UNMRP

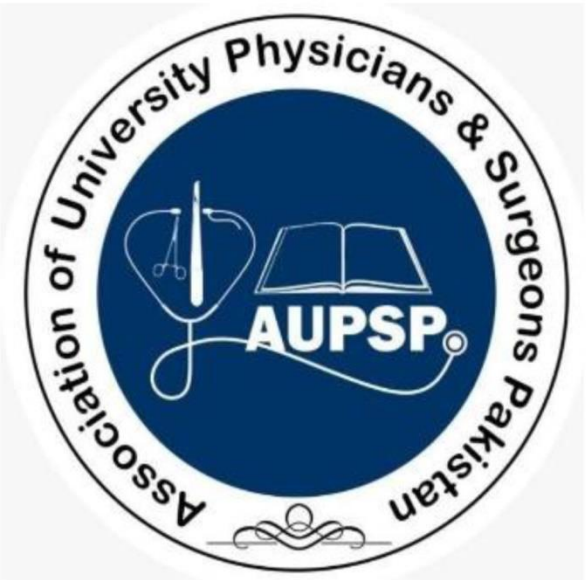
UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM PAKISTAN

UNIFIED CURRICULA REGISTRY MEDICAL UNIVERSITIES OF PAKISTAN

CURRICULUM

MD RADIOLOGY

Residential, Clinical, Stipend based, Full time



United Nations Academic Network (UNAN)
The UNESCO via the NEQMAP Bangkok

Note: All universities are included the international WHO directory discovered on the website of WHO and are duly recognized by the United Nations Academic Network (UNAN) and the UNESCO via the NEQMAP Bangkok

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SECTION 2

MISSION STATEMENT:

The mission of MD radiology program must be,

- That the student accepts Radiology in its full sense as lifelong activity and that he/she is prepared to invest time and effort to acquire, maintain and further improve his/her own knowledge and skills.
- A critical appreciation of techniques, procedures carried out in Radiology; an understanding of scientific methods, reliability and validity of observations and the testing of hypothesis.
- The ability and willingness to adopt a problem solving approach to manage clinical situations included in the definition of Radiology.
- The ability to plan and interpret management program with due regard to the patient's comfort and economic factors.
- His / her awareness of the role of specialists of Radiology in Health / rehabilitation / welfare teams and his/her willingness to work cooperatively within such teams.
- The awareness that he/she has to create his/her own professional impact as a capable specialist/ Teacher / Scholar of Radiology in the world.
- To pursue and develop the basic scientific pursuits and guideline for scientific discoveries to strengthen knowledge further about human body requirements.

SPECIFIC LEARNING OBJECTIVES

A Resident on completing his / her MD (Radio Diagnosis)

- Acquire good basic knowledge in the various sub – specialties of Radiology such as Neuroradiology, GI radiology, Uroradiology, Vascular Radiology, Musculokeletal, Interventional Radiology, Emergency Radiology, Pediatric Radiology and Imaging of breast
- Independently conduct and interpret all routine and special imaging investigations.
- Provide radiological services in acute emergency and trauma including its medicolegal aspects.
- Elicit indications, diagnostic features and limitations of applications of ultrasound, CT and MRI and should be able to describe proper cost effective algorithm of various imaging techniques in a given problem setting.

SECTION 3

ADMISSION CRITERIA:

Applications for admission to MD Training Programs will be invited through advertisement in print and electronic media mentioning closing date of applications and date of Entry Examination.
Eligibility: The applicant on the last date of submission of applications for admission must possess the:

- Basic Medical Qualification of MBES or equivalent medical qualification recognized by Pakistan Medical & Dental Council.
- Certificate of one year's House Job experience in institutions recognized by Pakistan Medical & Dental Council Is essential at the time of interview. The applicant is required to submit Hope Certificate from the concerned Medical Superintendent that the House Job shall be completed before the Interview.
- Valid certificate of permanent or provisional registration with Pakistan Medical Council.

REGISTRATION AND ENROLMENT:

- As per policy of Pakistan Medical Council the number of PG Trainees/ Students per supervisor shall be maximum O5 per annum for all PG programs including minor programs (if any).
- Beds to trainee ratio at the approved teaching site shall be at least 5 beds per trainee.
- The University will approve supervisors for MD courses.
- Candidates selected for the courses: after their enrollment at the relevant institutions shall be registered with university as per prescribed Registration Regulations.

SECTION 4

CURRICULUM CONTENT AND EDUCTIONAL OBJECTIVES FOR M.D. (RADIOLOGY) COURSE:

Duration Of Course – 4 years

- After admission in MD Radiology Program the resident will spend first 6 Months in the relevant Department of Radiology as Induction period during which resident will get orientation about the chosen discipline and will also participate in the mandatory workshops. The research project will be designed and the synopsis be prepared during this period.
- On completion of 6 months of induction period the resident will start formal training in the Basic Principles of Internal Medicine & General Surgery for 03 Months each. At the end of one calendar year, the candidate will take up Abridged Examination.
- The candidate will undergo clinical training in 2nd, 3rd, 4th year to achieve the educational objectives of M.D. Radiology Program (knowledge & Skills) along with two rotational placements in 2nd year and two rotations in the 3rd year of the program. The rotations have been described in relevant section. During this time he has to prepare his research/ thesis.

BASIC CONCEPTS AND CLINICAL SKILLS M.D. (RADIOLOGY) COURSE

- This training represents first opportunity to learn and acquire radiological skills.
- Be familiar with:
  - Concepts and terminology of diagnostic radiology
  - Radiological and radiographic techniques and procedures
  - Communication, interpretation and report writing
- The specialty of clinical radiology involves all aspects of medical imaging that provide information about anatomy, function and disease states.

SYSTEM – BASED SUBSPECIALTIES:

- Breast imaging
- Cardiac imaging
- Gastrointestinal imaging
- Head and Neck imaging including ear, nose and throat
- Muscular skeleton and trauma imaging
- Neuro Radiology
- Obstetric imaging
- Gynecological imaging
- Thoracic imaging
- Uro Radiology

- Vascular imaging

TECHNIQUE – BASED SUBSPECIALTIES:

C.T. MRI, USG Interventional Radiology and Radionuclide Radiology

DISEASE – BASED SUBSPECIALTY:

- Oncological imaging

AGE- BASED SUBSPECIALTY:

- Paediatric imaging

SECTION 5

ADVANCED PROFESSIONAL EDUCATION IN RADIOLOGY (THEORY AND SKILLS):

The aim of the curriculum Content is to produce well-trained competent clinical radiologists.

A. PHYSICS:

INTRODUCTION:

General properties of radiation and matter, fundamentals of nuclear physics and radioactivity. Structure of the atom. Definition of atomic number, mass number nuclide, isotope and electron volt.

ELECTROMAGNETIC RADIATION:

Spectrum, general properties, wave and quantum theories.

RADIOACTIVITY:

Exponential decay, specific activity, physical biological and effective half- life, properties of radioactive materials, radioactive decay schemes, units of activity, half life, properties of radiations 0 alpha, beta, gamma, basic knowledge of reactors.

PRODUCTION OF X-RAYS:

Principles, essential components of X-ray tubes, continuous spectra, characteristic radiation, Factors controlling the nature of X-ray emission.

TUBE RATING:

Stationary and rotating anodes, heat capacity, methods of cooling, effect of focal spot size, exposure time, voltage wave form, multiple exposures, failing load

operation, exposure timers, automatic exposure control

INTERACTION:
Interaction of x-rays and gamma rays with matter and their effects on the irradiated materials. Interaction processes and their relative importance for various materials and at different radiation energies. Attenuation, absorption scatter, exponential law, attenuation coefficients, half – value thickness. Homogenous and heterogeneous radiation contrast.

EFFECT:
Heat, excitation, ionization range of secondary electrons, chemical, photographic, fluorescent, phosphorescent, thermo luminescent.

MEASUREMENT OF X-RAY AND GAMMA RAYS:
Quantity: ionization, TLD, and photographic dosimetry.
Exposure: absorbed dose, and the relationship between them and radiation energy Exposure and exposure rate meters. Geiger – Muller and scintillation detectors Radionuclide detection measurement. Counting statistics
Quality: radiation, beam energy, mean, effective and peak energy, half value thickness and filtration

INTERACTION OF X-RAYS WITH THE PATIENT:
Attenuation in various body tissues, high voltage radiography, mammography enhancement by contrast media.
Geometric factors: magnification, distortion, positioning geometric and movement unsharpness, obliteration, micro- radiography, beam limitation, focal spot size.

THE RADIOLOGICAL IMAGING:
Image quality: description and meaning, resolution, noise, definition and contrast .

THE IMAGE RECEPTOR:
Intensifying screens: construction, physical principles and applications. X ray film: structure and operation, characteristic curve, density, speed, contrast, latitude, processing and the dark room, auto9matic x-ray film processor, function, principles, construction, advantages and disadvantages, handing and storage, labeling and identification . Design and care of cassettes. Display and perception of the radiographic image.
Image intensities construction, operation, brightness gain, optical couplings, TV systems. Recording media: 35 mm cine film, 100mm or 60 mm spot film, video tape / disc.
Electrostatic processes: xeroradiography.
SCATTERED RADIATION:
Effect and control scatter: beam limitation, compression, grid construction and operation. Radiographic subtraction technique. tomography (conventional):

principles, layer thickness.
Digital fluoroscopic systems: data collection, storage and display including digital subtraction techniques, implication of digital storage media.

RADIATION PROTECTION:

Biological effects of radiation, risks of somatic and genetic effects. Objectives of radiation protection. Recommendations of I.C.R.P. concepts of dose equivalent quality factors, detriment, limitations annual limits of intake, radiological protection regulations. Relevant codes of practice. Dose control by design and by operation in diagnostic x-ray procedures and nuclear medicine for both staff and patients. Doses received in diagnostic procedures, population, somatic and genetic dose, risk estimates, benefits, personnel monitoring.

QUALITY ASSURANCE:

Methods of assessing image quality and their relationship to specifications of system performance. Methods of monitoring equipment performance.

B. CLINICAL RADIOLOGY:

BREAST:

- Knowledge of breast pathology and clinical practice relevant to clinical radiology
- Understanding of the radiographic techniques employed in diagnostic mammography
- Understanding of the principles of current practice in breast imaging and breast cancer screening.
- Awareness of the proper application of other image techniques to this specialty (e.g. ultrasound, magnetic resonance imaging and radionuclide radiology)
- Mammographic reporting of common breast disease
- Participating in mammographic reporting sessions screening and symptomatic)
- Participation in breast assessment clinics
- Observations of breast biopsy and localization
- Performing breast biopsy and localization

CARDIAC:

- Knowledge of cardiac anatomy, and clinical practice relevant to clinical radiology
- Knowledge of the manifestations of cardiac disease demonstrated by conventional radiography
- Familiarity with the application of the following techniques:
  - Radionuclide investigations
  - Magnetic resonance imaging
  - Angiography
- Reporting plain radiographs performed to show cardiac disease
- Supervising and reporting radionuclide investigations, computed tomography and / or magnetic resonance imaging performed to show cardiac disease
- Experience in echocardiography

- Performing / observing coronary angiography and other cardiac angiographic and interventional procedures.

CHEST:

- Knowledge of respiratory anatomy and clinical practice relevant to clinical radiology
- Knowledge of the manifestations of thoracic disease demonstrated by conventional radiography and C.T.
- Knowledge of the application of radionuclide investigations to chest pathology with particular reference to radionuclide lung scintigrams.
- Knowledge of the application, risks and contraindications of the technique of image – guided biopsy of chest lesions.
- Reporting of plain radiographs performed to show chest disease
- Supervising reporting radionuclide lung scintigrams
- Supervising and reporting computed tomography of the chest, including high – resolution examinations and C.T. pulmonary angiography
- Drainage of pleural space collections under image guidance
- Observation of image – guided biopsies of lesions within the thorax
- Familiarity with the applications of the following techniques :
- Magnetic resonance imaging
- Angiography
- Supervising and reporting magnetic resonance imaging
- Angiography
- Bronchography

GASTROINTESTINAL (Including Liver, Pancreas And Spleen):

- Knowledge of gastrointestinal anatomy and clinical relevant to clinical radiology.
- Knowledge of the radiological manifestations of disease within the abdomen on conventional radiography, contrast studies (including ERCP), Ultrasound, C.T. MRI, radionuclide investigations and angiography.
- Knowledge of the applications, contraindications and complications of relevant interventional procedures.
- Reporting plain radiographs performed to show gastrointestinal disease
- Performing and reporting the following contrast examinations:
- Swallow and meal examinations , - small bowel, studies – enema examinations
- Performing and reporting transabdominal ultrasound of the gastrointestinal system and abdominal viscera.
- Supervising and reporting computed tomography 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) , - sonogram, - stomagram, GI video studies
- Experience of the manifestations of abdominal disease on MRI with particular reference to the solid viscera.

- Experience of the current application of radionuclide investigations to the gastrointestinal tract in the following areas:
- Live, - biliary system, - gastrointestinal bleeding (including Meckel's diverticulum) , - abscess localization, - assessment of inflammatory bowel disease
- Experience of the application of angiography and vascular interventional techniques to this subspecialty
- Experience of the relevant application of the following interventional procedures:
- Percutaneous biliary stenting , - balloon dilation of the oesophagus / stent insertion, - porto-systemic decompression procedures (TIPSS)
- Observation of ERCP and other diagnostic and therapeutic endoscopic techniques
- Endoluminal ultrasound
- Performing percutaneous cholangiography
- Observation of percutaneous gastrostomy
- Familiarity with performance and interpretation of the following contrast studies:
- Proctogram, - Pounchogram, -Herniogram

HEAD AND NECK IMAGING INCLUDING ENT / DENTAL:

- Knowledge of head and neck anatomy and clinical practice relevant to clinical radiology.
- Knowledge of the manifestations of ENT / dental disease as demonstrated by conventional radiography, relevant contrast examinations, ultrasound , C.T. and MRI
- Awareness of the application of ultrasound with particular reference to the thyroid and salivary glands and other neck structures
- Awareness of the application of radionuclide investigations with particular reference to the thyroid and parathyroids glands.
- Reporting plain radiographs performed to show ENT / dental disease
- Performing and reporting relevant contrast examination (e.g. barium studies including video swallows, sialography and dacrocystography)
- Performing and reporting ultrasound of the neck (including the thyroid , parathyroid and salivary glands)
- Supervising and reporting computed tomography of the head and neck for ENT problems
- Supervising reporting computed tomography for orbital problems
- Supervising and reporting magnetic resonance imaging in of the head and neck for ENT problems
- Reporting radionuclide thyroid investigations
- Performing biopsies of neck masses (thyroid, lymph nodes etc)
- Observation or experience in performing ultrasound of the eye
- Supervising and reporting computed tomography and magnetic resonance imaging of congenital anomalies of the ear

- Reporting radionuclide parathyroid investigations.

MUSCULOSKELETAL INCLUDING TRAUMA:

- Knowledge of musculoskeletal anatomy and clinical practice relevant to clinical radiology
- Knowledge of normal variants of normal anatomy, which may mimic trauma
- Knowledge of the manifestations of musculoskeletal disease and trauma as demonstrated by conventional radiography, C.T., MRI , contrast examinations, radionuclide investigations and ultrasound.
- Reporting plain radiographs relevant to the diagnosis of disorders of the musculoskeletal system including trauma.
- Reporting radionuclide investigations of the musculoskeletal system, particularly skeletal scintigrams .
- Supervising and reporting computed tomography of the musculoskeletal system
- Supervising and reporting magnetic resonance imaging of the musculoskeletal system
- Performing and reporting ultrasound of the musculoskeletal system.
- Supervising C.T. and MRI of trauma patients
- Experience of the relevant contrast examinations (e.g. arthrography)
- Familiarity with the application of angiography
- Awareness of the role and, where practicable, the observation of discography and facet injections.
- Observation of image – guided bone biopsy

NEURORADIOLOGY:

- Knowledge of neuroanatomy and clinical practice relevant to neuroradiology
- Knowledge of the manifestations of CNS disease as demonstrated on conventional radiography, C.T. MRI myelogrpahy and angiography
- Awareness of the applications, contraindications and complications of invasive neuroradiological procedures.
- Familiarity with the application of radionuclide investigations in neuroradiology.
- Familiarity with the application of C.T. and MR angiography in neuroradiology
- Reporting plain radiographs in the investigation of neurological disorders
- Supervising and reporting cranial and spinal computed tomography
- Supervising and reporting cranial and spinal magnetic resonance imaging
- Observation and reporting of cerebral angiograms
- Observation of carotid ultrasound including Doppler.
- Experience in MR angiography and CT angiography to image the cerebral vascular system.
- Performing and reporting cerebral angiography
- Performing and reporting myelograms
- Performing and reporting transcranial ultrasound
- Observation of interventional neuroradiological procedures
- Observation of magnetic resonance spectroscopy
- Experience of functional brain imaging techniques (radionuclide and MRI)

OBSTETRICS AND GYNAECOLOGY:

- Knowledge of obstetric and gynecological anatomy and clinical practice relevant to clinical radiology
- Knowledge of the physiological changes affecting imaging of the female reproductive organs
- Knowledge of the changes in fetal anatomy during gestation and the imaging appearances of fetal abnormality
- Awareness of the applications of angiography and vascular interventional techniques
- Awareness of the applications of magnetic resonance imaging in gynecological disorders and obstetrics
- Reporting plain radiographs performed to show obstetric and gynecological disorders.
- Performing and reporting transabdominal and endovaginal ultrasound in gynecological disorder.
- Supervising and reporting computed tomography in gynecological disorders.
- Supervising and reporting magnetic resonance imaging in gynecological disorders
- Performing and reporting hysterosalpingography
- Performing and reporting transabdominal and endovaginal ultrasound in obstetrics
- Supervising and reporting magnetic resonance imaging in obstetric applications (eg assessing pelvic dimensions)
- Observation of fetal MRI
- Observation of angiography and vascular interventional techniques in gynecological disease.

ONCOLOGY:

- Knowledge of clinical practice relevant to clinical radiology
- Familiarity with tumour staging nomenclature
- Familiarity with the application of ultrasound, radionuclide investigations, computed tomography , and magnetic resonance imaging , angiography and interventional techniques in oncological staging, and monitoring the response of tumours to therapy.
- Familiarity with the radiological manifestations of complications which may occur in tumour management.
- Reporting plain radiographs performed to assess tumours
- Performing and reporting ultrasound, C.T. MRI and radionuclide investigations in oncological staging and monitoring the response of tumours therapy.
- Performing image – guided biopsy of masses under US and CT guidance.
- Familiarity with the practical application of PET imaging in tumour staging and management

PAEDIATRIC:

- Knowledge of paediatric anatomy and clinical practice relevant to clinical radiology
- Knowledge of disease entities specific to the paediatric age group and their clinical manifestations relevant to clinical radiology.
- Knowledge of disease entities specific to the paediatric age group and their manifestations as demonstrated on conventional radiography, ultrasound, contrast studies, CT, MRI and radionuclide investigations
- Reporting plain radiographs performed in the investigation of paediatric disorders including trauma.
- Performing and reporting ultrasound in the paediatric age group in the following areas:
- Transabdominal , - transcranial
- Performing and reporting routine fluoroscopic procedures in the paediatric age group particularly:
- Contrast studies of the urinary tract
- Contrast studies of the gastrointestinal system
- Supervising and reporting computed tomography and magnetic resonance imaging
- Supervising and reporting radionuclide investigations in the paediatric age group
- The management of suspected non – accidental injury (NAI)
- The practical management of the following paediatric emergencies:
- Neonatal gastrointestinal obstruction, - intussusceptions
- Performing and reporting ultrasound in the paediatric age group in the following areas:
- Musculoskeletal, - chest

URORADIOLOGY:

- Knowledge of urinary tract anatomy and clinical practice relevant clinical radiology
- Knowledge of the manifestations of urological disease as demonstrated on conventional radiography, ultrasound , C.T. and MRI
- Familiarity with the current application of radionuclide investigations for imaging the following:
- Kidney, - renal function, - vescio-ureteric reflux
- Awareness of the application of angiography and vascular interventional techniques
- Reporting plain radiographs performed to show urinary disease.
- Performing and reporting the following contrast studies :
- Intravenous urogram, - retrograde pyelo-ureterography , - loopogram, - nephrostogram, - ascending urethrogram, - micturating cysto-urethrogram
- Performing and reporting transabdominal ultrasound to image the urinary tract
- Supervising and reporting computed tomography of the urinary tract
- Reporting radionuclide investigations of the urinary tract in the following areas;
- Kidney, - renal function,- vesico-reteric reflux

- Performing nephrostomics
- Observation of percutaneous ureteric stent placement
- Endorectal ultrasound
- Performing image- guided renal biopsy under US and C.T. guidance.
- Magnetic resonance imaging applied to the urinary tract
- Experience of angiography and vascular interventional techniques
- Experience of antegrade –uretherography
- Urodynamics

VASCULAR AND 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 and anesthetic regimes, patient monitoring during procedures and post – procedure patient care.
- Familiarity with procedure and post – procedure complications and their management.
- Familiarity with appropriate applications of the following techniques:
- Ultrasound (including Doppler)
- Intravenous digital subtraction angiography
- Intra-arterial angiography
- Computed tomography and C.T. angiography
- Magnetic resonance imaging and MR angiography
- Reporting plain radiographs relevant to cardiovascular disease
- Femoral artery puncture techniques, and the introduction of guide wires and catheters into the arterial system.
- Venous puncture techniques both central and peripheral and the introduction of guide wires and catheters into the venous system.
- Performing and reporting the following procedures:
- lower limb angiography
  - arch aortography
  - abdominal aortography
  - lower limb venography (contrast or ultrasound)
- Performing the following techniques:
- Ultrasound (including Doppler),- venous and arterial
- Intravenous digital subtraction angiography
- Supervising and reporting CT examination of the vascular system (CTA) including image manipulation
- Supervising and reporting MRI examinations of the vascular system (MRA) including image manipulation.
- Selective angiography (e.g. hepatic, renal, visceral)
- Pulmonary angiography
- Alternative arterial access (eg brachial , axillary puncture)
- Upper limb venography
- Portal venography

- Pelvic venography via femoral approach
- Superior vena cavography
- Inferior vena cavography
- femoral angiography , iliac angiography, renal angiography , embolisation , thrombolysis, stenting, caval filter insertion.

COMPUTED TOMOGRAPHY:

- knowledge of the 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 vetting requests, determining protocols, the examination and post processing and reporting of the examination in the following anatomical sites:
- brain, - head and neck, - chest , - abdomen and pelvis, - musculoskeletal vascular.
- Experience in performing computed tomography – guide procedures, e.g. biopsy and drainage.
- Familiarity with the application of CT angiography
- Familiarity with post image acquisition processing
  These examination may be performed during a system – based attachment , e.g. neuroradiology, or during a computed tomography attachment.

MAGNETIC RESONANCE:

- 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.
- Experience in supervision including vetting requests, determining protocols, the examination, and post processing and reporting of the examinations in the following anatomical sites:
- Brain, - head and neck, - chest – abdomen and pelvis, musculoskeletal (e.g. hips, knees, shoulders and extremities)
- Experience of the application of MR angiography and venography
- Familiarity with post image acquisition processing
  NB: this experience may have been gained during a system – based attachment , or during a magnetic resonance attachment.

ULTRASOUND:

- Knowledge of the technical aspects of ultrasound relevant to optimizing image quality.
- Knowledge of the cross-sectional anatomy as visualized on ultrasound
- Experience in performing and reporting Transabdominal ultrasound examination

of structures in the following anatomical areas:-

- General abdomen(including vessels), - obstetric, - pelvis (non –obstetric,)- small parts(scrotum, thyroid, neck structures), - upper abdomen (including lower chest)
- Experience of performing Doppler ultrasound imaging (e.g. leg veins, portal vein, carotid artery)
- Performing ultrasound of the breast
- Performing transcranial pediatric ultrasound
- Experience in ultrasound of the musculoskeletal system.

- Performing ultrasound – guided interventional procedures (e.g. biopsy and drainage)
- Interventional
- Familiarity with the equipment and techniques used in vascular, biliary, and renal interventional techniques.
- Familiarity with the indications, contraindications, pre-procedure preparation including informed consent, patient monitoring during the procedure and post procedure patient care
- Familiarity with procedure and post procedure complications and their management
- Performing nephrostomies
- Ultrasound –guided interventional procedures (e.g. biopsy and drainage)
- Computed tomography – guided interventional procedures (e.g. biopsy and drainage)

The Trainee Will Also Attain An Appropriate Level Of Knowledge In:

- Clinical conditions in which radiology has a role in diagnosis and / or treatment
- Applied pathology and physiology where it contributes to a better understanding of radiological signs and methods of investigation.
- Those aspects of clinical medicine and pathology, which are essential to the safe and effective conduct of interventional procedures.
- Current trends and recent advances in clinical radiology
- Medical ethics
- Statistics and research methods.

SECTION 6

MANDATORY WORKSHOPS:

- Each candidate of MD/MS/MDS program would attend the 04 mandatory workshops and any other workshop as required by the University.
- The four mandatory workshops will include the following:
  - Research methodology and biostatics
  - Synopsis Writing

- Communication skills
- Introduction to computer / information Technology and Software programs

❖ The workshops will be held on 03 monthly basis.
❖ An appropriate fee of each workshop will be charged.
❖ Each workshop will be 02-05 days duration.
❖ Certificates of attendance will be issued upon satisfactory completion.

SECTION 7

COMPULSORY ROTATIONS

The frame work for core training will consist of the rotations in

❖ -Medicine – 3 months
❖ -Surgery – 3 months
❖ -Nuclear medicine - for 6 weeks
❖ -MR for 8 weeks
❖ -Neuroradiology Radiology - 4 weeks
❖ -Angiography 04 weeks

The educational objective of rotations is to give appropriate experience in relevant fields

After 6 months of Induction period in Radiology, the resident shall undergo training in principals of Internal Medicine and General Surgery each for 3 months as follows:-

7.1 ROTATION LOG OF INTERNAL MEDICINE:

❖ Medical ethics
❖ Professional values, student teachers relationship
❖ Orientation of in-patient, out-patients and neurology labs
❖ Approach to the patient
❖ History taking
❖ General physical examination
❖ Systemic examination
❖ Routine investigations
❖ Special investigations
❖ Diagnostic and therapeutic procedures

Course Contents

1. **Cardiovascular Medicine**

Common and / or important Cardiac Problems:

Arrhythmias

Ischaemic Heart Disease: acute coronary syndromes, stable angina, atherosclerosis Heart Failure

Hypertension – including investigation and management of accelerated hypertension Valvular Heart Disease

Endocarditis Aortic dissection Syncope Dyslipidaemia

Clinical Science:

Physiological principles of cardiac cycle and cardiac conduction

Pharmacology of major drug classes: beta blockers, alpha blockers, ACE inhibitors, Angiotensin receptor blockers (ARBs), anti-platelet agents, thrombolysis, inotropes, calcium channel antagonists, potassium channel activators, diuretics, anti-arrhythmics, anticoagulants, lipid modifying drugs, nitrates, centrally acting anti-hypertensives

2. **Dermatology;**

Common and / or Important Problems:

Cellulitis

Cutaneous drug reactions Psoriasis and eczema

Skin failure: eg erthryoderma, toxic epidermal necrolysis Urticaria and angio-oedema

Cutaneous vasculitis

Herpes zoster and Herpes Simplex infections Skin tumours

Skin infestations Dermatomyositis Scleroderma Lymphoedema

Clinical Science:

Pharmacology of major drug classes: topical steroids, immunosuppressants

3. **Diabetes & Endocrine Medicine**

Common and / or Important Diabetes Problems:

Diabetic ketoacidosis

Non-acidotic hyperosmolar coma / severe hyperglycaemia Hypoglycaemia

Care of the acutely ill diabetic Peri-operative diabetes care

Common or Important Endocrine Problems:

Hyper/Hypocalcaemia Adrenocortical insufficiency Hyper/Hyponatraemia Thyroid dysfunction Dyslipidaemia

Endocrine emergencies: myxoedemic coma, thyrotoxic crisis, Addisonian crisis, hypopituitary coma, phaeochromocytoma crisis

Clinical Science:

Outline the function, receptors, action, secondary messengers and feedback of

hormones
Pharmacology of major drug classes: insulin, oral anti-diabetics, thyroxine, anti-thyroid drugs, corticosteroids, sex hormones, drugs affecting bone metabolism

4. Gastroenterology and Hepatology

Common or Important Problems: Peptic Ulceration and Gastritis Gastroenteritis
GI malignancy (oesophagus, gastric, hepatic, pancreatic, colonic) Inflammatory bowel disease
Iron Deficiency anaemia Acute GI bleeding
Acute abdominal pathologies: pancreatitis, cholecystitis, appendicitis, leaking abdominal aortic aneurysm Functional disease: irritable bowel syndrome, non-ulcer dyspepsia
Coeliac disease Alcoholic liver disease
Alcohol withdrawal syndrome
Acute liver dysfunction: jaundice, ascites, encephalopathy Liver cirrhosis
Gastro-oesophageal reflux disease
Nutrition: indications, contraindications and ethical dilemmas of nasogastric feeding and EG tubes, IV nutrition, re-feeding syndrome Gall stones
Viral hepatitis
Auto-immune liver disease Pancreatic cancer

Clinical Science:
Laboratory markers of liver, pancreas and gut dysfunction
Pharmacology of major drug classes: acid suppressants, anti-spasmodics, laxatives, anti-diarrhoea drugs, aminosalicylates, corticosteroids, immunosuppressants, infliximab, pancreatic enzyme supplements

5. Renal Medicine;

Common and / or Important Problems:
Acute renal failure Chronic renal failure Glomerulonephritis Nephrotic syndrome
Urinary tract infections Urinary Calculus
Renal replacement therapy
Disturbances of potassium, acid/base, and fluid balance (and appropriate acute interventions)

Clinical Science:
Measurement of renal function
Metabolic perturbations of acute, chronic, and end-stage renal failure and associated treatments

6. Respiratory Medicine

Common and / or Important Respiratory Problems:
COPD
Asthma Pneumonia
Pleural disease: Pneumothorax, pleural effusion, mesothelioma Lung Cancer
Respiratory failure and methods of respiratory support Pulmonary embolism and

DVT
Tuberculosis Interstitial lung disease Bronchiectasis
Respiratory failure and cor-pulmonale Pulmonary hypertension

Clinical Science:
Principles of lung function measurement
Pharmacology of major drug classes: bronchodilators, inhaled corticosteroids, leukotriene receptor antagonists, immunosuppressants

7. **Allergy**

Common or Important Allergy Problems
Anaphylaxis
Recognition of common allergies; introducing occupation associated allergies
Food, drug, latex, insect venom allergies
Urticaria and angioedema

Clinical Science
Mechanisms of allergic sensitization: primary and secondary prophylaxis Natural history of allergic diseases
Mechanisms of action of anti-allergic drugs and immunotherapy Principles and limitations of allergen avoidance

8. **Haematology**

Common and / or Important Problems:
Bone marrow failure: causes and complications Bleeding disorders: DIC, haemophilia Thrombocytopaenia
Anticoagulation treatment: indications, monitoring, management of over-treatment Transfusion reactions
Anaemia: iron deficient, megaloblastic, haemolysis, sickle cell, Thrombophilia: classification; indications and implications of screening Haemolytic disease
Myelodysplastic syndromes Leukaemia
Lymphoma Myeloma
Myeloproliferative disease
Inherited disorders of haemoglobin (sickle cell disease, thalassaemias) Amyloid

Clinical Science:
Structure and function of blood, reticuloendothelial system, erythropoietic tissues

9. **Immunology**

Common or Important Problems:
Anaphylaxis (see also 'Allergy')
Clinical Science:
Innate and adaptive immune responses
Principles of Hypersensitivity and transplantation

10. Infectious Diseases

Common and / or Important Problems:

Fever of Unknown origin
Complications of sepsis: shock, DIC, ARDS
Common community acquired infection: LRTI, UTI, skin and soft tissue infections, viral exanthema, gastroenteritis CNS infection: meningitis, encephalitis, brain abscess
HIV and AIDS including ethical considerations of testing Infections in immuno-compromised host
Tuberculosis
Anti-microbial drug monitoring Endocarditis
Common genito-urinary conditions: non-gonococcal urethritis, gonorrhoea, syphilis

Clinical Science:

Principles of vaccination
Pharmacology of major drug classes: penicillins, cephalosporins, tetracyclines, aminoglycosides, macrolides, sulphonamides, quinolones, metronidazole, anti-tuberculous drugs, anti-fungals, anti-malarials, anti-helminthics, anti-virals

11. Medicine in the Elderly

Common or Important Problems: Deterioration in mobility Acute confusion
Stroke and transient ischaemic attack Falls
Age related pharmacology Hypothermia
Continence problems Dementia
Movement disorders including Parkinson's disease
Depression in the elderly Osteoporosis Malnutrition Osteoarthritis

Clinical Science:

Effects of ageing on the major organ systems Normal laboratory values in older people

12. Musculoskeletal System

Common or Important Problems:

Septic arthritis Rheumatoid arthritis Osteoarthritis Seronegative arthritides
Crystal arthropathy
Osteoporosis – risk factors, and primary and secondary prevention of complications of osteoporosis Polymyalgia and temporal arteritis
Acute connective tissue disease: systemic lupus erythematosus, scleroderma, poly- and dermatomyositis, Sjogren's syndrome, vasculitides

Clinical Science:

Pharmacology of major drug classes: NSAIDS, corticosteroids, immunosuppressants, colchicines, allopurinol, bisphosphonates

13. Psychiatry

Common and /or Important Problems:

Suicide and parasuicide Acute psychosis Substance dependence Depression

Clinical Science:
Principles of substance addiction, and tolerance
Pharmacology of major drug classes: anti-psychotics, lithium, tricyclic antidepressants, mono-amine oxidase inhibitors, SSRIs, venlafaxine, donepezil, drugs used in treatment of addiction (bupropion, disulpharam, acamprosate, methadone)

14. Cancer and Palliative Care

Common or Important Oncology Problems:
Hypercalcaemia SVC obstruction
Spinal cord compression Neutropenic sepsis
Common cancers (presentation, diagnosis, staging, treatment principles): lung, bowel, breast, prostate, stomach, oesophagus, bladder)
Common or Important Palliative Care Problems:
Pain: appropriate use, analgesic ladder, side effects, role of radiotherapy
Constipation
Breathlessness Nausea and vomiting
Anxiety and depressed mood

Clinical Science:
Principles of oncogenesis and metastatic spread Apoptosis
Principles of staging Principles of screening
Pharmacology of major drug classes in palliative care: anti-emetics, opioids, NSAIDS, agents for neuropathic pain, bisphosphonates, laxatives, anxiolytics

15. Clinical Genetics

Common and / or Important problems:
Down's syndrome Turner's syndrome Huntington's disease Haemochromatosis
Marfan's syndrome Klinefelter's syndrome Familial cancer syndromes
Familial cardiovascular disorders

Clinical Science:
Structure and function of human cells, chromosomes, DNA, RNA and cellular proteins Principles of inheritance: Mendelian, sex-linked, mitochondrial
Principles of pharmacogenetics
Principles of mutation, polymorphism, trinucleotide repeat disorders
Principles of genetic testing including metabolite assays, clinical examination and analysis of nucleic acid (e.g. PCR)

16. Clinical Pharmacology

Common and / or Important problems:
Corticosteroid treatment: short and long-term complications, bone protection, safe withdrawal of corticosteroids, patient counselling regarding avoid adrenal crises

Specific treatment of poisoning with:

Aspirin, Paracetamol
Tricyclic anti-depressants Beta-blockers
Carbon monoxide Opiates
Digoxin
Benzodiazepines

Clinical Science:
Drug actions at receptor and intracellular level
Principles of absorption, distribution, metabolism and excretion of drugs Effects of genetics on drug metabolism
Pharmacological principles of drug interaction
Outline the effects on drug metabolism of: pregnancy, age, renal and liver impairment

Investigation Competencies
Outline the Indications for, and Interpret the Following Investigations:
Basic blood biochemistry: urea and electrolytes, liver function tests, bone biochemistry, glucose, magnesium Cardiac biomarkers and cardiac-specific troponin
Creatine kinase Thyroid function tests
Inflammatory markers: CRP / ESR Arterial Blood Gas analysis Cortisol and short Synacthen test HbA1C
Lipid profile Amylase
Full blood count
Coagulation studies Haemolysis studies D dimer
Blood film report
Blood / Sputum / urine culture
Fluid analysis: pleural, cerebro-spinal fluid, ascitic
Urinalysis and urine microscopy Auto-antibodies
Chest radiograph Abdominal radiograph
Joint radiographs (knee, hip, hands, shoulder, elbow, dorsal spine, ankle) ECG
Peak flow tests
Full lung function tests

More Advanced Competencies;
Ultrasound
Detailed imaging: CT Neuroangiography, high resolution CT, MRI Echocardiogram
24 hour ECG monitoring
Ambulatory blood pressure monitoring
Neurophysiological studies: EMG, nerve conduction studies, visual and auditory evoked potentials

Procedural Competencies

The trainee is expected to be competent in performing the following procedures by the end of core training. The trainee must be able to outline the indications for these interventions. For invasive procedures, the trainee must recognize the indications for the procedure, the importance of valid consent, aseptic technique, safe use of local anaesthetics and minimization of patient discomfort.

Venepuncture

Cannula insertion, including large bore Arterial blood gas sampling

Lumbar Puncture

Pleural tap and aspiration Central venous cannulation

Initial airway protection: chin lift, Guedel airway, nasal airway, laryngeal mask

Basic and, subsequently, advanced cardiorespiratory resuscitation Cytology: pleural fluid, ascitic fluid, cerebro-spinal fluid, sputum Urethral catheterization

Nasogastric tube placement and checking

7.2 ROTATION LOG OF GENERAL SURGERY:

History of surgery

Preparing a patient for surgery

Principles of operative surgery: asepsis, sterilization and antiseptics Surgical infections and antibiotics

Basic principles of anaesthesia and pain management Acute life support and critical care:

Pathophysiology and management of shock

Fluids and electrolyte balance/ acid base metabolism Haemostasis, blood transfusion

Trauma: assessment of polytrauma, triage, basic and advanced trauma Accident and emergency surgery

Wound healing and wound management Nutrition and metabolism

Principles of burn management Principles of surgical oncology Principles of laparoscopy and endoscopy Organ transplantation

Informed consent and medicolegal issues Molecular biology and genetics

Operative procedures for common surgical manifestations e.g cysts, sinuses, fistula, abscess, nodules, basic plastic and reconstructive surgery Principles of basic diagnostic and interventional radiography

Principles and interpretation of conventional and advanced radiographic procedures

Common Surgical Skills

Incision of skin and subcutaneous tissue:

- Langer's lines
- Healing mechanism
- Choice of instrument
- Safe practice

Closure of skin and subcutaneous tissue:

- Options for closure
- Suture and needle choice
- Safe practice

Knot tying:

- Choice of material
- Single handed
- Double handed
- Superficial
- Deep

Tissue retraction:

- Choice of instruments
- Placement of wound retractors
- Tissue forceps

Use of drains:

- Indications
- Types
- Insertion
- Fixation
- Management/removal

Incision of skin and subcutaneous tissue:

- Ability to use scalpel, diathermy and scissors

Closure of skin and subcutaneous tissue:

- Accurate and tension free apposition of wound edges

Haemostasis:

- Control of bleeding vessel (superficial)
- Diathermy
- Suture ligation
- Tie ligation
- Clip application
- Plan investigations
- Clinical decision making
- Case work up and evaluation; risk management

Pre-operative assessment and management:

- Cardiorespiratory physiology
- Diabetes mellitus
- Renal failure
- Pathophysiology of blood loss

- Pathophysiology of sepsis
- Risk factors for surgery
- Principles of day surgery
- Management of comorbidity

Intraoperative care:

- Safety in theatre
- Sharps safety
- Diathermy, laser use
- Infection risks
- Radiation use and risks
- Tourniquets
- Principles of local, regional and general anaesthesia

Post-operative care:

- Monitoring of postoperative patient
- Postoperative analgesia
- Fluid and electrolyte management
- Detection of impending organ failure
- Initial management of organ failure
- Complications specific to particular operation
- Critical care

Blood products:

- Components of blood
- Alternatives to use of blood products

- Management of the complications of blood product transfusion including children

Antibiotics:

- Common pathogens in surgical patients
- Antibiotic sensitivities
- Antibiotic side-effects
- Principles of prophylaxis and treatment

Safely assess the multiply injured patient:

- History and examination
- Investigation
- Resuscitation and early management
- Referral to appropriate surgical subspecialties

Technical Skills

- Central venous line insertion
- Chest drain insertion

- Diagnostic peritoneal lavage
- Bleeding diathesis & corrective measures, e.g. warming, packing
- Clotting mechanism; Effect of surgery and trauma on coagulation
- Tests for thrombophilia and other disorders of coagulation
- Methods of investigation for suspected thromboembolic disease
- Anticoagulation, heparin and warfarin
- Role of V/Q scanning, CT angiography and thrombolysis
- Place of pulmonary embolectomy
- Awareness of symptoms and signs associated with pulmonary embolism and DVT
- Role of duplex scanning, venography and d-dimer measurement
- Initiate and monitor treatment

Diagnosis and Management of Common Surgical Conditions: Abdominal pain
Vomiting Trauma
Groin conditions

- Hernia
- Hydrocoele
- Penile inflammatory conditions
- Undescended testis
- Acute scrotum

Abdominal wall pathologies Urological conditions Constipation
Head / neck swellings Intussusception Abscess
In growing toenail

In terms of general experience it is expected that trainees would have gained exposure to the following procedures and to be able to perform those marked (*) under direct supervision.
Elective Procedures Inguinal hernia
(not neo-natal) Orchidopexy Circumcision* Lymph node biopsy*
Abdominal wall herniae Insertion of CV lines
Management of in growing toenails* EUA rectum*
Manual evacuation* Open rectal biopsy Excision of skin lesions* Emergency Procedures Appendicectomy
Incision and drainage of abscess* Pyloromyotomy
Operation for testicular torsion* Insertion of pleural drain* Insertion of suprapubic catheter* Reduction of intussusception

7.3 ROTATION LOG OF NUCLEAR RADIOLOGY:

- Secure knowledge of the relevant aspects of current legislation regarding the administration of radiopharmaceuticals.
- Knowledge of the technical aspects of radionuclide radiology relevant to optimizing image quality.
- Knowledge of the radiopharmaceuticals currently available for the purposes of imaging organs and locating inflammatory collections, tumours and sites of

hemorrhage.

- Knowledge of the relevant patient preparation, precautions (including drug effects), and complications of the more commonly performed radionuclide investigations.
- Knowledge and understanding of the principles and indications of the more commonly performed radionuclide investigations and how these relate to other imaging modalities, in particular knowledge of the radionuclide investigations in the following topic areas:
  - Cardiology, - endocrinology, - gastroenterology and hepato- biliary disease, . - haematology, - infections , - lung disease, - Nephro-urology, - nervous system, - oncology, - pediatrics, - skeletal disorders , understating the significance of significance of normal and abnormal results.
- Knowledge of the strengths and weaknesses of radionuclide investigations compared to other imaging modalities.
- Experience in supervision and reporting of radionuclide investigations
- Familiarity with the practical application of PET imaging
  NB: ideally the training in radionuclide radiology should take place during a radionuclide imaging attachment, but it may occur in part or wholly during a system – based attachment.

7.4 ROTATION LOG OF INTERVENTIONAL RADIOLOGY:

- Knowledge of vascular anatomy and clinical practice relevant to clinical radiology.
- Familiarity with the indications, contraindications, pre- procedure preparation (including informed consent), sedation and anesthetic regimes, patient monitoring during procedures and post – procedure patient care.
- Familiarity with procedure and post – procedure complications and their management.
- Familiarity with appropriate applications of the following techniques:
  - Intravenous digital subtraction angiography
  - Intra-arterial angiography
  - Computed tomography and C.T. angiography
  - Magnetic resonance imaging and MR angiography
- Femoral artery puncture techniques, and the introduction of guide wires and catheters into the arterial system.
- Venous puncture techniques both central and peripheral and the introduction of guide wires and catheters into the venous system.
- Performing and reporting the following procedures:
  -lower limb angiography
  - arch aortography
  - abdominal aortography
  - lower limb venography (contrast or ultrasound)
- Performing the following techniques:
  - Intravenous digital subtraction angiography

- Selective angiography (e.g. hepatic, renal, visceral)
- Pulmonary angiography
- Alternative arterial access (eg brachial , axillary puncture)
- Upper limb venography
- Portal venography
- Pelvic venography via femoral approach
- Superior vena cavography
- Inferior vena cavography
- femoral angiography , iliac angiography, renal angiography , embolisation , thrombolysis, stenting, caval filter insertion.

7.4/ 7.5 ROTATION LOG OF MRI AND NEURORADIOLOGY:

These have been described in section 5 above

SECTION 8:

RESEARCH THESIS:

During course on Research Methodology and Biostatistics held, the candidate is expected to develop synopsis of Research.

EVALUATION & ACCEPTANCE OF SYNOPSIS/THESIS:

- The candidate will submit his/her thesis at least 06 months prior to completion of training.
- The Thesis along with certificate of approval from the supervisor will be submitted to the Registrar's office that would record the date / time etc and get it received from the controller of Examination within 05 working days of receiving.
- The Controller of Examination will ensure that Thesis is complete in every respect
- The Controller of Examination will submit a panel of eight examiners within 07 days for selection of four examiners by the Vice Chancellor. The Vice Chancellor

shall return the final panel within 05 working days to the controller of examination for processing and assessment. In case of any delay the controller of examination would bring the case personally to the Vice Chancellor.

- ❖ The controller of examination will make sure that the Thesis is submitted to examiners in appropriate fashion and reminder is sent after every ten days.
- ❖ The thesis will be evaluated the examiners within a period of 06 weeks.
- ❖ In case the examiners fail to complete the task within 06 weeks with 02 fortnightly reminders by the controller of Examination, the controller of examination will bring it to the notice of Vice Chancellor in person.
- ❖ In case of difficulty in finding, an internal examiner for thesis evaluation, the Vice Chancellor would, in consultation with the concerned Deans, appoint any relevant person as examiner.
- ❖ There will be two internal and two external examiners. In case of difficulty in finding examiners, the Vice Chancellor would, in consultation with the concerned Deans, appoint minimum of three, one internal and two external examiners.
- ❖ The total marks of thesis evaluation will be 400 and 75% marks will be required to pass the evaluation
- ❖ The Thesis will be considered accepted if the cumulative score of all the examiners is 75%
- ❖ The clinical training will end at completion of stipulated training period but the candidate will become eligible to appear in the Final Examination at completion of clinical training and after acceptance of thesis. In case clinical training ends earlier, the slot will fall vacant after stipulated training period.

GUIDELINES FOR PREPARATION OF SYNOPSIS:

The applicants should organize thesis synopsis to address the following points:

A	Title	
B	Introduction	Should clearly manifest why the present work is undertaken.
C	Literature review	Place the project in academic context by referring to the major work by others on the topic.
D	Objectives	Define clearly the aims of the research proposal.
E	Significance	Explain the significance of the proposal for the field

		and the country
F	Plan	Give year wise tentative plan of the work.
G	Methodology	Explain the approach and methods he/she will follow.
H	Bibliography	Upto date references.

- It is the responsibility of the candidate through his /her supervisor to get his synopsis approved from AS & RB within **02 years** from the date of admission into training program. In case of failure in getting the synopsis approved within this time period an additional grace period of **30 days** may be granted at the discretion of the V.C. If the candidate still fails to get his synopsis approved he/she would stand ineligible to appear in the intermediate Examination and will be excluded from the training in the chosen program. His stipend/scholarship if any will be stopped and the post shall fall vacant . Any difficulty faced by the candidate for completed submission of synopsis must be brought the notice of the registrar for remediation before completion of **18 months** from the time of induction.

- After the intermediate examination the candidate will initiate research project immediately after approval of synopsis.

GUIDELINES FOR THESIS FORMAT

The thesis must bound in accordance with the following specifications:-

- Quarts approximately 10 inches, except for drawings and maps on which no restriction is placed. A margin of 1.5 inches to be left on left hand side. Cloth bound in standard size. Lettered boldly up back in gold (1 inch letters)
- The front should bear the title, name of the candidate and the insignia of the University.

CHARACTERISTICS OF THE RESEARCH TOPIC:

The research topic in clinical subjects should address 20% to the related applied Basic Sciences and in Basic Sciences should address 80% to the related applied clinical sciences. The research topic must consist of a reasonable sample size and sufficient No. of Variables to give training to the candidate to conduct research to acquire data, analyze data and reach results, disease results and draw conclusions and thus test the hypothesis.

PREPARATION OF SYNOPSIS:

The applicants should organize thesis synopsis to address the guidelines mentioned in the University manual.

SUBMISSION OF THESIS:

- Four (4) copies of the Thesis must be submitted at least 6-months before the commencement of the written and oral examination
- The minimum duration between approval of synopsis of research and submission of thesis should be 2 years, the maximum duration will be 07 years.
- The Thesis will be submitted along with evaluation fee through Bank Challan form in the account of the Medical University. Application for Thesis Evaluation recommended by the Supervisor

SECTION 9

6 CORE COMPETENCIES OF CURRICULUM

The Core competencies and Milestones of the Curriculum are provided here to have clear concepts about the competencies and to provide knowledge for all inpatient and outpatient rotations. Program requirements are based on the **ACGME(Accreditation Council for Graduate Medical Education)** standards for categorical training. Curriculum is based on 6 core competencies.

Detail of these competencies is as follows

COMPETENCY NO. 1

PATIENT CARE (PC)

- Carrying out doctor's prescriptions
- Applying ethical guidelines
- Adequately informing the patient
- Guiding and educating the patient
- Empowering the patient by involving him/her in the examination and treatment
- Guiding the patient's relatives
- Encouraging and supporting the patient
- Protecting the patient's integrity
- Alleviating the patient's anxiety
- Judging the risk of leaving the patient unattended
- Observing and monitoring the patient
- Identifying and encountering the patient in a state of shock
- Identifying pain and pain reactions
- Participating in quality improvement regarding patient safety and care
- Organizing and planning taking account of the clinical situation
- Responsibility for preparing the medico-technical equipment
- Independently planning and preparing work on the basis of existing documentation
- Prioritizing patients in the work flow
- Adapting the examination to the patient's prerequisites and needs
- Minimizing radiation doses for patient and staff
- Producing accurate and correct images
- Evaluating the quality of the medical image in relation to the referral and the question stated therein

- Optimizing the quality of the image

COMPETENCY NO 2

MEDICAL KNOWLEDGE(MK)

Clinical knowledge

- Possesses sufficient scientific, socioeconomic and behavioral knowledge required to provide care for common medical conditions.
- Possesses the scientific, socioeconomic and behavioral knowledge required to provide care for complex medical conditions.
- Possesses the scientific, socioeconomic and behavioral knowledge required to successfully diagnose medically uncommon, ambiguous and complex conditions.
- Consistently interprets basic diagnostic tests accurately
- Does not need assistance to understand the concepts of pre-test probability and test performance Characteristics
- Fully understands the rationale and risks associated with common procedures
- Interprets complex diagnostic tests accurately
- Teaches the rationale and risks associated with common procedures and anticipates potential complications when performing procedures
- Anticipates and accounts for pitfalls and biases when interpreting diagnostic tests and procedures

How to Teach

- Books etc
- Articles
- CPC(Clinic Pathological Conference)
- Lecture
- Videos
- SDL(Self Directed Learning)
- PBL(Problem Based Learning)

How To Assess

- MCQs
- SEQs
- Viva
- Videos
- Internal assessment

COMPETENCY NO. 3

SYSTEM BASED PRACTICE(SBP)

Works effectively within an interprofessional team (e.g. peers,

consultants, nursing, Ancillary professionals and other support personnel). (SBP1).

- Recognizes the contributions of other inter professional team members
- Does not frustrates team members with inefficiency and errors
- Identifies roles of other team members and recognize how/when to utilize them as resources.
- Does not requires frequent reminders from team to complete physician responsibilities (e.g. talk to family, enter orders)
- Understands the roles and responsibilities of all team members and uses them effectively
- Participates in team discussions when required and actively seek input from other team members
- Understands the roles and responsibilities of and effectively partners with, all members of the team
- Actively engages in team meetings and collaborative decision-making
- Integrates all members of the team into the care of patients, such that each is able to maximize their skills in the care of the patient
- Efficiently coordinates activities of other team members to optimize care
- Viewed by other team members as a leader in the delivery of high quality care

- **Recognizes system error and advocates for system improvement. (SBP2)**

Does not ignore a risk for error within the system that may impact the care of a patient. Does not make decisions that could lead to error which are otherwise corrected by the system or supervision. Does not resist to feedback about decisions that may lead to error or otherwise cause harm.

Recognizes the potential for error within the system.

Identifies obvious or critical causes of error and notifies supervisor accordingly.

Recognizes the potential risk for error in the immediate system and takes necessary steps to mitigate that risk. Willing to receive feedback about decisions that may lead to error or otherwise cause harm.

Identifies systemic causes of medical error and navigates them to provide safe patient care. Advocates for safe patient care and optimal patient care systems

Activates formal system resources to investigate and mitigate real or potential medical error. Reflects upon and learns from own critical incidents that may lead to medical error.

Advocates for system leadership to formally engage

in quality assurance and quality improvement activities. Viewed as a leader in identifying and advocating for the prevention of medical error.

Teaches others regarding the importance of recognizing and mitigating system error.

Identifies forces that impact the cost of health care, and advocates for, and practices cost-effective care. (SBP3).

- Does not ignores cost issues in the provision of care
- Demonstrates effort to overcome barriers to cost- effective care
- Has full awareness of external factors (e.g. socio- economic, cultural, literacy, insurance status) that impact the cost of health care and the role that external stakeholders (e.g. providers, suppliers, financers, purchasers) have on the cost of care
- Consider limited health care resources when ordering diagnostic or therapeutic interventions
- Recognizes that external factors influence a patient's utilization of health care and Does not act as barriers to cost- effective care Minimizes unnecessary diagnostic and therapeutic tests
- Possesses an incomplete understanding of cost- awareness principles for a population of patients (e.g. screening tests)
- Consistently works to address patient specific barriers to cost-effective care
- Advocates for cost-conscious utilization of resources (i.e. emergency department visits, hospital readmissions)
- Incorporates cost-awareness principles into standard clinical judgments and decision-making, including screening tests
- Teaches patients and healthcare team members to recognize and address common barriers to cost- effective care and appropriate utilization of resources
- Actively participates in initiatives and care delivery models designed to overcome or mitigate barriers to cost-effective high quality care.

How to teach:

- Lecture/ orientation session
- Various system/policies should be identified and discussed with the residents.
- Examples: Zakaat
- Admission procedure Bait-ul-Mall Consultation procedure
- Preferably a manual should be designed regarding various systems existing in the Hospital
- for the resident.
- Cost effectiveness/availability of medicine
- Avoidance of unnecessary tests because of limited health resources. Feed back
- Assessment during case discussion

COMPETENCY NO. 4

PRACTICE BASED LEARNING (PBL)

Monitors practice with a goal for improvement. (PBLI)

- Willing to self-reflect upon one's practice or performance
- Concerned with opportunities for learning and self-improvement
- Unable to self-reflect upon one's practice or performance
- Avails opportunities for learning and self-improvement
- Consistently acts upon opportunities for learning and self-improvement
- Regularly self-reflects upon one's practice or performance and consistently acts upon those reflections to improve practice
- Recognizes sub-optimal practice or performance as an opportunity for learning and self-improvement
- Regularly self-reflects and seeks external validation regarding this reflection to maximize practice improvement
- Actively engages in self- improvement efforts and reflects upon the experience

Learns and improves via performance audit. (PBL2)

- Regards own clinical performance data
- Demonstrates inclination to participate in or even consider the results of quality improvement efforts
- Adequate awareness of or desire to analyze own clinical performance data
- Participates in a quality improvement projects
- Familiar with the principles, techniques or importance of quality improvement
- Analyzes own clinical performance data and identifies opportunities for improvement
- Effectively participates in a quality improvement project
- Understands common principles and techniques of quality improvement and appreciates the responsibility to assess and improve care for a panel of patients Analyzes own clinical performance data and actively works to improve performance
- Actively engages in quality improvement initiatives
- Demonstrates the ability to apply common principles and techniques of quality improvement to improve care for a panel of patients
- Actively monitors clinical performance through various data sources
- Is able to lead a quality improvement project
- Utilizes common principles and techniques of quality improvement to continuously improve care for a panel of patients

Learns and improves via feedback. (PBL3)

- Does not resists feedback from others
- Often seeks feedback

- Never responds to unsolicited feedback in a defensive fashion
- Temporarily or superficially adjusts performance based on feedback
- Does not solicits feedback only from supervisors
- Is open to unsolicited feedback
- Solicits feedback from all members of the inter professional team and patients
- Consistently incorporates feedback
- Performance continuously reflects incorporation of solicited and unsolicited feedback
- Able to reconcile disparate or conflicting feedback

Learns and improves at the point of care. (PBL4)

- Acknowledges uncertainly and does not revert to reflexive patterned response when inaccurate
- Seeks or applies evidence when necessary
- Familiar with strengths and weaknesses of the medical literature
- Has adequate awareness of or ability to use information technology
- Does not accepts the findings of clinical research studies without critical appraisal Can translate medical information needs into well-formed clinical questions independently
- Aware of the strengths and weaknesses of medical information resources and utilizes information technology with sophistication
- Appraises clinical research reports, based on accepted criteria
- Does not "slows down" to reconsider an approach to a problem, ask for help, or seek new information
- Routinely translates new medical information needs into well-formed clinical questions
- Utilizes information technology with sophistication
- Independently appraises clinical research reports based on accepted criteria
- Searches medical information resources efficiently, guided by the characteristics of clinical questions
- Role models how to appraise clinical research reports based on accepted criteria
- Has a systematic approach to track and pursue emerging clinical question

Practice Based Learning (PBL1, PBL2, PBL3, PBL4)

How to Teach

- Discussions about problem cases
- Should discuss errors and omissions

How to Assess

- Feed back
- 360 evaluation
- Research article presentation

- Journal club presentation
- CPC presentation
- Ward presentation
- Quality improvement of projects

COMPETENCY NO. 5

PROFESSIONALISM (PROF 1)

- Has professional and respectful interactions with patients, caregivers and members of the inter professional team (e.g. peers, consultants, nursing, ancillary professionals and support personnel). (PROF1)
- Consistently respectful in interactions with patients, caregivers and members of the inter professional team, even in challenging situations
- Is available and responsive to needs and concerns of patients, caregivers and members of the inter professional team to ensure safe and effective care Emphasizes patient privacy and autonomy in all interactions
- Demonstrates empathy, compassion and respect to patients and caregivers in all situations
- Anticipates, advocates for, and proactively works to meet the needs of patients and caregivers
- Demonstrates a responsiveness to patient needs that supersedes self-interest
- Positively acknowledges input of members of the inter professional team and incorporates that input into plan of care as appropriate
- Role models compassion, empathy and respect for patients and caregivers
- Role models appropriate anticipation and advocacy for patient and caregiver needs
- Fosters collegiality that promotes a high-functioning inter professional team

Teaches others regarding maintaining patient privacy and respecting patient autonomy Accepts responsibility and follows through on tasks. (PROF2)

- Demonstrates responsibilities expected of a physician professional
- Accepts professional responsibility even when not assigned or not mandatory
- Completes administrative and patient care tasks in a timely manner in accordance with local practice and/or policy
- Completes assigned professional responsibilities without questioning or the need for reminders
- Prioritizes multiple competing demands in order to complete tasks and responsibilities in a timely and effective manner
- Willingness to assume professional responsibility regardless of the situation
- Role models prioritizing multiple competing demands in order to complete tasks and responsibilities in a timely and effective manner
- Assists others to improve their ability to prioritize multiple, competing tasks

Responds to each patient's unique characteristics and needs. (PROF3)

- Willing to modify care plan to account for a patient's unique characteristics and needs
- Is sensitive to and has basic awareness of differences

related to culture, ethnicity, gender, race, age and religion in the patient/caregiver encounter
- Seeks to fully understand each patient's unique characteristics and needs based upon culture, ethnicity, gender, religion, and personal preference
- Modifies care plan to account for a patient's unique characteristics and needs with complete success
- Recognizes and accounts for the unique characteristics and needs of the patient/ caregiver
- Appropriately modifies care plan to account for a patient's unique characteristics and needs
- Role models professional interactions to negotiate differences related to a patient's unique characteristics or needs
- Role models consistent respect for patient's unique characteristics and needs

- **Exhibits integrity and ethical behavior in professional conduct. (PROF4)**
- Has a basic understanding of ethical principles, formal policies and procedures, and does not intentionally disregard them
- Honest and forthright in clinical interactions, documentation, research, and scholarly activity
- Demonstrates accountability for the care of patients
- Adheres to ethical principles for documentation, follows formal policies and procedures, acknowledges and limits conflict of interest, and upholds ethical expectations of research and scholarly activity
- Demonstrates integrity, honesty, and accountability to patients, society and the profession
- Actively manages challenging ethical dilemmas and conflicts of interest
- Identifies and responds appropriately to lapses of professional conduct among peer group
- Assists others in adhering to ethical principles and behaviors including integrity, honesty, and professional responsibility
- Role models integrity, honesty, accountability and professional conduct in all aspects of professional life
- Regularly reflects on personal professional conduct

Professionalism (PROF1, PROF2, PROF3 AND PROF4) How To Teach

- Should be taught during reporting sessions and hands on training
- By supervisor
- Through workshop

How To Assess

- Punctuality
- Behavior
- Direct observation during reporting
- Feed back
- 360 degree evaluation

COMPETENCY No. 6

INTERPERSONAL AND COMMUNICATION SKILL (ICS)

- Communicates effectively with patients and care givers. ICS1
- Does not ignore patients preferences for plan of care
- Makes attempts to engage patient in shared decision making
- Does not engages in antagonistic or counter-therapeutic relationships with patients and
- caregivers
- Engages patients in discussions of care plans and respects patient preferences when offered by the patient, and also actively solicit preferences.
- Attempts to develop therapeutic relationships with patients and caregivers which is often successful
- Defers difficult or ambiguous conversations to others
- Engages patients in shared decision making in uncomplicated conversations
- Requires assistance facilitating discussions in difficult or ambiguous conversations
- Requires guidance or assistance to engage in communication with persons of different socioeconomic and cultural backgrounds
- Identifies and incorporates patient preference in shared decision making across a wide variety
- of patient care conversations
- Quickly establishes a therapeutic relationship with patients and caregivers, including persons of different socioeconomic and cultural backgrounds
- Incorporates patient-specific preferences into plan of care
- Role models effective communication and development of therapeutic relationships in both routine and challenging situations
- Models cross-cultural communication and establishes therapeutic relationships with persons of diverse socioeconomic backgrounds

Communicates effectively in inter professional teams (e.g. peers, consultants, nursing, ancillary professionals and other support personnel). (ICS2)

- Does not uses unidirectional communication that fails to utilize the wisdom of the team
- Does not resists offers of collaborative input
- Consistently and actively engages in collaborative communication with all members of the team
- Verbal, non-verbal and written communication consistently acts to facilitate collaboration with the team to enhance patient care
- Role models and teaches collaborative communication with the team to enhance patient care, even in challenging settings and with conflicting team member opinions

Appropriate utilization and completion of health records. (ICS3)

- Health records are organized and accurate and are not superficial and does not miss key data or fails to communicate clinical reasoning
- Health records are organized, accurate, comprehensive, and effectively communicate

clinical reasoning
- ❖ Health records are succinct, relevant, and patient specific
- ❖ Role models and teaches importance of organized, accurate and comprehensive health records that are succinct and patient specific

Interpersonal and Communication Skill (ISC1, ICS2 AND ICS3)

How to Teach
- ❖ Teaching through communication skills by supervisor
- ❖ Through workshop

How to assess
- ❖ Direct observation
- ❖ Feed back
- ❖ 360 degree evaluation
- ❖ History taking
- ❖ CPC presentation
- ❖ Journal club presentation
- ❖ Article presentation
- ❖ Consultation
- ❖ OPD working
- ❖ Counseling sessions
- ❖ OSPE
- ❖ VIVA

SECTION 10

METHODS OF TEACHING & LEARNING DURING COURSE CONDUCTION

1. **Reporting sessions:** All residents will have rotations in Radiography, MRI, CT, mammography, Floruoroscopy where respective reporting session will be conducted. The required knowledge and skills pertaining to respective areas shall be demonstrated. All residents will play an active role under supervision of respective fellow.
2. **Hands on training:** Hands on training shall be conducted for Ultrasounds, dopplers, guided aspirations, biopsy procedures, and fluoroscopies where residents shall have active participation to acquire the skills that shall play a significant role in their career ahead.
3. **Journal Club Meeting (JC):** A resident will be assigned to present, in depth, a research article or topic of his/her choice of actual or potential broad interest and/or application. Two hours per month should be allocated to discussion of any current articles or topics introduced by any participant. Faculty or outside researchers will be invited to present outlines or results of current research activities. The article should be critically evaluated and its applicable results

should be highlighted, which can be incorporated in clinical practice. Record of all such articles should be maintained in the relevant department

4. **Small Group Discussions/ Problem based learning/ Case based learning:** Traditionally small groups consist of 8-12 participants. Small groups can take on a variety of different tasks, including problem solving, role play, discussion, brainstorming, debate, workshops and presentations. Generally students prefer small group learning to other instructional methods. From the study of a problem students develop principles and rules and generalize their applicability to a variety of situations PBL is said to develop problem solving skills and an integrated body of knowledge. It is a student-centered approach to learning, in which students determine what and how they learn. Case studies help learners identify problems and solutions, compare options and decide how to handle a real situation.
5. **Discussion/Debate**: There are several types of discussion tasks which would be used as learning method for residents including: guided discussion, in which the facilitator poses a discussion question to the group and learners offer responses or questions to each other's contributions as a means of broadening the discussion's scope; inquiry-based discussion, in which learners are guided through a series of questions to discover some relationship or principle; exploratory discussion, in which learners examine their personal opinions, suppositions or assumptions and then visualize alternatives to these assumptions; and debate in which students argue opposing sides of a controversial topic. With thoughtful and well-designed discussion tasks, learners can practice critical inquiry and reflection, developing their individual thinking, considering alternatives and negotiating meaning with other discussants to arrive at a shared understanding of the issues at hand.
6. **Case Conference (CC)/ Morning Meetings:** These sessions are held once each week; the focus of the discussion is selected by the presenting resident. For example, some cases may be presented to discuss a differential diagnosis, while others are presented to share interesting cases.
7. **Clinico-pathological Conferences:** The clinico pathological conference, popularly known as CPC primarily relies on case method of teaching medicine. It is a teaching tool that illustrates the logical, measured consideration of a differential diagnosis used to evaluate patients. The process involves case presentation,

diagnostic data, discussion of differential diagnosis, logically narrowing the list to few selected probable diagnoses and eventually reaching a final diagnosis and its brief discussion. The idea was first practiced in Boston, back in 1900 by a Harvard internist, Dr. Richard

C. Cabot who practiced this as an informal discussion session in his private office. Dr. Cabot incepted this from a resident, who in turn had received the idea from a roommate, primarily a law student.

8. **Evidence Based Medicine (EBM):** Residents are presented a series of monthly lectures presented to allow residents to learn how to critically appraise journal articles, stay current on statistics, etc. The lectures are presented by the program director.
9. **Clinical Audit based learning:** "Clinical audit is a quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria…Where indicated, changes are implemented…and further monitoring is used to confirm improvement in healthcare delivery." Principles for Best Practice in Clinical Audit (2002, NICE/CHI)
10. **Peer Assisted Learning:** Any situation where people learn from, or with, others of a similar level of training, background or other shared characteristic. Provides opportunities to reinforce and revise their learning. Encourages responsibility and increased self-confidence. Develops teaching and verbalization skills. Enhances communication skills, and empathy. Develops appraisal skills (of self and others) including the ability to give and receive appropriate feedback. Enhance organizational and team-working skills.
11. **SEQ as assignments on the content areas:** SEQs assignments are given to the residents on regular basis to enhance their performance during written examinations.
12. **Directly Supervised Procedures - (DSP):** Residents learn procedures under the direct supervision of an attending or fellow during some rotations.

13. **Self-directed learning**

self-directed learning residents have primary responsibility for planning, implementing, and evaluating their effort. It is an adult learning technique that assumes that the learner knows best what their educational needs are. The facilitator's role in self- directed learning is to support learners in identifying their needs and goals for the program, to contribute to clarifying the learners' directions and objectives and to provide timely feedback. Self-directed learning can be highly motivating, especially if the learner is focusing on problems of the immediate present, a potential positive outcome is anticipated and obtained and they are not threatened by taking responsibility for their own learning.

14. **Core curriculum meeting:** All the core topics of Radiology should be thoroughly discussed during these sessions. The duration of each session should be at least two hours once a month. It should be chaired by the chief resident (elected by the residents of the relevant discipline). Each resident should be given an opportunity to brainstorm all topics included in the course and to generate new ideas regarding the improvement of the course structure.
15. **Annual Grand Meeting** Once a year all residents enrolled for MD Diagnostic Radiology should be invited to the annual meeting. One full day will be allocated to this event. All the chief residents from affiliated institutes will present their annual reports. Issues and concerns related to their relevant courses will be discussed. Feedback should be collected and suggestions should be sought in order to involve residents in decision making. The research work done by residents and their literary work may be displayed. In the evening an informal gathering and dinner can be arranged. This will help in creating a sense of belonging and ownership among students and the faculty.
16. **Learning through maintaining log book:** *it is* used to list the core clinical problems to be seen during the attachment and to document the student activity and learning achieved with each patient contact.
17. **Learning through maintaining portfolio:** Personal Reflection is one of the most important adult educational tools available. Many theorists have argued that without reflection, knowledge translation and thus genuine "deep" learning cannot occur. One of the Individual reflection tools maintaining portfolios, Personal Reflection allows students to take inventory of their current knowledge skills and attitudes, to integrate concepts from various experiences, to transform current

ideas and experiences into new knowledge and actions and to complete the experiential learning cycle.

18. **Community Based Medical Education:** CBME refers to medical education that is based outside a tertiary or large secondary level hospital. Learning in the fields of epidemiology, preventive health, public health principles, community development, and the social impact of illness and understanding how patients interact with the health care system. Also used for learning basic clinical skills, especially communication skills.
19. **Audio visual laboratory:** audio visual material for teaching skills to the residents is used specifically in teaching ultrasound and interventional procedure details.
20. **E-learning/web-based medical education/computer-assisted instruction;** Computer technologies, including the Internet, can support a wide range of learning activities from dissemination of lectures and materials, access to live or recorded presentations, real-time discussions, self-instruction modules and virtual patient simulations. distance-independence, flexible scheduling, the creation of reusable learning materials that are easily shared and updated, the ability to individualize instruction through adaptive instruction technologies and automated record keeping for assessment purposes.
21. **Research based learning:** All residents in the categorical program are required to complete an academic outcomes-based research project during their training. This project can consist of original bench top laboratory research, clinical research or a combination of both. The research work shall be compiled in the form of a thesis which is to be submitted for evaluation by each resident before end of the training. The designated Faculty will organize and mentor the residents through the process, as well as journal clubs to teach critical appraisal of the literature.

22. **Other teaching strategies specific for different specialties as mentioned in the relevant parts of the curriculum**

    Some of the other teaching strategies which are specific for certain domains of Diagnostic Radiology are given along with relevant modules.

SECTION 11

CHARTING THE ROAD TO COMPETENCE: DEVELOPMENTAL MILESTONES FOR MD DIAGNOSTIC RADIOLOGY PROGRAM AT MEDICAL UNIVERSITY

Remember to celebrate for the milestones as you prepare for the road ahead -----

Nelson Mandela.

High-quality assessment of resident performance is needed to guide individual residents' development and ensure their preparedness to provide patient care. To facilitate this aim, reporting milestones are now required across all diagnostic radiology residency programs. This document presents milestones designed for programs to use in semi-annual review of resident performance. Milestones are knowledge, skills, attitudes, and other attributes for each of the ACGME competencies organized in a developmental framework from less to more advanced. They are descriptors and targets for resident performance as a resident moves from entry into diagnostic radiology residency through graduation. In the initial years of implementation, the Review Committee will examine milestone performance data for each program's residents as one element in the Next Accreditation System (NAS) to determine whether residents overall are progressing. For each reporting period, review and reporting will involve selecting the level of milestones that best describes each resident's current performance level in relation to milestones. Milestones are arranged into numbered levels. Selection of a level implies that the resident substantially demonstrates the milestones in that level, as well as those in lower levels. A general interpretation of levels for diagnostic radiology is below:
Level 1: The resident demonstrates milestones expected
of one who has had some education in diagnostic
radiology. Level 2: The resident is advancing and
demonstrating additional milestones.
Level 3: The resident continues to advance and demonstrate additional milestones; the resident consistently demonstrates the majority of milestones targeted for residency.
Level 4: The resident has advanced so that he or she now substantially demonstrates the milestones targeted for residency. This level is designed as the graduation target.
Level 5: The resident has advanced beyond performance targets set for residency and is demonstrating "aspirational" goals which might describe the performance of someone who has been in practice for several years. It is expected that only a few exceptional residents will reach this level.

DIAGNOSTIC RADIOLOGY MILESTONES
ACGME REPORT WORKSHEET

Patient Care and Technical Skills (Residents must be able to meet previous year milestones when evaluated at a specific level)

PCTS1: Consultant					
Has not Achieved Level 1	Level 1	Level 2	Level 3	Level 4	Level 5
	Uses established evidence-based imaging guidelines such as American College of Radiology (ACR) Appropriateness Criteria® Appropriately uses the Electronic Health Record to obtain relevant clinical information	Recommends appropriate imaging of common* conditions independently *As defined by the residency program	Recommends appropriate imaging of uncommon* conditions independently *As defined by the residency program	Integrates current research and literature with guidelines, taking into consideration cost effectiveness and risk-benefit analysis, to recommend imaging	Participates in research, development, and implementation of imaging guidelines
☐	☐	☐	☐	☐	☐
Comments:					

Possible Methods of Assessment/Examples:

- 360 Evaluation/Multi-rater/Peer
- Direct observation and feedback
- End-of-Rotation Global Assessment
- Self-Assessment and Reflections/Portfolio
- End-of-Year Examination
- Simulation/OSCE

Patient Care and Technical Skills

Possible Methods of Assessment/Examples:

- 360 Evaluation/Multi-rater/Peer
- End-of-Rotation Global Assessment
- Case/Procedure Logs, including complications
- Direct observation and feedback
- Procedural competency checklists
- Self-Assessment and Reflections/Portfolio
- Simulation/OSCE

PCTS2: Competence in procedures					
Has not Achieved Level 1	Level 1	Level 2	Level 3	Level 4	Level 5
	Competently performs basic procedures* under indirect supervision Recognizes and manages complications of basic procedures *Basic procedures, as defined by each residency program, include those needed to take independent call	Competently performs intermediate procedures, as defined by the residency program Recognizes and manages complications of intermediate procedures	Competently performs advanced procedures, as defined by the residency program Recognizes and manages complications of advanced procedures	Able to competently and independently perform the following procedures: • adult and pediatric fluoro studies • lumbar puncture • image-guided venous and arterial access • hands-on adult and pediatric ultrasound studies • drainage of effusions and abscesses • image-guided biopsy • nuclear medicine I-131 treatments (≤ 33 and > 33 mCi)	Able to teach procedures to junior-level residents Competently performs complex procedures, modifies procedures as needed, and anticipates and manages complications of complex procedures
☐	☐	☐	☐	☐	☐
Comments:					

Medical Knowledge

Possible Methods of Assessment/Examples:

- End-of-Rotation Global Assessment
- Direct observation and feedback
- Self-Assessment and Reflections/Portfolio
- Core exam
- OSCE/simulation

MK1: Protocol selection and optimization of images					
Has not Achieved Level 1	Level 1	Level 2	Level 3	Level 4	Level 5
	Selects appropriate protocol and contrast agent/dose for basic imaging, including protocols encountered during independent call as defined by the residency program Recognizes sub-optimal imaging	Selects appropriate protocols and contrast agent/dose for intermediate imaging as defined by the residency program	Selects appropriate protocols and contrast agent/dose for advanced imaging as defined by the residency program Demonstrates knowledge of physical principles to optimize image quality	Independently modifies protocols as determined by clinical circumstances Applies physical principles to optimize image quality	Teaches and/or writes imaging protocols
☐	☐	☐	☐	☐	☐
Comments:					

Medical Knowledge

Possible Methods of Assessment/Examples:

- End-of-Rotation Global Assessment
- Direct observation and feedback
- Reading out with resident
- ER preparedness test
- Review of reports
- Rate of major discrepancies
- Core exam

MK2: Interpretation of examinations					
Has not Achieved Level 1	Level 1	Level 2	Level 3	Level 4	Level 5
	Makes core observations, formulates differential diagnoses, and recognizes critical findings Differentiates normal from abnormal	Makes secondary observations, narrows the differential diagnosis, and describes management options	Provides accurate, focused, and efficient interpretations Prioritizes differential diagnoses and recommends management	Makes subtle observations Suggests a single diagnosis when appropriate Integrates current research and literature with guidelines to recommend management	Demonstrates expertise and efficiency at a level expected of a subspecialist Advances the art and science of image interpretation
☐	☐	☐	☐	☐	☐
Comments:					

Professionalism

Possible Methods of Assessment/Examples:

- ❖ End-of-Rotation Global Assessment
- ❖ 360 Evaluation/Multi-rater/Peer
- ❖ Simulation/OSCE
- ❖ Direct observation and feedback
- ❖ Conference attendance logs
- ❖ Timeliness in completing institutional and program requirements

PROF1: Professional Values and Ethics					
Has not Achieved Level 1	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**
	Demonstrates the following professional behaviors: • recognizes the importance and priority of patient care and advocates for patient interests • fulfills work-related responsibilities • is truthful • recognizes personal limitations and seeks help when appropriate • recognizes personal impairment and seeks help when needed • responds appropriately to constructive criticism • places needs of patients before self • maintains appropriate boundaries with patients, colleagues, and others • exhibits tolerance and acceptance of diverse individuals and groups • maintains patient confidentiality • fulfills institutional and program requirements related to professionalism and ethics • attends required	Is an effective health care team member Demonstrates professional behaviors listed in the second column	Is an effective health care team leader, promoting primacy of patient welfare, patient autonomy, and social justice Demonstrates professional behaviors listed in the second column	Serves as a role model for professional behavior Demonstrates professional behaviors listed in the second column	Participates in local and national organizations to advance professionalism in radiology Mentors others regarding professionalism and ethics

	conferences				
☐	☐	☐	☐	☐	☐
Comments:					

Interpersonal and Communication Skills

Possible Methods of Assessment/Examples:

- End-of-Rotation Global Assessment
- 360 Evaluation/Multi-rater/Peer
- Simulation/OSCE
- Direct observation and feedback
- Self-Assessment and Reflections/Portfolio

ICS1: Effective communication with patients, families, and caregivers					
Has not Achieved Level 1	Level 1	Level 2	Level 3	Level 4	Level 5
	Communicates information about imaging and examination results in routine, uncomplicated circumstances Obtains informed consent	Communicates, under direct* supervision, in challenging circumstances (e.g., cognitive impairment, cultural differences, language barriers, low health literacy) Communicates, under direct supervision, difficult information such as errors, complications, adverse events, and bad news *see ACGME definition of direct supervision in the Program Requirements	Communicates, under indirect* supervision, in challenging circumstances (e.g., cognitive impairment, cultural differences, language barriers, low health literacy) *see ACGME definition of direct supervision in the Program Requirements	Communicates complex and difficult information, such as errors, complications, adverse events, and bad news	Serves as a role model for effective and compassionate communication Develops patient-centered educational materials
☐	☐	☐	☐	☐	☐
Comments:					

Interpersonal and Communication Skills

Possible Methods of Assessment/Examples:

- End-of-Rotation Global Assessment
- 360 Evaluation/Multi-rater/Peer
- Simulation/OSCE (Intradepartmental and Team)
- Direct observation and feedback
- Self-Assessment and Reflections/Portfolio

ICS2: Effective communication with members of the health care team					
Has not Achieved Level 1	Level 1	Level 2	Level 3	Level 4	Level 5
	Adheres to transfer-of-care policies **Written/Electronic:** Generates accurate reports with appropriate elements required for coding **Verbal:** Communicates urgent and unexpected findings according to institutional policy and ACR guidelines	**Written/Electronic:** Efficiently generates clear and concise reports that do not require substantive faculty member correction on routine cases **Verbal:** Communicates findings and recommendations clearly and concisely	**Written/Electronic:** Efficiently generates clear and concise reports that do not require substantive faculty member correction on common complex cases **Verbal:** Communicates appropriately under stressful situations	**Written/Electronic:** Efficiently generates clear and concise reports that do not require substantive faculty member correction on all cases **Verbal:** Communicates effectively and professionally in all circumstances	Leads interdisciplinary conferences **Written/Electronic:** Generates tailored reports meeting needs of referring physician Develops templates and report formats **Verbal:** Serves as a role model for effective communication
☐	☐	☐	☐	☐	☐
Comments:					

Systems-based Practice

Possible Methods of Assessment/Examples:

- End-of-Rotation Global Assessment
- 360 Evaluation/Multi-rater/Peer
- Direct observation and feedback
- Self-Assessment and Reflections/Portfolio
- Semi-annual evaluation with program director
- Written feedback on project (with mentor)
- Project presentation feedback (faculty, peers, others in system)
- Critical incidents reporting and feedback

SBP1: Quality Improvement (QI)					
Has not Achieved Level 1	Level 1	Level 2	Level 3	Level 4	Level 5
	Describes departmental QI initiatives Describes the departmental incident/occurrence reporting system	Incorporates QI into clinical practice Participates in the departmental incident/occurrence reporting system	Identifies and begins a systems-based practice project incorporating QI methodology	Completes a systems-based practice project as required by the ACGME Review Committee Describes national radiology quality programs (e.g., National Radiology Data Registry, accreditation, peer-review)	Leads a team in the design and implementation of a QI project Routinely participates in root cause analysis
☐	☐	☐	☐	☐	☐
Comments:					

Systems-based Practice

Possible Methods of Assessment/Examples:

- End-of-Rotation Global Assessment
- Project presentation feedback (faculty, peers, others in system)
- Completion of knowledge-based modules Suggested educational strategies:
- Annual QA session with head of billing
- Institute for Health Care International modules
- Agency for Healthcare Research and Quality modules

SBP2: Health care economics					
Has not Achieved Level 1	Level 1	Level 2	Level 3	Level 4	Level 5
	Describes the mechanisms for reimbursement, including types of payors	States relative cost of common procedures	Describes the technical and professional components of imaging costs	Describes measurements of productivity (e.g., RVUs)	Describes the radiology revenue cycle
☐	☐	☐	☐	☐	☐
Comments:					

Practice-based Learning and Improvement

Possible Methods of Assessment/Examples:

- End-of-Rotation Global Assessment
- 360 Evaluation/Multi-rater/Peer

PBLI1: Patient safety: contrast agents; radiation safety; MR safety; sedation					
Has not Achieved Level 1	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**
	Contrast Agents: Recognizes and manages contrast reactions **Radiation Safety:** Describes the mechanisms of radiation injury and the ALARA ("as low as reasonably achievable") concept **MR Safety:** Describes risks of MRI	**Contrast Agents:** Re-demonstrates recognition and management of contrast reactions **Radiation Safety:** Accesses resources to determine exam-specific average radiation dose information **MR Safety:** Accesses resources to determine the safety of implanted devices and retained metal	**Contrast Agents:** Re-demonstrates recognition and management of contrast reactions **Radiation Safety:** Communicates the relative risk of exam-specific radiation exposure to patients and practitioners **MR Safety:** Communicates MR safety of common implants and retained foreign bodies to patients and practitioners	**Contrast Agents:** Re-demonstrates recognition and management of contrast reactions **Radiation Safety:** Applies principles of Image Gently® and Image Wisely® **MR Safety:** Applies principles of MR safety including safety zones and pre-MR screening **Sedation**: Describes the principles of conscious sedation	**Contrast Agents:** Teaches appropriate treatment of contrast reactions **Radiation Safety:** Promotes radiation safety **MR Safety:** Participates in establishing or directing a safe MR program **Sedation**: Selects appropriate sedation agent and dose for conscious sedation
☐	☐	☐	☐	☐	☐
Comments:					

Simulation/OSCE

- Direct observation and feedback
- Self-Assessment and Reflections/Portfolio
- Completion of institutional safety modules, BCLS/ACLS

Practice-based Learning and Improvement

Possible Methods of Assessment/Examples:

- End-of-Rotation Global Assessment
- Semi-annual evaluation meeting with program director
- Self-Assessment and Reflections/Portfolio
- Resident teaching and feedback
- Core exam

PBLI2: Self-Directed Learning					
Has not Achieved Level 1	Level 1	Level 2	Level 3	Level 4	Level 5
	Develops an annual learning plan based on self-reflection and program feedback	Evaluates and modifies learning plan	Evaluates and modifies learning plan	Evaluates and modifies learning plan	Advocates for lifelong learning at local and national levels
☐	☐	☐	☐	☐	☐
Comments:					

Practice-based Learning and Improvement

Possible Methods of Assessment/Examples:

- End-of-Rotation Global Assessment
- Self-Assessment and Reflections/Portfolio
- Core exam
- Journal club discussions
- Written feedback on project (with mentor)
- Project presentation feedback (faculty, peers, others in system)
- Completion of AJR Self-Assessment Modules or CITI modules

PBLI3: Scholarly activity					
Has not Achieved Level 1	Level 1	Level 2	Level 3	Level 4	Level 5
	Documents training in critical thinking skills and research design	Works with faculty mentors to identify potential scholarly projects	Begins scholarly project	Completes and presents a scholarly project	Independently conducts research and contributes to the scientific literature and/or completes more than one scholarly project Completes an IRB submission
☐	☐	☐	☐	☐	☐
Comments:					

SECTION 12
WRITTEN ASSESSMENT RECORD

S.NO	TOPIC OF WRITTEN TEST/EXAMINATION	TYPE OF THE TEST MCQS OR SEQS OR BOTH	TOTAL MARKS	MARKS OBTAINED	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

S.NO	TOPIC OF WRITTEN TEST/EXAMINATION	TYPE OF THE TEST MCQS OR SEQS OR BOTH	TOTAL MARKS	MARKS OBTAINED	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

CLINICAL ASSESSMENT RECORD

SR.#	DATE	TOPIC OF CLINICAL TEST/ EXAMINATION	TYPE OF THE TEST& VENUE (TOACS, TABLE VIVA)	TOTAL MARKS	MARKS OBTAINED	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SR.#	DATE	TOPIC OF CLINICAL TEST/ EXAMINATION	TYPE OF THE TEST& VENUE OSPE, MINICEX, CHART STIMULATED RECALL, DOPS, SIMULATED PATIENT, SKILL LAB e.t.c	TOTAL MARKS	MARKS OBTAINED	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)

SECTION-13

To Be Filled At the End of 1st Year of Training

Evaluation records

MEDICAL UNIVERSITY
SUPERVISOR APPRAISAL FORM

Resident's Name:_____ Hospital Name: _____

Evaluator's Name(s): _____ Department:_____Unit : _____

1. Use one of the following ratings to describe the performance of the individual in each of the categories.

1	**Unsatisfactory**	Performance does not meet expectations for the job
2	**Needs Improvement**	Performance sometimes meets expectations for the job
3	**Good**	Performance often exceeds expectations for the job
4	**Merit**	Performance consistently meets expectations for the job
5	**Special Merit**	Performance consistently exceeds expectations for the job

I. CLINICAL KNOWLEDGE / TECHNICAL SKILLS	5	4	3	2	1
a) Clinical Knowledge is up to the mark					
b) Follows procedures and clinical methods according to SOPs					
c) Uses techniques, materials, tools & equipment skillfully					
d) Stays current with technology and job-related expertise					
e) Works efficiently in various workshops					
f) Has interest in learning new skills and procedures					
g) Understands & performs assigned duties and job requirements					
II. QUALITY / QUANTITY OF WORK	5	4	3	2	1
a) Sets and adheres to protocols and improving the skills					
b) Exihibts practice based learning methods efficaciously					
c) Actively participates in large group interactive sessions for postgraduate trainees					
d) Actively takes part in morning& evening teaching and learning sessions & noon conferences					

e) Actively takes part in Multidisciplinary Clinic O Pathological Conferences (CPC)					
f)Actively participates in Journal clubs					
g) Uses resources sensibly and economically					
h) interpersonal and communication skills					
i) Provides best possible patient care					
j) demonstrate best professional values and ethics					
III. INITIATIVE / JUDGMENT	5	4	3	2	1
a) Takes effective action without being told					
b) Analyzes different emergency cases and suggests effective solutions					
c) Develops realistic plans to accomplish assignments					
IV. DEPENDABILITY / SELF-MANAGEMENT	5	4	3	2	1
a) Demonstrates punctuality and regularly begins work as scheduled					
b) Contacts supervisor concerning absences on a timely basis					
c) Contacts supervisor without any delay regarding any difficulty in managing any patient					
d) Can be depended upon to be available for work independently					
e) Manages own time effectively					
f) Manages Outdoor Patient Department (OPD) efficiently					
g) Accepts responsibility for own actions and ensuing results					
h) Demonstrates commitment to service					
i) Shows Professionalism in handling patients					
j) Offers assistance, is courteous and works well with colleagues					
k) Is respectful with the seniors					
OVERALL RATINGS/SUGGESTIONS/REMARKS REGARDING PERFORMANCE OF THE TRAINEE					

Total Score/155

Date Resident's Name &Signatures Date Evaluator's Signature &Stamp

MEDICAL UNIVERSITY

SUPERVISOR APPRAISAL FORM

To Be Filled At The End Of 2nd Year Of Training

Resident's Name: _____
Evaluator's Name(s): _____
Hospital Name: _____
Department : _____ **Unit :** _____

1. Use one of the following ratings to describe the performance of the individual in each of the categories.

1	**Unsatisfactory**	Performance does not meet expectations for the job
2	**Needs Improvement**	Performance sometimes meets expectations for the job
3	**Good**	Performance often exceeds expectations for the job
4	**Merit**	Performance consistently meets expectations for the job
5	**Special Merit**	Performance consistently exceeds expectations for the job

I. CLINICAL KNOWLEDGE / TECHNICAL SKILLS	5	4	3	2	1
a) Clinical Knowledge is up to the mark					
b) Follows procedures and technical skills according to SOPs					
c) Uses techniques, materials, tools & equipment skillfully					
d) Stays current with technology and job-related expertise					
e) Works efficiently in various workshops					
f) Has interest in learning new skills and procedures					
g) Understands & performs assigned duties and job requirements					
II. QUALITY / QUANTITY OF WORK	5	4	3	2	1
a) Sets and adheres to protocols and improving the skills					
b) Exihibts practice based learning methods efficaciously					
c) Actively participates in large group interactive sessions for postgraduate trainees					
d) Actively takes part in morning& evening teaching and learning sessions & noon conferences					

e) Actively takes part in Multidisciplinary Clinic O Pathological Conferences (CPC)					
f)Actively participates in Journal clubs					
g) Uses resources sensibly and economically					
h) Interpersonal and communication skills					
i) Provides best possible patient care					
j) demonstrate best professional values and ethics					
III. INITIATIVE / JUDGMENT	5	4	3	2	1
a) Takes effective action without being told					
b) Analyzes different emergency cases and suggests effective solutions					
c) Develops realistic plans to accomplish assignments					
IV. DEPENDABILITY / SELF-MANAGEMENT	5	4	3	2	1
a) Demonstrates punctuality and regularly begins work as scheduled					
b) Contacts supervisor concerning absences on a timely basis					
c) Contacts supervisor without any delay regarding any difficulty in managing any patient					
d) Can be depended upon to be available for work independently					
e) Manages own time effectively					
f) Manages Outdoor Patient Department (OPD) efficiently					
g) Accepts responsibility for own actions and ensuing results					
h) Demonstrates commitment to service					
i) Shows Professionalism in handling patients					
j) Offers assistance, is courteous and works well with colleagues					
k) Is respectful with the seniors					

OVERALL RATINGS/SUGGESTIONS/REMARKS REGARDING PERFORMANCE OF THE TRAINEE

Total Score……155

Date Resident's Name &Signatures Date Evaluator's Signature &Stamp

MEDICAL UNIVERSITY
SUPERVISOR APPRAISAL FORM

To Be Filled At the End Of 3rd Year Of Training

Resident's Name: _____
Evaluator's Name(s): _____
Hospital Name: _____
Department : _____ **Unit :** _____

1. Use one of the following ratings to describe the performance of the individual in each of the categories.

1	**Unsatisfactory**	Performance does not meet expectations for the job
2	**Needs Improvement**	Performance sometimes meets expectations for the job
3	**Good**	Performance often exceeds expectations for the job
4	**Merit**	Performance consistently meets expectations for the job
5	**Special Merit**	Performance consistently exceeds expectations for the job

I. CLINICAL KNOWLEDGE / TECHNICAL SKILLS	5	4	3	2	1
a) Clinical Knowledge is up to the mark					
b) Follows procedures and clinical methods according to SOPs					
c) Uses techniques, materials, tools & equipment skillfully					
d) Stays current with technology and job-related expertise					
e) Works efficiently in various workshops					
f) Has interest in learning new skills and procedures					
g) Understands & performs assigned duties and job requirements					
II. QUALITY / QUANTITY OF WORK	5	4	3	2	1
a) Sets and adheres to protocols and improving the skills					
b) Exihibts practice based learning methods efficaciously					
c) Actively participates in large group interactive sessions for postgraduate trainees					
d) Actively takes part in morning& evening teaching and learning sessions & noon conferences					
e) Actively takes part in Multidisciplinary Clinic O Pathological Conferences (CPC)					
f)Actively participates in Journal clubs					

g) Uses resources sensibly and economically					
h) Interpersonal and communication skills					
i) Provides best possible patient care					
j) demonstrate best professional values and ethics					
III. INITIATIVE / JUDGMENT	5	4	3	2	1
a) Takes effective action without being told					
b) Analyzes different emergency cases and suggests effective solutions					
c) Develops realistic plans to accomplish assignments					
IV. DEPENDABILITY / SELF-MANAGEMENT	5	4	3	2	1
a) Demonstrates punctuality and regularly begins work as scheduled					
b) Contacts supervisor concerning absences on a timely basis					
c) Contacts supervisor without any delay regarding any difficulty in managing any patient					
d) Can be depended upon to be available for work independently					
e) Manages own time effectively					
f) Manages Outdoor Patient Department (OPD) efficiently					
g) Accepts responsibility for own actions and ensuing results					
h) Demonstrates commitment to service					
i) Shows Professionalism in handling patients					
j) Offers assistance, is courteous and works well with colleagues					
k) Is respectful with the seniors					
OVERALL RATINGS/SUGGESTIONS/REMARKS REGARDING PERFORMANCE OF THE TRAINEE					

Total Score_____/155

Date Resident's Name &Signatures Date Evaluator's Signature &Stamp

MEDICAL UNIVERSITY

SUPERVISOR APPRAISAL FORM

To Be Filled At The End Of 4th Year Of Training

Resident's Name: _____

Evaluator's Name(s): _____

Hospital Name: _____

Department:_____ **Unit :** _____

1. Use one of the following ratings to describe the performance of the individual in each of the categories.

1	**Unsatisfactory**	Performance does not meet expectations for the job
2	**Needs Improvement**	Performance sometimes meets expectations for the job
3	**Good**	Performance often exceeds expectations for the job
4	**Merit**	Performance consistently meets expectations for the job
5	**Special Merit**	Performance consistently exceeds expectations for the job

I. CLINICAL KNOWLEDGE / TECHNICAL SKILLS	5	4	3	2	1
a) Clinical Knowledge is up to the mark					
b) Follows procedures and clinical methods according to SOPs					
c) Uses techniques, materials, tools & equipment skillfully					
d) Stays current with technology and job-related expertise					
e) Works efficiently in various workshops					
f) Has interest in learning new skills and procedures					
g) Understands & performs assigned duties and job requirements					
II. QUALITY / QUANTITY OF WORK	5	4	3	2	1
a) Sets and adheres to protocols and improving the skills					
b) Exihibts practice based learning methods efficaciously					
c) Actively participates in large group interactive sessions for postgraduate trainees					
d) Actively takes part in morning& evening teaching and learning sessions & noon conferences					

e) Actively takes part in Multidisciplinary Clinic O Pathological Conferences (CPC)					
f)Actively participates in Journal clubs					
g) Uses resources sensibly and economically					
h) Interpersonal and communication skills					
i) Provides best possible patient care					
j) demonstrate best professional values and ethics					
III. INITIATIVE / JUDGMENT	5	4	3	2	1
a) Takes effective action without being told					
b) Analyzes different emergency cases and suggests effective solutions					
c) Develops realistic plans to accomplish assignments					
IV. DEPENDABILITY / SELF-MANAGEMENT	5	4	3	2	1
a) Demonstrates punctuality and regularly begins work as scheduled					
b) Contacts supervisor concerning absences on a timely basis					
c) Contacts supervisor without any delay regarding any difficulty in managing any patient					
d) Can be depended upon to be available for work independently					
e) Manages own time effectively					
f) Manages Outdoor Patient Department (OPD) efficiently					
g) Accepts responsibility for own actions and ensuing results					
h) Demonstrates commitment to service					
i) Shows Professionalism in handling patients					
j) Offers assistance, is courteous and works well with colleagues					
k) Is respectful with the seniors					
OVERALL RATINGS/SUGGESTIONS/REMARKS REGARDING PERFORMANCE OF THE TRAINEE					

Total Score_____/155

Date Resident's Name &Signatures Date Evaluator's Signature &Stamp

UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM PAKISTAN

EVALUATION / REMARKS BY UNIVERSITY TRAINING MONITORING CELL (UTMC) WORKING UNDER DEPARTMENT OF MEDICAL EDUCATION (DME)

(AT THE END OF 1ST YEAR OF TRAINING)

UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM PAKISTAN

EVALUATION / REMARKS BY UNIVERSITY TRAINING MONITORING CELL (UTMC) WORKING UNDER DEPARTMENT OF MEDICAL EDUCATION (DME)

(AT THE END OF 2ND YEAR OF TRAINING)

UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM PAKISTAN

EVALUATION / REMARKS BY UNIVERSITY TRAINING MONITORING CELL (UTMC) WORKING UNDER DEPARTMENT OF MEDICAL EDUCATION (DME)

(AT THE END OF 3RD YEAR OF TRAINING)

UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM PAKISTAN

EVALUATION / REMARKS BY UNIVERSITY TRAINING MONITORING CELL (UTMC) WORKING UNDER DEPARTMENT OF MEDICAL EDUCATION (DME)

(AT THE END OF 4th YEAR OF TRAINING)

UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM PAKISTAN

EVALUATION / REMARKS BY QUALITY ENHANCEMENT CELL (QEC) WORKING UNDER DEPARTMENT OF MEDICAL EDUCATION (DME) (AT THE END OF 1ST YEAR OF TRAINING)

UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM PAKISTAN

EVALUATION / REMARKS BY QUALITY ENHANCEMENT CELL (QEC) WORKING UNDER DEPARTMENT OF MEDICAL EDUCATION (DME) (AT THE END OF 2ND YEAR OF TRAINING)

UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM PAKISTAN

EVALUATION / REMARKS BY QUALITY ENHANCEMENT CELL (QEC) WORKING UNDER DEPARTMENT OF MEDICAL EDUCATION (DME) (AT THE END OF 3RD YEAR OF TRAINING)

UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM PAKISTAN

EVALUATION / REMARKS BY QUALITY ENHANCEMENT CELL (QEC) WORKING UNDER DEPARTMENT OF MEDICAL EDUCATION (DME) (AT THE END OF 4th YEAR OF TRAINING)

SECTION 14

LEAVE RECORD

(Signed & Approved Leave Application/Certificate to Be Kept In Record and To Be Brought In Meetings with URTMC & QEC)

SR.#	TYPE OF LEAVE(Casual Leave, Sick Leave, Ex –Pak Leave, Maternity Leave, Any Other Kind Of Leave)	YEAR	DATE		REASON	SUPERVISOR'S REMARKS	SUPERVISOR'S SIGNATURE (Name/Stamp)
			FROM	TO			

UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM PAKISTAN

SECTION-15

RECORD SHEET OF ATTENDANCE/COUNCELLING SESSION/DOCUMENTATION QUALITY PER YEAR

TO BE FILLED AT THE END OF FIRST YEAR OF TRAINING

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
January	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
February	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
March	WARD												
	CPC												
	LECTURE												
	WORKSHO												

UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM PAKISTAN

Year - I

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
April	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
May	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
June	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM PAKISTAN

Year - I

MONTH		ATTENDANCE RECORD			DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
July	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH		ATTENDANCE RECORD			DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
August	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH		ATTENDANCE RECORD			DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
September	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM PAKISTAN

Year - I

MONTH		ATTENDANCE RECORD			DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
October	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH		ATTENDANCE RECORD			DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
November	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH		ATTENDANCE RECORD			DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
December	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM PAKISTAN

Year - II

TO BE FILLED AT THE END OF SECOND YEAR OF TRAINING

MONTH		ATTENDANCE RECORD			DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
January	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH		ATTENDANCE RECORD			DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
February	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH		ATTENDANCE RECORD			DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
March	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM PAKISTAN

Year - II

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
April	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
May	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
June	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM PAKISTAN

Year - II

MONTH		ATTENDANCE RECORD			DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
July	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH		ATTENDANCE RECORD			DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
August	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH		ATTENDANCE RECORD			DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
September	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM PAKISTAN

Year - II

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
October	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
November	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
December	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM PAKISTAN

TO BE FILLED AT THE END OF THIRD YEAR OF TRAINING

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
January	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
February	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
March	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM PAKISTAN

Year - III

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
April	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
May	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
June	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM PAKISTAN

Year - III

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
July	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
August	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
September	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM PAKISTAN

Year - III

MONTH		ATTENDANCE RECORD			DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
October	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH		ATTENDANCE RECORD			DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
November	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH		ATTENDANCE RECORD			DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
December	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM PAKISTAN

Year - IV

TO BE FILLED AT THE END OF FOURTH YEAR OF TRAINING

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
January	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
February	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
March	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM PAKISTAN

Year - IV

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
April	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
May	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH	ATTENDANCE RECORD				DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
June	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM PAKISTAN

Year - IV

MONTH		ATTENDANCE RECORD			DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
July	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH		ATTENDANCE RECORD			DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
August	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH		ATTENDANCE RECORD			DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
September	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

UNIVERSITY NATIONAL MEDICAL RESIDENCY PROGRAM PAKISTAN

Year - IV

MONTH		ATTENDANCE RECORD			DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
October	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH		ATTENDANCE RECORD			DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
November	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

MONTH		ATTENDANCE RECORD			DOCUMENTATION QUALITY					COUNCELLING SESSION			SUPERVISOR'S REMARKS SIGNATURE (Name/Stamp)
		TOTAL	ATTENDED	%	Poor	Average	Good	V. Good	Excellent	YES	NO	IF YES THEN NUMBER OF SESSIONS	
December	WARD												
	CPC												
	LECTURE												
	WORKSHOP												

ANY OTHER IMPORTANT AND RELEVANT INFORMATION/DETAILS

SECTION 16

RECOMMENDED BOOKS

1. Ryan S. ***Anatomy for Diagnostic Imaging***. 2nd ed. Saunders;2004 .
2. Bushong S. C. ***Radiological Science for Technologists Physics, Biology and Protection***. 8th ed.Mosby;2004.
3. Chapman S. and Nakienly R. ***A Guide to Radiological Procedures***. 4th ed. Baillier Tindall, Jaypee Brothers; 2001.
4. Chapman S. and Nakielny R. ***Aids to Radiological Differential Diagnosis***. 4th ed. Elsevier Science Limited; 2003.
5. Sutton D. ***Textbook of Radiology and imaging (Vol. l and ll)***.7th ed. UK: Churchill Livingstone; 2003.
6. Clark. ***Clark's Textbook of Positioning in Radiology***. 12th ed. Hoddler Arnold Publications; 2005.
7. Farr. ***Physics for medical imaging***. 2nd ed. Saunders;2007
8. Dahnert W. ***Radiology review manual***.7th ed. 2011
9. Diagnostic Radiology – Graninger & Allison
10. Christensen's Physics of Diagnostic Radiology – Thomas S. Curry et al.
11. Clinical Doppler Ultrasonography – Paul L. Allen

SECTION 18

ABRIDGED EXAM :

At the end of 1 year

Eligibility Criteria:

The candidates appearing in Abridged Examination are required

- ❖ To have submitted certificate of completion of mandatory workshops.
- ❖ To have submitted certificate / certificates of completion of first year of training from the supervisor / supervisors of rotations.
- ❖ To have submitted CIS assessment proforma from his/her own supervisor on 03 monthly basis and also from his/her supervisors during rotation, achieving a cumulative score of 75%.
- ❖ To have submitted certificate of submission of synopsis.
- ❖ To have submitted evidence of payment of examination fee.

Abridged Examination Schedule and Fee

- ❖ Abridged Examination at completion of one year training, will be held twice a year.
- ❖ There will be a minimum period of 30 days between submission of application for the examination and the conduction of examination.
- ❖ Examination fee will be determined periodically by the University.
- ❖ The examination fee once deposited cannot be refunded / carried over to the next examination under any circumstances.
- ❖ The Controller of Examinations will issue Roll Number Slips on receipt of prescribed application form, documents satisfying eligibility criteria and evidence of payment of examination fee.

All candidates admitted in MD Radiology course shall appear in Abridged Examination at the end of 1st calendar year.

- Written Examination =300 Marks
- Video projected clinical Examination = 50 Marks
- Total = 350 marks
- There shall be 150 MCQs single best type of answer as for
- Basic Principles of Internal Medicine = 50 MCQs
- Basic Principles of General surgery = 50 MCQs
- Physics applied to Radiology = 50 MCQs

Each MCQ will carry 2 marks and each incorrect response will result in deductions of 0.5 duration of this exam will be 150 minutes. The candidate securing 75% marks will paper the written examination and will be eligible to appear in the video projected clinical exam.

Video Projected Clinical Part of Abridged Exam (VPCE)

The VPCE will consist of 25 videos/ Slides of clinical material and scenarios from Internal Medicine, General Surgery and Radiology. Each Video/ slide will have one question and carry 2 marks. Incorrect response will result in deduction of 0.5 marks.

The Candidate securing 75% marks in VPCE will pass this part of exam

Declaration of Result

The Candidate will have to score 75% marks in written and video-projected clinical components

A maximum total of four consecutive attempts (availed or unavailed) will be allowed in the Abridged Examination during which the candidate will be allowed to continue his training program. If the candidate fails to pass his Abridged Examination within the above mentioned limit of four attempts, the candidate shall be removed from the training program, and the seat would fall vacant, stipend/ scholarship if any would be stopped.

FINAL EXAMINATION;

a) **Eligibility Criteria:**

to appear in the Final Examination the candidate shall be required.

- To have submitted that result card of passing intermediate Examination
- To have submitted the certificate of completion of training issued by the supervisor will be mandatory.
- To have achieved a cumulative score of 75% in continuous internal assessments of all training year.
- To have got the thesis accepted and will then be eligible to appear in Final Examination
- To have submitted no dues certificate form all relevant departments including library, hostel, cashier etc.
- To have submitted evidence of submission of examination fee.

FINAL EXAMINATION SCHEDULE AND FEE;

Final Examination will be held twice a year.
The candidates have to satisfy eligibility criteria before permission is granted to take the examination. Examination fee will be determined and varied at periodic intervals by the university.
The examination fee once deposited cannot be refunded / carried over to the next examination under any circumstances.
The controller of examination will issue an Admittance Card with a photograph of the candidate on receipt of prescribed application form, documents satisfying eligibility criteria and evidence of payment of examination fee. This card will also show the Roll Number, date/time and venue of examination.

COMPONENTS OF FINAL EXAMINATION;

- Written part of Final Examination — Total Marks 500
- Clinical and Oral Part of Final Examination — Total Marks 500
- Contribution of CIS to the Final Examination — Total Marks 100
- Thesis Evaluation — Total Marks 400

WRITTEN PART OF FINAL EXAMINATION

- There will be **02** written papers which will cover the whole syllabus of the specialty of training with total marks of 500
- The written examination will consist of 200 single best answer type Multiple Choice Question and 10 short essay questions. Each correct answer in the Multiple Choice Question paper will carry **02 marks** but an incorrect response will result in deduction of **0.5 mark**. Each short essay Question will carry **10 marks**.
- The Total marks of the Written Examination will

be **500** and to be divided as follows: Multiple Choice Question paper total marks = 400
Short Essay Question Paper total marks = 100

- The candidates scoring a score of 75% **marks** in multiple choice question paper and short essay question paper will pass the written part of the final examination and will become eligible to appear in the clinical and oral examination
- The written part result will be valid for **three** consecutive attempts for appearing in the clinical and oral part of the Final Examination. After that the candidate will have to re-sit the written part of the Final Examination.

CLINICAL AND ORAL PART OF FINAL EXAMINATION:

- The clinical and oral examination will consist of film reporting and oral viva stations to be taken by examiners as decided by examiners panel for a pair of examiners. Each oral viva station will be of **07 minutes** duration, **05 minutes** will be for examining the patient and **02 minutes** for discussion.
- The total marks of clinical and oral examination will be **500.**
- A panel of four examiners will be appointed by the Vice Chancellor and of these two will be from university whilst the other two will be the external examiners. Internal examiner will act as a coordinator. In case of difficulty in finding an internal examiner in a given subject, the Vice Chancellor would, in consultation with the concerned Deans, appoint any relevant person with appropriate qualification and experience, outside the University as an examiner.
- The internal examiners will not examine the candidates for whom they have acted as supervisor and will be substituted by the other internal examiner.
- The candidates scoring 75% marks in each component of the Clinical & Oral examination will pass this part of the Final Examination
- The candidates who fail in clinical and oral examination will have to re-appear in clinical & oral examination. A maximum of three consecutive attempts(availed or un availed will be allowed)
- The candidates will have two attempts to pass the final examination with normal fee.

CONTINUOUS INTERNAL ASSESSMENT (CIS):

Continuous internal assessment will be a stand – alone component. The marks for continuous internal assessment as per **10%** weightage formula will be **100** and will be added to the marks of other components of the final examination and of those of Thesis evaluation as follows

THESIS EVALUATION: 100

According the protocols defined by the university and would carry **400 marks**

DECLARATION OF RESULT:

For the declaration of result
The candidate must get his thesis accepted.
The candidate must have passed the final written examination with 75% **marks** and the clinical and oral examination securing 75% **marks**.
The MD/MS/MDS degree shall be awarded after acceptance of thesis and success in the final examination
On completion of stipulated training period, irrespective of the result (pass or fail) the training slot of the candidate shall be declared vacant

References

1 https://cdn.ymaws.com/www.aocr.org/resource/resmgr/E2S/ACGME_Diagnostic_Radiology_M.pdf
2 https://www.academicradiology.org/article/S1076-6332(11)00064-X/fulltext