsy of suspicious breast lesions, with marked reduction in patient discomfort because of shorter time required for biopsy. The digital spot filming capability permits electronic manipulation and magnification of images. This is important to the radiologist for providing better visualisation and more accurate diagnosis of small lesions and microcalcifications in the breast.

Digital Radiography and Fluoroscopy:

The new Advantx Legacy 1000 mA x-ray unit is a high power, digital radiography/fluoroscopy system which acquires x-ray images in a digital format. It is employed for specialized contrast procedures such as barium swallow, barium meal, myelograms and for Digital subtraction Angiography (DSA). The digital format allows manipulation and magnification of the images to improve contrast and make the lesions look more conspicuous. The improved quality of images can almost eliminate the need for repeat radiographs.

The DSA facility permits accurate visualization of blood vessels after injection of contrast medium and allows lower dose of contrast as compared to conventional angiography. It is of great value in studying diseases of blood vessels, blood supply of tumours and mapping vascular anatomy in various parts of the body.

Ultrasonography and Color Doppler: The Colour Doppler scanners enable colour flow studies to be added to the ultrasound examinations to evaluate blood flow and velocity and assess tumour vascularity. Narrowing and thrombosis of blood vessels can be diagnosed with this technique. The top-of-the-line Logiq 700 unit incorporates features such as Tissue Harmonic Imaging, Coded excitation and 3-D imaging, which permit high resolution images of superficial and deep structures to be obtained.

Bedside sonography is carried out in the ICU using the two Portable Ultrasound Scanners - the Capasee and SDR 1200 units. These scanners are also employed for intraoperative sonography, especially for evaluation of the liver, gall bladder and pancreas, using a specialised high frequency intraoperative probe.
The CMF-800 Endovascular Ultrasound unit which is a very special equipment, also useful for research is available for detailed assessment of blood vessels using a special intravascular probe and useful for endovascular brachytherapy.

**Computerized Tomography (CT)**

CT scanning of the whole body with spiral and sequential techniques is performed on the Somatom Plus 4 Spiral CT Scanner. The Spiral scanning techniques employed for the chest and abdomen enables an entire volume or region of the body to be scanned in one or two breath-holds, thus eliminating motion and misregistration artefacts. Tiny nodules in the lungs and liver can be detected with greater accuracy.

Dual/Triple phase contrast enhanced scans are also performed with the spiral scanning techniques, to evaluate and characterize tumours in the liver, pancreas, kidneys etc. by scanning during the arterial and venous phases following contrast injection.

Newer applications like CT Angiography, 3-D reformatted images and Bone Mineral Densitometry can also be performed on the spiral CT Scanner.

**Magnetic Resonance Imaging (MRI)**

The Department has just installed the state-of-the-art, high field strength 1.5 tesla Signa Echospeed MRI System with attached Advantage Workstation. MR imaging is of great value for the brain ans spine, with excellent differentiation of grey and white matter, normal and abnormal tissues. It has also proved to be of value in the head and neck regions and for evaluation of the musculo-skeletal system and joints. It depicts changes in bone marrow with great clarity. MR imaging of abdominal and pelvic organs can also provide useful information regarding characterixaion, staging and operability of tumours in selected cases.
Training & Education

The department conducts post graduate training programmes for the MD (Radiodiagnosis) degrees. A two year combined training course for Radiotherapy and Radiodiagnosis technicians is also being conducted jointly with the department of Radiation Oncology.