

Course Syllabus of CT and MRI equipment and technique

Faculty: Faculty of Medicine and Health Sciences

Department: Health Sciences

Program: Bachelor in Radiologic Technology and Medical Imaging

I. General information about the course instructor:

Name	Saddam Alzofi	Office Hours (3 Hours Weekly)					
Location & phone number	UST- 775031101	Sat	Sun	Mon	Tue	Wed	Thu
Email	S.alzofi @gmail.com	1		1		1	

II. General information about the course:

1.	Course Title:	CT and MRI equipment and technique				
2.	Course Code and Number:	BMI421				
3.	Credit Hours	Lecture	Seminar/Tutorial	Practical	Training	Total
		2		1		3
4.	Study Level and Semester:	4 th year / 2 ^{ed} semester				
4.	Pre-requisites:	BMI413				
5.	Co-requisites:	None				
6.	Program in which the course is offered:	Bachelor in Radiologic Technology and Medical Imaging				
7.	Teaching Language:	English				
8.	Study System :	Semester based				
9.	Instruction location:	University of Science and Technology, Sana'a, Yemen				

III. Course Description:

This course is a study of protocols of examination of main body parts by CT and MRI. This course includes an introduction to CT and MRI physics and parameters that affect image quality in addition to safety issues specially in MRI. Patient preparation, position and protocol selection is the primary content of this course. General and sectional anatomical review in addition to main pathological condition also included in this course. The teaching will include, lectures with seminars, Group discussion, field visit, dialogue and clinical practice. The students will be evaluated through report, quiz, assignment and written and practical exams. CT & MRI physics is pre-requisite courses.

عميد الكلية:
د. عبدالله المخلافي

رئيس القسم:
د. عبدالحبيب القباطي

١٥/٩

المراجع:
د. أمين الفلاحي
د. مجاهد نصار

الموصف:
صدام الزوفي

IV. Course objectives: This course is aimed to

1. Provide sufficient knowledge about manipulation of advance modalities.
2. Select the appropriate protocols according to patient status and pathological condition.
3. Correctly apply the safety procedures in advance imaging modalities.
4. Improve student's skills in dealing with special needs patient.
5. Effective utilization of accessories available in CT and MRI rooms.
6. Professional using of Contrast media and lifesaving drugs in case of emergency.

V. Course Intended Learning Outcomes (CILOs):

1. Recognize the sectional anatomy and radiographic pathology regarding to CT and MRI.
2. Identify the physical parameters that affect the image quality.
3. Explain the advance techniques and procedure of CT and MRI.
4. Framing suitable solutions and procedures in emergency cases.
5. Analyze the image quality to detect any abnormality and expect wither this abnormality regarded to patient or equipment.
6. Operate the advance imaging modalities professionally.
7. Follow international standards of patient safety and protection in accordance to patient condition.
8. Apply QA procedures regarding to advance imaging modalities.
9. Perform suitable procedures to the patient from preparation to after care procedures to improve patient care and meet the needs of examination.
10. Effectively interact with health care workers specially radiologist and engineer to provide safety of patient and machines.



١٥ / ١٠

[Handwritten signature]
D. Amin Al-Falahi
D. Majed Nasser

المراجع :
د. أمين الفلاحي
د. مجاهد نصار

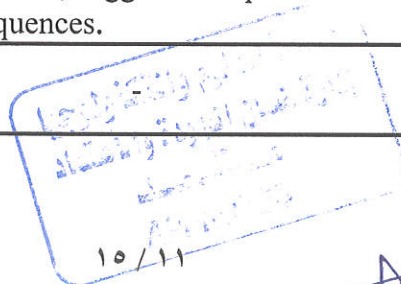
الموصف :
صدام الزوفي

[Handwritten signature]

VI. Course Content

First: Theoretical Aspects

No.	Course Topics/Units	Sub-topics	Weeks due	Contact Hours
1	Introduction to CT	Physical principles Major component of CT scanner CT images Parameters affect quality of CT images	1 st	2
2	Introduction to MRI	Physical principles Major component of MRI scanner MRI images Parameters affect quality of MRI images MRI safety	2 nd	2
3	CT brain & CTA	Anatomical review Indications & contraindications Patient preparation Positioning and centering Protocol selection Most common pathological finding Filming	3 rd , 4 th	4
4	MRI brain	Anatomical review Indications & contraindications Patient preparation Equipment used Positioning, centering planning Protocol selection, suggested sequences and additional sequences. Most common pathological finding Filming	5 th	2
5	CT chest	Anatomical review Indications & contraindications Patient preparation Positioning and centering Protocol selection Most common pathological finding Filming	6 th	2
6	MRI chest	Anatomical review Indications & contraindications Patient preparation Positioning, centering Equipment used planning Protocol selection, suggested sequences and additional sequences.	7 th	2
7	Mid-term		8 th	2



المراجع :
د. أمين الفلاحي
د. مجاهد نصار

الموصف :
صدام الزوفي

8	CT abdomen	Anatomical review Indications & contraindications Patient preparation Positioning and centering Protocol selection Most common pathological finding Filming	9 th	2
9	MRCP	Anatomical review Indications & contraindications Patient preparation Positioning, centering Equipment used planning Protocol selection, suggested sequences and additional sequences.	10 th	2
10	CT spine	Anatomical review Indications & contraindications Patient preparation Positioning and centering Protocol selection Most common pathological finding Filming	11 th	2
11	MRI spine	Anatomical review Indications & contraindications Patient preparation Positioning, centering Equipment used planning Protocol selection, suggested sequences and additional sequences	12 th	2
12	MRI shoulder	Anatomical review Indications & contraindications Patient preparation Positioning, centering and Equipment used planning Protocol selection, suggested sequences and additional sequences	13 th	2
13	MRI knee	Anatomical review Indications & contraindications Patient preparation Positioning, centering and Equipment used planning Protocol selection, suggested sequences and additional sequences	14 th	2
14	Final Exam		15 th	2
Total number of weeks and hours			15	30

١٥ / ١٢

المراجع :
د. أمين الفلاحي
د. مجاهد نصار

الموصف :
صدام الزوفي

Second: Practical/Tutorial/Clinical Aspects			
No.	Practical/Tutorial/Clinical topics	No. of Weeks	Contact Hours
1	CT physics and equipment demonstration	1 st	2
2	MRI physics and equipment demonstration	2 nd	2
3	CT brain demonstration	3 rd	2
4	MRI brain demonstration	4 th	2
5	CT chest demonstration	5 th	2
6	MRI chest demonstration	6 th	2
7	CT abdomen demonstration	7 th	2
8	MRCP demonstration	8 th	2
9	CT spine demonstration	9 th	2
10	MRI spine demonstration	10 th	2
11	MRI shoulder demonstration	11 th	2
12	MRI knee demonstration	12 th	2
13	General revision	13 th	2
14	Final practical exam	14 th	2
Total number of weeks and hours		14	28