Jordan University of Science and Technology

Faculty of Medicine
2018-2019

COURSE TITLE : **Diagnostic Radiology.**

COURSE CODE : **MED 419**

CREDIT HOURS : **2.25 CREDIT HOURS**

SEQUENCE : **YEAR 4 , 2 WEEKS**

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Course Description:

The clinical diagnostic radiology clerkship is a 2-week rotation offered at King Abdullah university hospital. Students devote 80% of their time attending lectures, and 20% of time rotating through all of the subspecialty radiology services covered at our radiology department, taking different cases from different modalities for case discussion at the end of rotation.
Course objectives are concise and are distributed to students at the beginning of the rotation. Faculty members who participate in teaching are familiar with these objectives.
Students are taught by specialized radiologists who are faculty members of the medical school.
Student evaluation consists of three components:
15% of the final grade is based on evaluation and case discussion at the end of rotation as well as attendance.
another 40% of the final grade is based on end rotation clinical exam(spot image diagnosis).
The final 45% is based on final written exam.

Course Learning Outcomes

1. Be familiar with common radiological exams and procedures.
2. Know the indications and contraindications of different radiological exams.
3. Be familiar with basic radiological anatomy.
4. Be able to identify and diagnose common and emergency pathological conditions using different radiological modalities.

Recommended Textbooks:

1. Blue print radiology.
2. Radiology for medical student.
3. Lecture notes on radiology.
4. Clinical medicine (Kumar and Clark)
5. McLeod's clinical examination.

Learning Objectives

(1) Lectures objectives

1	Department orientation	1. Review the basic concepts of radiation and its different types. 2. Review the sources of photons (x and gamma rays) and its interaction with matter 3. Review the principles of radiobiology and radiation protection. 4. Show examples of different radiological modalities and discuss possible indications.
2	Nuclear medicine(1) Introduction	1. Introduce the medical students to the concept of nuclear medicine and its application. 2. Show example of normal exams of different nuclear medicine tests and some pathological entities.
3	Nuclear medicine(2) Bone scan	1. To understand concept of bone reaction against bone insult(Osteoblastic lesion) 2. To understand the technique of bone scan. 3. To know the role of bone scan in metastasis. 4. To list differential diagnosis of active lesions on bone scan.
4	Nuclear medicine(3) V/Q scan	1. To understand the technique of V/Q scan. 2. To know the role of V/Q scan in pulmonary embolism. 3. To list the indications for V/Q scan. 4. Comparison between V/Q scan and CT pulmonary angiography.
5	Nuclear medicine(4) Renal isotope scan	1. To understand the technique of static and dynamic renal scans. 2. To know the indications of static renal scan in pediatric pyelonephritis and VUR. 3. To know the indications of dynamic renal scan in pediatric hydronephrosis. 4. To know the concept of split function.
6	Nuclear medicine(5) Thyroid isotope scan	1. To understand the technique of thyroid isotope scan 2. To understand concept of thyrotoxicosis. 3. To know the role of thyroid isotope scan in thyrotoxicosis. 4. To know the role of radio-iodine in ablation of benign and malignant thyroid diseases.

7	Nuclear medicine(6) PET scan	1. To understand the concept of PET images. 2. To know the role of PET scan in oncology including staging and restaging of different cancers like lung, colon, breast, oesophagus, lymphoma, head and neck.
8	Contrast Media	1. To explain different types of contrast media. 2. To explain pharmacological agents used for diagnostic purpose in human body. 3. To explain adverse reactions of contrast media and its management. 4. Describe different methods for reducing the risk of contrast nephropathy
9	Chest radiology(Anatomy)	1. Introduce the students to chest radiological anatomy. 2. Recognize normal anatomic structures of the chest on imaging exams. 3. To learn basics about chest radiographs interpretation.
10	Chest radiology(Pathology)	1. To learn how to differentiate between consolidation and atelectasis. 2. Discuss common and emergency pathologies on chest x-ray. 3. To know differences between benign Vs. malignant lung masses. 4. To know about different types of lung cancer and their radiological appearance.
11	Neuroanatomy	1. Review the radiological anatomy of central nervous system. 2. Discuss different imaging modalities in Neuro-radiology. 3. To know section planes and different MRI sequences.
12	Neuroradiology	1. Discuss the appearances of basic pathological process on CT and MRI. 2. To understand imaging protocol in cerebrovascular accidents 3. To learn about intracranial hemorrhages like extradural, subdural, subarachnoid and intracerebral hemorrhages. 4. Explanation about intra and extra-axial CNS tumors.
13	Musculoskeletal radiology	1. Rapid review of short lines about musculoskeletal anatomy. 2. To know imaging features of benign and malignant bone lesions. 3. To know about different joint diseases and their radiological signs.
14	CT abdomen anatomy	1. For good orientation and review of short lines about abdominal anatomy. 2. To correlate between radiological anatomy and applied pure anatomy

15	GI pathology	1. To describe different types of barium studies. 2. To know indications and contraindications of barium studies. 3. Describe radiographic signs and differential diagnosis of common gastrointestinal pathologies for example GI tumors and inflammatory bowel diseases.
16	GU pathology	1. Identify the major radiological anatomy of the genitourinary system. 2. Describe main radiographic procedures of the genitourinary system. 3. Elicit radiographic signs of common GU diseases for example urolethiasis, VUR, uterine anomalies and renovascular diseases.
17	Pediatric radiology(1) Chest	1. Make the students able to interpret pediatric chest x-ray. 2. Able to identify different types of tubes and lines on chest and abdomen radiographs. 3. Describe radiographic signs of a pneumothorax. 4. Be able to identify radiological findings of foreign body inhalation in pediatric age groups.
18	Pediatric radiology(2) Urinary system	1. To know different imaging modalities of genitourinary tract in pediatric age groups. 2. To learn about recommended imaging procedures following urinary tract infections in children. 3. To know about VUR grades.
19	Pediatric radiology(3) Miscellaneous	1. To know the importance and benefits of spine and head ultrasound in infants. 2. To learn common radiological signs and findings seen in child abuse. 3. Growth plate fractures and its types.
20	Mammography(1)	1. Brief revision about breast anatomy. 2. To understand basic physics of mammography, basic mammogram views. 3. To know the difference between screening and diagnostic mammograms.
21	Mammography(2)	1. To know Indications and importance of breast ultrasound. 2. Discuss different cases of benign & malignant breast diseases. 3. Latest updates about breast cancer screening guidelines.

22	Interventional radiology (Vascular)	1. To understand the proper placement of tubes and central venous lines, as well as the various complications of these procedures. 2. To know the indications of an IVC filter placement. 3. To know the benefits and limitations of different angiographic studies for example CT angiogram, MR angiogram, conventional angiography.
23	Interventional radiology (Non-vascular)	1- To know the role of interventional radiology in hepatobiliray system including chemoembolization, Trans jugular intrahepatic portosystemic shunt, liver biopsies. 2- To know different genitourinary system interventions like nephrostomies, antegrade Double-J and Percutaneous nephrolithotomy. 3- To know about uterine artery embolization in the treatment of uterine fibroids. 4- To know the principle of ultrasound and CT guided biopsies.
24	Interventional radiology (Neuorointervention)	1- Brief review of vascular supply of central nervous system. 2- To know the role of interventional radiology in the diagnosis and treatment of non traumatic subarachnoid hemorrhage like ruptured berry aneurysms and arteriovenous malformation. 3- To know the role of interventional radiology in the treatment of acute ischemic stroke like thrombolysis and thrombectomy.

(2) Seminar

Seminar	1. Each student is asked to take two different cases from two different modalities like CT scan, MRI, Fluoroscopy, nuclear medicine scans, Ultrasound and X-rays. 2. Each student should take clinical history, attend the imaging procedure and write the radiological findings. 3. Each student will discuss his/her cases with a senior resident at the end of rotation as part of evaluation.

Course Assessment

Assessment	
Assessment type	**Weight**
Evaluation(Attendance)	5
Seminar	10
End rotation clinical exam	40
Final written exam	45
Total	100

Student Learning Outcomes Upon successful completion of this course, students should be able to:		
SLOs	**Evaluation Criteria (MCQ, End rotation exam, Case discussion)**	
	Type of Criteria (MCQ, End-rotation exam, Case discussion)	**Weight (%)**
The student will be able to identify normal anatomy on routine diagnostic imaging as well as recognize image modality.	**End rotation exam & Case discussion**	**25**
The student will be able to diagnose common and emergency pathologies on routine diagnostic images.	**End rotation exam & Case discussion**	**25**
The student will be able to develop an approach for evaluation of plain radiography	**Case discussion**	**5**
The student will be able to apply gained knowledge of radiological anatomy, imaging procedures, techniques and basic physical principles of radiology in daily clinical work, the student is expected to incorporate this knowledge in patients care.	**MCQ**	**45**
		100