

Al-Azhar University

Faculty of Medicine for Men

Course specification

For Master of Radiodiagnosis

(2014 – 2015)

University : Al-Azhar

Faculty : Medicine for men

Course specification

- Programmers on which course is given : Radiodiagnosis Master
- Major or minor element of programmes : major
- Department offering the programme : Radiodiagnosis, Radiotherapy, Community medicine, surgery, internal medicine and Physics departments

A – Basic Information

Title : Master Degree in Diagnostic RadiologyCode :

Course duration : 24 months

B – Professional Information

1 – Overall aims of course

- To provide the students with an indepth understanding of radiological anatomy of different parts of the body with different radiological modalities .
- To enable the student to understand and recognize the basic radiological techniques and positions
- To extend students' comprehension of key physics concepts of different radiological modalities, including conventional X- ray, CT and ultrasound as well as magnetic resonance .

- To instill a critical awareness of advances at the forefront of the diagnostic radiology.
- To provide the students with the ability to understand the different isotope scanning and basic of medical statistics .
- To instill critical awareness of hazards of radiations and its biological effects as well as methods of radiation protection .
- To prepare students effectively for professional employment attitudes and provide them with ethical principles and communication skills .
- To provide students with the ability to interpret different radiological modalities and differentiate between normal and abnormal findings .

Intended Learning Outcomes of course (ILOs)

a- Knowledge and Understanding:

Postgraduate attaining Master Degree in Radiodiagnosis should have sufficient understanding and knowledge that enable him/her to:

- a1- Demonstrate knowledge and understanding of essential facts, advances and principles of different radiological modalities and their applications .
- a2- Recognize and interpret different radiological films and differentiate between normal and abnormal findings .
- a3- Describe the radiological anatomy for different parts of the body
- a4- Demonstrate an understanding of value of different radiological positions in variable cases.
- a5- Explain the variations in imaging modalities according to the investigated case.
- a6- Recognize the role of various imaging modalities including : plain film, contrast studies, ultrasound, computed tomography, magnetic resonance imaging, isotope scanning, angiography and interventional radiology in management of different disease .
- a7- Recognize the ethical considerations in conduction & publishing of different types of scientific research.

- a8- Recognize the quality standards of different imaging modalities
- a9- Recognize the aetiology, symptoms and signs and surgical aspect of different disease related to radiology.
- a10- Demonstrate the physics of CT and MRI and methods of radiation and magnetic field protection
- a11- Describe the aetiology and management of the common problems of internal medicine that has changes in radiological imaging
- a12- Recognize the effect of radiation and magnetic field on the body
- a13- Demonstrate the different ways of radiation protection
- a14- Demonstrate the role of different isotope scans in diagnosis of disease
- a15- Describe the technique of different isotope scans
- a16- Recognize the fundamentals of ethical and legal aspects of radiological practice.
- a17- Recognize the quality standards of radiological practice.
- a18- Recognize the main scientific advances in radiological field.
- a19- Recognize the basics and ethics of scientific research.

b- Intellectual Skills:

Postgraduate attaining Master Degree in Radiodiagnosis should develop intellectual skills that enable him/her to:

- b1- interpret the different radiological imaging .
- b2- Correlate thoroughly the imaging findings with the clinical history of the patient .
- b3- Identify the indication and contraindication for different radiological procedures
- b4- Identify the new technique and modalities in researches and articles

b5- Identify the ethical considerations in different types of scientific research.

b6- Select and evaluate the methods of radiation protection

b7 -Evaluate risks imposed during cardiology clinical practice.

B8-Plan for radiological professional improvement.

c- Professional and Practical Skills:

Postgraduate attaining Master Degree in Radiodiagnosis should develop professional and practical skills that enable him/her to:

c1- Demonstrate a complete reporting of different basic radiological images .

c2- Recognize accurately the radiological findings in urgent life threatening conditions .

c3- identify the appropriate recommendation by further radiological imaging according to the existing radiological findings and the clinical history .

c4- Demonstrate skills required for the conduction of different radiological techniques as : HSG, Ba study, arteriography and simple drainage procedures.

c5- Interpret and explain different radiologic films and detect abnormal findings.

c6 - Select appropriate technique and procedures and apply accurately the pre and post procedures preparations and care .

c7- Apply skills required to work independently and be self – critical in the evaluation of risks and outcomes .

c8 - Apply the ethical considerations in different types of scientific research.

c9- Evaluate the different ways of radiation protection

c10- Evaluate the infection control measures in the field of radiology

c11- Be competent in doing general examination and take complete history of patient with diseases related to radiology

d-General and Transferable Skills:

Postgraduate attaining Master Degree in Radiodiagnosis should develop general and transferrable skills that enable him/her to:

- d1- Communication skills , covering both written and oral communications.
- d2- Problem solving skills
- d3- Interact and communicate effectively with other health care professionals.
- d4- Manage time effectively and demonstrate skills needed for life long learning as information technology skills (IT) .
- d5- Work effectively and cooperatively in a team .
- d6- Discuss professional errors in a an honest way .
- d7- Independent learning ability required for continuing professional development

e- Professional behaviour

Postgraduate attaining Master Degree in Radiodiagnosis should acquire the ethics and attitude that enable him/her to:

- e.1-Respect the patient privacy.
- e.2-Deal ethically with patients, colleagues, junior & senior staff.
- e.3-Select the time when to listen, speak, comment, or reply to others.

Contents

Program duration 24 months

First part : 6 months

Second part : 18 months

(First Part) (6 months)

During this period the candidate should study the following subjects.

1 – Radiation physics

2 – Radial positions and techniques

3 – Radiological anatomy

4 – Radiobiology and nuclear medicine

5 – Medical statistics

1- Radiation physics : including

1- Principles of conventional radiology, US, CT, MRI and nuclear medicine imaging .

2- Principles of radiographic image formation and different physical factors affecting image quality .

3- Principles of image receptors : photographic film, intensifying screen, fluoroscopy, image intensification and television system .

2 – Radiological positions and technique including

1 – Principles of positioning of each anatomic part and standard radiological projection .

2 – principle of radiological contrast media examination including angiography. Advantage and disadvantage of these techniques in conventional and advanced radiology including , indication, patient preparation , procedure of examination , patient after care and the possible complications and their management .

3 – Radiological anatomy

1 – Radiological anatomy of different part of the body with different radiological modalities , including : conventional radiology , contrast studies, US and color Doppler study, CT and MRI .

2 – The anatomic region of interest should cover :

- The skull and its contents including the brain and cerebral vessels, skull base, pharynx and temporal bone
- The face and facial bones, orbits, sinuses , jaws & salivary glands

- The neck, thyroid, larynx & extra cranial vessels
- The spine, spinal cord and meninges
- The musculoskeletal system including bones ,joints, ligaments & muscles,
- The heart and great vessels
- The chest & chest wall
- The gastrointestinal system including solid organs like liver, spleen,...
- The genitourinary system
- The peripheral vessels and lymphatic system
- The breast

NB :Some topics are excluded from the 1st part and included in the 2ndpart :

- o CT of maxillofacial region
 - o anatomy of petrous bones,
 - o anatomy ofparapharyngealspaces
 - o anatomy of mouth floor,
 - o breast CT and MRI,
 - o MRI of the face and neck,
 - o MRI of the joints(Except the knee)
 - o MRI of theheart
- Radiobiology and Nuclear Medicine
 - Radiobiology
 - Including radiation effects on normal tissues (Chromosomal level, cellular and sub cellular levels), tissue reactions toradiation , radiation protection principles
 - Nuclear medicine
 - Cardiovascular system
 - Renal imaging
 - Hepatic imaging
 - Thyroid scan
 - Bone scan
 - Breast scan

(Second Part) (18 months)

- During this period the candidates undergo shifts between the different units in the Radiology Department: conventional x- ray, US, CT.

- By the end of this time the candidate is expected to finish master degree assay and also have fair knowledge in the following diagnostic fields:
 - Neuro radiology
 - Including imaging of the brain and spinal pathology, sellar lesions, skull base diseases and carotid angiography
 - Head and Neck Radiology (Excluding the brain)
 - Including pathology of the paranasal sinuses, orbits, larynx, neck and petrous bones.
 - Musculoskeletal Radiology
 - Including imaging of trauma, Major joints(Knee, shoulder, ankle, hip) and Myotendenious pathology.
 - Cardio thoracic Radiology
 - Including imaging of chest diseases(lung, mediastinum, chest wall and pleura), Cardiac imaging including the basis of
 - Echocardiography, principles of Nuclear Cardiology and basis of Cardiac MRI.
 - Gastrointestinal radiology
 - Including barium studies, CT and MRI of the abdomen, abdominal ultra sonography, hepatic and biliary scintigraphy, MRcholangiography and MR urography, Functional gastrointestinal imaging and transit · Imaging virtual endoscopy (CTand MR endoscopy,...)
 - Genitourinary radiology
 - Including conventional & contrast studies, ultrasonography, CT & MRI
 - Kidneys & supra renal glands, ureters.
 - Urinary bladder, prostate & urethra
 - Female genital system (HSG, US, CT , MRI)
 - Invasive (Angiography , vasography....)
 - Interventional (guided biopsy & aspiration and drainage for diagnostic and therapeutic purposes)
 - Vascular Imaging and Intervention:
 - Including diseases of the arteries, veins and lymphatics as assessed by arteriography, venography, lymphography,ultrasound doppler studies, CT and MR angiography
 - Breast imaging
 - Including mammographic techniques, breast ultrasound, breast CT and basis of breast MRI.

- In each diagnostic field , most of the pathological entities are expected to be covered including congenital , traumatic,inflammatory ,neoplastic and miscellaneous conditions.

4 – Teaching and learning methods

- Demonstrative lectures .
- Data show presentation.
- Case based discussion .

5 – Student assessment methods

Candidates are expected to attend:

- The scientific meeting of the Radiology department (Once /week onMonday).
 - o Prepare the material for assigned meeting
 - o Present some of the cases
 - o Share in discussions
- The annual scientific meeting of the Faculty(Once / year)
- Six thesis discussions
- Technical Procedures attendance and / or performance with emphasis on angiography ,interventional, CT, MRI ,Doppler, digital imaging.

Assessment schedule

Written, oral and clinical exam at end of first and second parts

Weighting of assessment

According to the regulations and unified internal bylaws of Al-Azhar University's faculties of medicine.

List of references

- Textbook of radiology and imaging
- Periodicals, website : Radiologyeducation.com
Radiographics.rsna.org

Course coordinator : Prof. Dr.Ahmad Mustafa Ouf

Head of deparment : Prof. Dr. Ahmad Mustafa Ouf

Date : 1 / 10 / 2014