Medical Doctorate (M.D.) Degree Program and Courses Specifications for RADIO-DIAGNOSIS

(According to currently applied Credit point bylaws)

Radiodiagnosis Department

Faculty of medicine

Assiut University

2022 - 2023

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Speciality Courses **Course 6: Radio-diagnosis** **1- Unit (Module) 1 Genitourinary tract** **2- Unit (Module) 2 Musculoskeletal system** **3- Unit (Module) 3 Chest and cardiovascular** **4- Unit (Module) 4 Gastrointestinal tract** **5- Unit (Module) 5 Neuroradiology, head and neck** **6- Unit (Module) 6 Pediatric radiology** **7- Unit (Module) 7 Ultrasound** **8- Unit (Module) 8 Emergency radiology** **9- Unit (Module) 9 Interventional radiology** **10- Unit (Module) 10 Breast radiology**	**57**

M. D. degree of Radio-diagnosis

A. Basic Information

- **Program Title: M.D degree of Radio-diagnosis**
- **Nature of the program: Single.**
- **Responsible Department: Department of Radiology-Faculty of Medicine –Assuit University**
- **Program Academic Director (Head of the Department): Prof. Mostafa Hashem**
- **Coordinator (s):**
  - **Principle coordinator: Prof. . Samy A.El Aziz**
  - **Assistant coordinator (s) :**
  - **Prof. Gehan Sayed Ahmed**
  - **Dr. Mohamed Abdel-Tawab**
- **Internal evaluators: Prof. Dr Afaf Abdel-kader**
  Prof. Dr Abdel-karim Hassan
- **External evaluator: Prof. Dr Amr Hamdy Helmy Morsy**
  Prof. Dr Osman AbouElcibaa Osman Ismail
- **Date of Approval by the Faculty of Medicine Council of Assiut University:** 13-11 - 2017
- **Date of most recent approval of program specification by the Faculty of Medicine Council of Assiut University:** 27-11-2022
- **Total number of courses: 6 courses**
- First part: 5 courses
- Second part: 1 course

B. Professional Information

1- Program aims

1/1. Provide well trained, competent clinical radiologist capable of being appointed as and to undertake the duties of consultant radiologist

1/2. Develop the radiologist knowledge and skills that can be utilized to plan, deliver and evaluate diagnostic radiographic application within legal, ethical and professional framework.

1/3. Write a comprehensive report on radiological study with clinical- radiological interpretation and to deduce the correct diagnosis or the possible differential diagnosis.

1/4. Have a sufficient preliminary knowledge about the use of Computers and computer sciences in radiological

2-Intended learning outcomes (ILOs) *for the whole program*:

2/1Knowledge and understanding:

A. Demonstrate in-depth knowledge and understanding of theories, basics and updated biomedical, clinical epidemiological and socio – behavioral science relevant to Radio-diagnosis as well as the evidence – based application of this knowledge to patient care.
B. Explain basics, methodology, tools and ethics of scientific medical, clinical research.
C. Mention ethical, medico logical principles and bylaws relevant to his practice in the field of Radio-diagnosis.
D. Mention principles and measurements of quality assurance and quality improvement in medical education and in clinical practice of the Radio-diagnosis.
E. Mention health care system, public health and health policy, issues relevant to this speciality and principles and methods of system – based improvement of patient care in common health problems of the field of Radio-diagnosis.

2/2 Intellectual outcomes

A. Apply the basic and clinically supportive sciences which are appropriate to the Radio-diagnosis related conditions.

B. Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to Radio-diagnosis.

C. Plan research projects.

D. Write scientific papers.

E. Participate in clinical risk management as a part of clinical governance.

F. Plan for quality improvement in the field of medical education and clinical practice in Radio-diagnosis.

G. Create and innovate plans, systems, and other issues for improvement of performance in Radio-diagnosis.

H. Present and defend his / her data in front of a panel of experts.

I. Formulate management plans and alternative decisions in different situations in the field of the Radio-diagnosis

2/3 Skills

2/3/1 Practical skills (Patient Care)

Students will be able to:

A. Provide extensive level of patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health.

p.s. Extensive level means in-depth understanding from basic science to evidence – based clinical application and possession of skills to manage independently all problems in field of practice.

B. Provide extensive level of patient care ***for patients with all common diagnoses and for uncomplicated procedures*** related to Radio-diagnosis.

C. Provide extensive level of patient care ***for non-routine, complicated patients and under increasingly difficult circumstances***, while demonstrating compassionate, appropriate and effective care.

D. Perform diagnostic and therapeutic procedures considered essential in the field of Radio-diagnosis.

E. Handles unexpected complications, while demonstrating compassion and sensitivity to patient needs and concerns.

F. Communicate effectively and demonstrate caring and respectful behaviors when interacting with patients and their families in the Radio-diagnosis related situations**.**

G. Gather essential and accurate information about patients of the Radio-diagnosis related conditions.

H. Make informed decisions about diagnostic and therapeutic interventions based on patient information and preferences, up-

to-date scientific evidence and clinical judgment for the Radio-diagnosis related conditions.

I. Develop and carry out patient management plans for Radio-diagnosis related conditions.

J. Counsel and educate patients and their families about Radio-diagnosis related conditions.

K. Use information technology to support patient care decisions and patient education in all Radio-diagnosis related clinical situations.

L. Perform competently all medical and invasive procedures considered essential for the Radio-diagnosis related conditions / area of practices.

M. Provide health care services aimed at preventing the Radio-diagnosis related health problems.

N. Lead health care professionals, including those from other disciplines, to provide patient-focused care in Radio-diagnosis related conditions**.**

O-Write competently all forms of patient charts and sheets including reports evaluating these charts and sheets (Write and evaluate a consultation note, Inform patients of a diagnosis and therapeutic plan, completing and evaluating comprehensive, timely and legible medical records)

2/3/2 General skills

Including:

- Practice-based Learning and Improvement
- Interpersonal and Communication Skills
- Professionalism
- Systems-based Practice

Practice-Based Learning and Improvement

A. Demonstrate continuous evaluation of different types of care provision to patients in the different area of Radio-diagnosis.
B. Appraise scientific evidence.
C. Continuously improve patient care based on constant self-evaluation and life-long learning.
D. Participate in clinical audit and research projects.
E. Practice skills of evidence-based Medicine (EBM).
F. Educate and evaluate students, residents and other health professionals.
G. Design logbooks.
H. Design clinical guidelines and standard protocols of management.
I. Appraise evidence from scientific studies related to the patients' health problems.
J. Apply knowledge of study designs and statistical methods to the appraisal of clinical studies.
K. Use information technology to manage information, access on-line medical information; for the important topics.

Interpersonal and Communication Skills

L. Master interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals, including:-

- Present a case.
- Write a consultation note.
- Inform patients of a diagnosis and therapeutic plan completing and maintaining comprehensive.
- Timely and legible medical records.
- Teamwork skills.

M. Create and sustain a therapeutic and ethically sound relationship with patients.
N. Elicit and provide information using effective nonverbal, explanatory, questioning, and writing skills.
O. Work effectively with others as a member or leader of a health care team or other professional group.

Professionalism

P Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society.
Q. Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.
R. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities.

Systems-Based Practice

S. Work effectively in health care delivery settings and systems related to Radio-diagnosis including good administrative and time management.

T. Practice cost-effective health care and resource allocation that does not compromise quality of care.

U. Advocate for quality patient care and assist patients in dealing with system complexities.

V. Design, monitor and evaluate specification of under and post graduate course and programs.

W. Act as a chair man for scientific meetings including time management.

3- Program Academic Reference Standards (ARS) (Annex 2)

Academic standards for Medical Doctorate (MD) degree in Radio-Diagnosis

Assiut Faculty of Medicine developed MD degree programs' academic standards for different clinical specialties.

In preparing these standards, the General Academic Reference Standards for post graduate programs (GARS) were adopted. These standards set out the graduate attributes and academic characteristics that are expected to be achieved by the end of the program.

These standards were approved by the faculty council on 13-11-2017. These standards were revised and approved without changes by Faculty Council on 27-11-2022.

4- Program External References (Benchmarks)

1. ACGME (Accreditation Council for Graduate Medical Education).
https://www.acgme.org/specialties/radiology/overview/
2. American College of Radiology (ACR).
http://www.acr.org/

Comparison between program and external reference		
Item	Radio-diagnosis	ACR Board Review Course
Goals	Matched	Matched
ILOS	Matched	Matched
Duration	4-6 years	Different
Requirement	Different	Different
Program structure	Different	Different
Outpatient skills	Gained as part of radio-diagnosis Unit (Module), not as a separate course.	Gained as part of radio-diagnosis as a separate course.

5- Program Structure

A. Duration of program: 4-6 years

B. Structure of the program:

Total number of credit point = 420 CP

Master degree: 180 credit point

Didactic #: 37 (23.1%), practical 123 (76.9%), total 160 CP

Thesis and researches: 80 CP (33.3%)

First part

Didactic 10 CP (100 %), practical 0(0 %).total 10 CP

Second part

Didactic 24, (16.3 %) practical 123 (83.7 %) total 147

According the currently applied bylaws:

Total courses:160 credit point

Compulsory courses: 157 credit point (98.1%)

Elective courses: 3 credit point (1.9%)

	Credit points	% from total
Basic science courses	10	4.1%
Humanity and social courses	3	1.2%
Speciality courses	147	61.3%
Others (Computer, …)		0
Field training	123	51.3%
Thesis	40	16.7%
2 published researches	40	16.7%

C- Program Time Table

Duration of program 4 years (could be extended at maximum to 6 years) divided into

- Part 1

Program-related Basic science courses
- Medical statistic
- Research methodology
- Medicolegal Aspects and Ethics in Medical Practice and Scientific Research

Students are allowed to sit the exams of these courses after 6 months from applying to the M D degree.
Students are allowed to sit the exams of the remaining Basic science courses after 12 months from applying to the MD degree.

- Thesis and 2 published researches

For the M D thesis;
MD thesis subject should be officially registered within 1 year from application to the MD degree,
Discussion and acceptance of the thesis should not be set before 24 months from registering the M D subject;
It could be discussed and accepted either before or after passing the second part of examination

- Part 2

Program –related Speciality courses and ILOs
Students are not allowed to sit the exams of these courses before 4 years from applying to the MD degree.

Two elective courses can be set during either the 1st or 2nd parts.

The students pass if they get 50% from the written exams and 60% from oral exams, 60% from clinical/practical exams of each course and 60% of summation of the written exams, oral and clinical/practical exams of each course

Total degrees 1700 marks.

500 marks for first part

1200 for second part

Written exam 40% - 70%.

Clinical/practical and oral exams 30% - 60%.

Curriculum Structure: (Courses):

Levels and courses of the program:

Courses and student work load list	Course Code	Core Credit points		
		didactic #	training	total
First Part				
Basic science courses (10 CP) Course 1: Medical Statistics and computer Course 2: Research Methodology Course 3: - Medicolegal Aspects & Ethics in Medical Practice and Scientific Research Course 4: - Nuclear medicine Course 5: Recent Advance in different medical imaging techniques and its applications	 FAC309A FAC309B FAC310C RAD327 RAD328A	 1 1 1 3 4	 - - - - -	 1 1 1 3 4
Elective courses*	3 CP			
Elective course 1 Elective course 2		1.5 1.5		1.5 1.5
Thesis		40 CP		
Published researches**		40 CP		
Second Part	Speciality courses 24 CP Speciality Clinical Work (log Book) 123 CP			
Speciality Courses **Course 6 "radio-diagnosis.**	**RAD328B**		24	
Speciality Clinical Work (123 CP)	**RAD328B**			123
Total of second part		24	123	147

#Didactic (lectures, seminars, tutorial)

* Elective courses can be taken during either the 1st or 2nd parts.

Student work load calculation:

Work load hours are scheduled depending on the type of activities and targeted competences and skills in different courses

Elective Courses#:

- Advanced medical statistics.
- Evidence based medicine.
- Advanced infection control.
- Quality assurance of medical education.
- Quality assurance of clinical practice.
- Hospital management

Two of the above mentioned courses are prerequisites for fulfillment of the degree.

3. Thesis / Researches:

40 CP are appointed to the completion and acceptance of the thesis.

** Another 40 points are appointed to acceptance or publication of one research from the thesis in international indexed medical journals or publication of 2 researches from the thesis in local specialized medical journals.

*Radio-diagnosis Course

Units' Titles' list	% from total Marks
1) Unit (Module) 1 Genitourinary tract.	12%
2) Unit (Module) 2 MSK system	15%
3) Unit (Module) 3 Chest and cardio-vascular system	15%
4) Unit (Module) 4 Gastrointestinal tract	14%
5) Unit (Module) 5 Neuroradiology, head and neck.	16%
6) Unit (module) 6 Pediatric radiology	6%
7) Unit (Module) 7 US.	8%
8) Unit (Module) 8 Emergency radiology	8%
9) Unit (Module) 9 Interventional radiology	3%
10) Unit (module) 10 Breast radiology	3%
Total No. of Units: (10)	**100%**

6. Courses Contents (Annex 1)

The competency based objectives for each course/module/rotation are specified in conjunction with teaching/training methods, requirements for achieving these objectives and assessment methods.

See Annex 1 for detailed specifications for each course/ module
Annex 6 II: Program Matrix

7-Admission requirements

- **Admission Requirements (prerequisites) if any :**
  - **I. General Requirements:**
    - **Master degree in the Radio-diagnosis.**
  - **II. Specific Requirements:**
    - **Fluent in English (study language)**

VACATIONS AND STUDY LEAVE

The current departmental policy is to give working assistant lecture 3 week leave prior to first/ second part exams.

FEES:

As regulated by the postgraduate studies rules and approved by the faculty vice dean of post graduate studies and the faculty and university councils.

8-Progression and completion requirements

- Examinations of the first part (Medical statistic, Research methodology and Medicolegal Aspects and Ethics in Medical Practice and Scientific Research) could be set at 6 months from registering to the MD degree.
- Students are allowed to sit the exams of the remaining Basic science courses of the first part after 12 months from applying to the MD degree.
- Examination of the second part cannot be set before 4 years from registering to the degree.
- Discussion of the MD thesis could be set after 2 years from officially registering the MD subject, either before or after setting the second part exams.
- The minimum duration of the program is 4 years.

The students are offered the degree when:

1. Passing the exams of all basic science, elective and Speciality courses of this program as regulated by the post graduates approved rules by the faculty council.
2. Completing all scheduled CP and log book (minimum 80%).
3. Discussion and acceptance of the MD thesis.
4. Acceptance or publication of one research from the thesis in international indexed medical journals or publication of 2 researches from the thesis in local specialized medical journals.

9-Program assessment methods and rules (Annex IV)

Method	ILOs measured
Written examinations: Structured essay questions Objective questions MCQ Problem solving	K & I
Clinical: Long/short cases OSCE	K ,I, P &G skills
Structured oral	K ,I &G skills
Logbook assessment	All
Research assignment	I &G skills

Weighting of assessments:

Courses		Degrees			
	Course code	Written Exam	Oral and/or Practical Exam		Total
First Part					
Basic science courses:					
Statistics and computing	FAC309A	35	15	-	50
Research Methods	FAC309B	35	15	-	50
Medical reports and medical ethics	FAC310C	35	15	-	50
Course 4: - Nuclear medicine	RAD327	90	60	-	150
Course 5: Recent Advance in different medical imaging techniques and its applications	RAD328A	80	60	60	200
Total of first part					500
Second Part					
	Course code	Written	oral*	Clinical and practical	total
Speciality Courses		480			
1- Course 4 "Radio-diagnosis" Paper 1 Paper 2 Paper 3 Paper 4	RAD328B	 120 120 120 120	36	360	
Total		480	360	360	1200
Elective course 1		50	50		100
Elective course 2		50	50		100

* 25% of the oral exam for assessment of logbook

Total degree 1900
500 marks for first part
1200 for second part
Written exam 40% (480 marks).
Clinical /practical and oral exams 60% (720) marks

Examination system:

First part:

- Written exam 2 hours in Medical Statistics and Research Methodology + oral examination
- Written exam 1 hours in Medicolegal Aspects and Ethics in Medical Practice and Scientific Research + oral examination
- Written exam 2 hours in Nuclear Medicine + Oral exam
- Written exam 3 hours in Recent Advance in different medical imaging techniques and its applications + Oral exam+ Practical exam

Second part:

- Written Exam 4 papers 3 hours for each in Radio diagnosis + Oral exam + Practical exam
-

Elective courses

- Written exam one paper 1 hour in Elective course 1 + Oral & Practical exam
- Written exam one paper 1 hour in Elective course 2 + Oral & Practical exam

10-Program evaluation

By whom	Method	Sample
Quality Assurance Unit	Reports Field visits	#
External Evaluator (s):According to department council External Examiner (s): According to department council	Reports Field visits	#
Stakeholders	Reports Field visits questionnaires	#
Senior students	questionnaires	#
Alumni	questionnaires	#

#Annex 5 contains evaluation templates and reports (Joined in the departmental folder).

11-Declaration

We certify that all of the information required to deliver this program is contained in the above specification and will be implemented.
All course specifications for this program are in place.

Contributor	Name	Signature	Date
Program Principle Coordinator:	**Prof. Dr Samy Abdel-Aziz**		**6/2022**
Head of the Responsible Department (Program Academic Director):	**Prof. Dr Mostafa Hashem**		**6/2022**

Annex 1, Specifications for Courses / Modules

Annex 1: specifications for courses

First Part

1) **Course 1: Medical statistics**
2) **Course 2: Research Methodology**
3) **Course 3: Medicolegal Aspects and Ethics in Medical Practice and Scientific Research**

Course 1: Medical statistics

Name of department: Public Health and Community Medicine
Faculty of medicine
Assiut University
2022-2023

1. Course data

- **Course Title: Medical statistics**
- **Course code: FAC309A**
- **Specialty: offered to all clinical and academic specialties**
- **Number of credit points: 1 credit point**
- **Department (s) delivering the course:** Pubic Health and Community Medicine
- **Coordinator (s):**
  - Course coordinator: Prof. Farag Mohammed Moftah
  - Assistant coordinator (s): Prof. Medhat Araby Khalil Saleh
- Date last reviewed: January -2022
- **Requirements (pre-requisites) if any:**
  - Completed Master degree in any of the academic or clinical departments of Medicine.

2. Course Aims

Enable gradute students to use statistical principles to improve their professional work and develop the concept of critical interpretation of data

3. Intended learning outcomes (ILOs):To be able to use statistical principals to manage data

A knowledge and understanding

ILOS	Methods of teaching/ learning	Methods of Evaluation
A. List the types of variables	Lecture and discussion	Written examination
B. Identify the methods of data collection	Lecture and discussion	Written examination
C. Describe the different sampling strategies	Lecture and discussion	Written examination
D. Identify types of tabular and graphic presentation of data	Lecture and discussion	Written examination
E. Identify measures of central tendency and dispersion	Lecture and discussion	Written examination
F. Identify the characters of normal distribution curve.	Lecture and discussion	Written examination
G. Detect the difference between parametric and non-parametric tests	Lecture and discussion	Written examination
H. Identify the concepts of correlation and regression	Lecture and discussion	Written examination

B. intellectual

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Describe the normal curves.	Lecture& Discussions	Written examination
B. Describe and summarize data	Lecture& Discussions	Written examination
C. Select the proper test of significance	Lecture& Discussions	Written examination
D. Interpret the proper test of significance	Lecture& Discussions	Written examination
E. Describe the difference between parametric and non-parametric tests	Lecture& Discussions	Written examination

C. Practical skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Design data entry files.	Tutorial on SPSS	Assignments SPSS exam
B. Validate data entry.	Tutorial on SPSS	Assignments SPSS exam
C. Manage data files.	Tutorial on SPSS	Assignments SPSS exam
D. Construct tables and graphs.	Tutorial on SPSS	Assignments SPSS exam
E. Calculate measures of central tendency and dispersion.	Tutorial on SPSS	Assignments SPSS exam
F. Select, apply and interpret the proper test of significance.	Tutorial on SPSS	Assignments SPSS exam

D general skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Appraise scientific evidence	Discussions	Research assignment
B. Use information technology to manage information, access on-line medical information; for the important topics.	tutorial	Research and audits' assignment

4. Course contents (topic s/modules/rotation
Course Matrix

Time Schedule: First Part

Topic	Covered ILOs			
	Knowledge A	Intellectual B	Practical skills C	General Skills D
Introduction	A-F	A-D	-	A&B
Tables and graphics	D	A-D	-	A&B
Sampling	C	-	-	A&B
Methodology of data collection	B	-	-	A&B
Type of variables	A	-	-	A&B
Proportion test& Chi-square test	E,F	C&D	-	A&B
Student T test& Paired T test	E,F	C&D	F	A&B
ANOVA test	E,F	C&D	F	A&B
Non parametric tests	E,F	C&D	F	A&B

Discrimination analysis factor analysis	E,F	C&D	-	A&B
SPSS Introduction	A-F	A-D	-	A&B
Data entry and cleaning of data	A	A-D	A-C	A&B
Transforming of variables	A	A&B	A-C	A&B
Descriptive statistics	D	A-D	D&E	A&B
Graphic presentation	D	A&B	D	A&B
Chi square and interpretation of results	E,F	C&D	F	A&B
Correlation Regression	E,F	C&D	F	A&B
Multiple and logistic Regression	E,F	C&D	F	A&B

5. Course Methods of teaching/learning

1. Lectures
2. Assignments
3. Discussions
4. Exercises
5. Tutorial on SPSS v.16

6. Course assessment methods:

i. Assessment tools:

1. Attendance and active participation
2. Assignment
3. Practical SPSS examination
4. Written exam

ii. Time schedule: After 6 months from applying to the M D degree.

iii. Marks: 50 (35 for written exam and 15 for practical exam).

7. List of references

i. Lectures notes

Department lecture notes

ii. Essential books

- Medical Statistics: Book by Ramakrishna HK 2016
- Janet Peacock and Philip Peacock. Oxford Handbook of Medical Statistics (second edition.) Publisher: Oxford University Press, Print Publication Date: Nov 2010 Print ISBN-13: 9780199551286, Published online: Jun 2011. DOI: 10.1093/med/9780199551286.001.0001
- Leslie E. Daly MSc, PhD, Hon MFPHM,, Geoffrey J. Bourke MA, MD, FRCPI, FFPHM, FFPHMI, Interpretation and Uses of Medical Statistics, Fifth Edition, First published:1 January 2000, Print ISBN:9780632047635 |Online ISBN:9780470696750 |DOI:10.1002/9780470696750
- Marcello Pagano, Kimberlee Gauvreau: Principles of Biostatistics second edition published in 2000 by Brooks/Cole and then Cengage Learning. CRC Press, Feb 19, 2018 - Mathematics - 584 pages.

Iii- Recommended books

- Ji-Qian Fang (Sun Yat-Sen University, China) Handbook of Medical Statistics: https://doi.org/10.1142/10259 | September 2017.Pages: 852
- Robert H. Riffenburgh: Statistics in Medicine 4th Edition (2020). EvidenceEvidence Based Medicine How to practice and teach EBM.
- Discovering Statistics Using IBM SPSS Book by Andy Field, 2013.

iii. Periodicals, Web sites, etc

iv. **Periodicals , etc** Statistics in Medicine - Wiley Online Library

v. **Web sites** https://www.phc.ox.ac.uk/research/medical-statistics

8. Signatures

Course Coordinator: - Farag Mohammed Moftah	**Head of the Department:** - Prof. Eman Morsy Mohamed
Date: 10-1-2022	**Date**: 10-1-2022
Associated Coordinator: Prof. Medhat Araby Khalil Saleh	
Date: 10-1-2022	

Course 2: Research Methodology

Name of department: Public Health and Community Medicine
Faculty of medicine
Assiut University
2021-2022

1. Course data

- **Course Title: Research methodology**
- **Course code: FAC309B**
- **Specialty: Offered to all clinical and academic specialties**
- **Number of credit points: 1 credit point**
- **Department (s) delivering the course: Department of public health**
- **Coordinator (s):**
  - **Course coordinator:** Prof. Mahmoud Attia

  Assistant coordinator (s): Prof. Ekram Mohamed
  - Prof. Medhat Araby Khalil
- **Date last reviewed:** January 2022
- **Requirements (prerequisites) if any:**
  - **Completed Master degree in any of the academic or clinical departments of Medicine.**

2. Course Aims

To provide graduate students with the skills of:

- planning and implementing sound research
- writing a scientific research proposal

3. Intended learning outcomes (ILOs)

A knowledge and understanding

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Explain differences between different study designs.	Lecture and discussion Practical sessions Workshops	Written exam Log book assignments Practical exam
B. Identify sources and types of bias in research.	Lecture and discussion Practical sessions	Written exam Log book assignments Practical exam
C. Identify methods of data collection.	Lecture and discussion Practical sessions	Written exam Log book assignments
D. Select and design valid measurement tools for research.	Lecture and discussion Practical sessions Workshops	Written exam Log book assignments Practical exam
E. Explain ethical issues in conducting research on human subjects.	Lecture and discussion Practical sessions Workshops	Written exam Log book assignments
F. List the steps involved in proposal writing.	Lecture and discussion Practical sessions Workshops	Written exam Log book assignments Practical exam
G. Identify a research problem within a	Lecture Discussion	Written exam Log book

conceptual framework.		assignments Practical exam
H. Use the web sources to do a literature search	Practical tutorial on web	Log book assignment
I. Describe the rules of authorship in scientific writing.	Lecture and discussion Practical sessions Workshops	Written exam Log book assignments
J. Select the appropriate study design for the research question.	Lecture Practical sessions	Written exam Practical exam
K. Minimize bias in designing research.	Lecture	Written exam
L. Screening & theoretical background	Lectures	Written exam Practical exam
M. Mention the basic ethics for conducting a research and medicolegal principles relevant to data confidentiality.	lectures seminar	Written exam Practical exam

B. intellectual

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A- Apply basic science & knowledge for appraising scientific literature.	Discussions &seminars	Written exam Practical exam
B- Design research and present study data, in seminars.	lecture seminar	log book assignments
C- Design suitable epidemiological study.	lecture seminar	log book assignments
D- Design strategies for resolving ethical concerns in research, law, and regulations.	lecture Workshops	Written exam log book assignments
E- Apply coherently synthesize ideas and integrate lateral and vertical thinking.	lecture Workshops	log book assignments
F- Evaluate screening tests and interpreting their uses in different population.	lecture	Written exam Practical exam

C. Practical skills

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A- Conduct epidemiological studies, screening and surveys.	lectures seminar	written exam log book assignments
B- Identify steps required in fielding the study.	Lecture	Assignments Written exam
C- Managing data collection team.	lectures seminar	log book assignments
D- Identify steps required for calculation sensitivity, specificity, positive predictive value, negative predictive value, accuracy of a screening test.	Lecture Practical sessions	Assignments Written exam Practical exam
E- Be able to define and apply the epidemiologic criteria of causality and be able to distinguish between a measure of association and evidence of causality.	Lecture Practical sessions	Assignments Written exam Practical exam
F- Synthesize information from multiple sources for research writing and the ability to perform paper critique .	Lecture Practical sessions	Assignments Written exam Practical exam
G- Identify bias and confounding in epidemiological study designs, their types and ways to control them in various types of biases.	Lecture Practical sessions	Assignments Written exam Practical exam

D General skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A- Scientific paper and proposal writing skills: be able to write an introduction, objectives and the methodological section.	Tutorial	Written examination
B- Learn authorship ethical rules.	Tutorial	Written examination
C- Perform practice-based improvement activities using a systematic methodology (audit, logbook, critical appraisal)	- Lectures -Practical sessions - Discussion - Readings	critical appraisal
D- Appraise evidence from scientific studies(journal club)	- Lectures -Practical sessions - Discussion - Readings	critical appraisal
E- Conduct epidemiological studies, screening and surveys.	- Lectures -Practical sessions - Discussion - Readings	attendance and participation
F- Facilitate training of junior students and other health care professionals in different screening activities.	Field work Participation in projects	attendance and participation

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
G- Maintain ethically sound relationship with community members.	- Lectures -Practical sessions - Discussion - Readings	Written exams
H- Provide information using effective nonverbal, explanatory, questioning, and writing skills.	- Lectures -Practical sessions - Discussion - Readings	Written exams Practical exams
I- Present results of researches in seminars.	- Lectures -Practical sessions - Discussion - Readings	Log book assignments

Professionalism

ILOs	Methods of teaching/ learning	Methods of Evaluation
J- Demonstrate respect, compassion, and integrity to the needs of society.	- Lectures - Discussion - Readings	Written exams
K- Manage potential conflicts of interest encountered by practitioners, researchers, and organizations.	- Lectures - Discussion - Readings	Written exams
L- Design strategies for resolving ethical concerns in research, law, and regulations.	Lectures - Discussion - Readings	Written exams Practical exams
M- Demonstrate ways to control for confounding in the analysis phase of a study	Lectures - Discussion - Readings	Written exams Practical exams
N- Demonstrate a commitment to ethical principles including confidentiality of participants' information and informed consent.	Lectures - Discussion - Readings	Written exams
O- Assess ethical considerations in developing communications and promotional initiatives.	- Lectures - Discussion - Readings	Written exams

4. Course contents (topic s/modules/rotation
Course Matrix

Time Schedule: First Part

Topic	Covered ILOs			
	Knowledge A	Intellectual B	Practical skills C	General Skills D
Over view on research conduction and research ethics	A&E	A-D	A-C	C-G, I,L&M-O
How to write a research proposal	F,I	E	F	A-C&H
Observational study design	A& D	B & C	D	E & F
Experimental study design	A& D	B & C	B	E & F
Evaluation of diagnostic tests (Screening)	L	A	B& E	F
Systematic reviews and meta analysis	G, H & M	E& F	F	C, D
Confounding, bias & effect modification	B & K	D	E & G	M

5. Course Methods of teaching/learning:

1. Lectures
2. Assignments
3. Discussion
4. Exercises

6. Course assessment methods:

i. Assessment tools:

1. Attendance and participation
2. Log book assignments
3. Written examination
4. Practical examination

ii. Time schedule: After 6 months from applying to the M D degree.

iii. Marks: 50 (35 for written exam and 15 for practical exam).

7. List of references

i. Lectures notes

- Department lecture notes

ii. Essential books

- Research Design: Qualitative, Quantitative and Mixed Methods Approaches 4th Edition by John W. CreswellSAGE Publications, Inc; 4th edition (January 1, 2014)
- Research methodology: A step – by – step Guide for Beginners. Ranjit Kumar, 2020. Second edition https://books.google.com.eg/books?
- Medical Research Essentials Rania Esteitie, McGraw Hill Professional, third edition, Feb 5, 2014 - Medical - 104 pages
- Research Methodology in the Medical and Biological Sciences Petter Laake, Haakon Breien Benestad, Bjorn R. Reino Olsen, 4th edition , Academic Press, Nov 5, 2007 - Science - 512 pages

iv. Recommended books

- Research Methods in Education 7th Edition, by Louis Cohen, Lawrence Manion, Keith Morrison Publisher: Routledge; (April 22, 2011) www.routledge.com/textbooks/cohen7e.
- Research Methodology: A Practical and Scientific Approach Vinayak Bairagi, Mousami V. Munot · 2019, Research Methodology: A Practical and Scientific Approach - Google Books
- Based Medicine How to practice and teach EBM. David Sachett, Sharon E. Straus, W. Scott Richardson , William Rosenberg R.Brain Haynes
- Dissertation workshop open courseware JHSPH

8. Signatures

Course Coordinator: Prof.Mahmoud Attia	**Head of the Department:** Prof. Eman Morsy Mohamed
Date: 10-1-2022	**Date**: 10-1-2022

Course 3: Medicolegal Aspects and Ethics in Medical Practice and Scientific Research

Name of department:
Forensic medicine and clinical toxicology
Faculty of medicine
Assiut University
2016-2017

1. Course data

- **Course Title: Medicolegal Aspects and Ethics in Medical Practice and Scientific Research**
- **Course code: FAC310C**
- **Specialty: Radiology (1st part)**
- **Number of credit point: 1 credit point**
- **Department (s) delivering the course: Forensic Medicine and Clinical Toxicology**
- **Coordinator (s):**
  - **Course coordinator**: Prof. Safaa Maher George.
  - **Assistant coordinator (s)**. Prof. Ghada Omran

- **Date last reviewed: 17-9– 2017.**
- **Requirements (prerequisites) if any :**
  - **Completed Master degree**

2. Course Aims

To describe the basic ethical and medicolegal principles and bylaws relevant to practice in the field of Radiodiagnosis.

3. Intended learning outcomes (ILOs):

A. knowledge and understanding

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A. Explain principals of writing medical reports.	Lecture and discussion	Written & oral exam
B. Mention principals of Dealing with wounds.	Lecture and discussion	Written & oral exam
C. Mention principals of firearm injuries.	Lecture and discussion	Written & oral exam
D. List indications of induced emesis, gastric lavage and samples collection.	Lecture and discussion	Written & oral exam

B. intellectual

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A. Design and present case, seminars in Permanent infirmities, Euthanaesia, and Organ Transplantation	Lecture and discussion	Discussion

C. Practical skills

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A. Identify medical ethics and ethics in research.	Lecture and discussion	Discussion
B. Identify medical responsibilities.	Lecture and discussion	Discussion
C. Write medical reports	Lecture and discussion	Discussion and active participation
D. Perform gastric lavage, induce emesis, and obtain samples	Lecture and discussion	
E. Identify types of wounds and how to deal with	Lecture and discussion	Discussion and active participation
F. Identify types, distance and direction of firearm wounds and how to deal with	Lecture and discussion	Discussion and active participation

D. general skills

Practice-Based Learning and Improvement

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A. Present a case.	Lecture and discussion	Global rating logbook
B. Write a consultation note	Lecture and discussion	Global rating logbook
C. Inform patients and maintaining comprehensive..	Lecture and discussion	Global rating logbook
D. Make timely and legible medical records	Lecture and discussion	Global rating logbook
E. Acquire the teamwork skills	Lecture and discussion	Global rating logbook

4. Course contents (topic s/modules/rotation
Course Matrix

Time Schedule: First Part

Topic	Covered ILOs			
	Knowledge A	Intellectual B	Practical Skill C	General Skills D
1. Medical reports	A		C	A,B,D,E
2. Ethics in research.			A	
3. Medical ethics.			A,B	C,E
4. Wounds.	B	A	E	A
5. Firearm injuries.	C	A	F	A
6. Toxicological Reports	D		D	
7. Permanent infirmities, Euthanasia, and Organ Transplantation		**A**	**C**	B,E

5. Course Methods of teaching/learning:

1. Lectures.
2. Discussions.
3. Exercises.

6. Course assessment methods:

i. Assessment tools:

1. Written examination.
2. Attendance and active participation.
3. Oral examination.

ii. Time schedule: After 6 months from applying to the M D degree.

iii. Marks: 50 (35 for written exam and 15 for oral exam).

7. List of references

i. Lectures notes

- Course notes.
- Staff members print out of lectures and/or CD copies.

ii. Essential books

-Bernard Knight and Pekka Saukko (2015: Knight Forensic Pathology. Hodder Arnold press

-Goldfrank, Lewis R.; Howland, Mary Ann; Hoffman, Robert S.; Nelson, Ewis S.; Lewin, Neal A (2019): Goldfrank's Toxicologic Emergencies, 11th ed. McGraw Hill / Medical.

-Medical Ethics Manual. World medical association. Third edition 2015.

-Medical ethics and law. Dominic Wilkinson, 3rd edition 2019.

iii. Recommended books

-Biswas Gautam (2021): Review of Forensic Medicine & Toxicology. 5th ed. Jaypee Brothers Medical Pub.

iv. Journal and web site

- Journals of all Egyptian Universities of Forensic Medicine and Clinical Toxicology.
- All International Journals of Forensic Medicine and Clinical Toxicology which available in the university network at www.sciencedirect.com. As:
  - Forensic Science International Journal.
  - Toxicology Letter.

v. others

8. Signatures

- Course Coordinator: **Prof. Safaa Maher George**	**- Head of the Department:** **Prof. Randa Hussein Abde lhady**
Date: 17- 9-2017	**Date:17- 9 -2017**

Course 4 - Nuclear medicine

1. Course data

- **Course Title:** Nuclear medicine
- **Course code:** RAD327
- **Speciality is Radio diagnosis**
- **Number of credit point : didactic 3 credit points (100%) , practical (0%) hours, Total 3.**
- **Department (s) delivering the course : Nuclear medicine in conjunction with Radio diagnosis**
- **Course coordinator: Staff members of nuclear medicine**
- **Date last reviewed:** 6-2022
- **Requirements (prerequisites) if any : None**

2. Course aim

The student should acquire in depth the nuclear medicine facts necessary for Radio diagnosis.

3. Intended learning outcomes (ILOs):

A- Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A. Mention in details Principles of : -Nuclear medicine instrumentation. - Hybrid imaging (PET/CT, SPECT/CT) . - PET MRI.	-Lectures	-Written and oral examination - Log book
B- Describe in depth Details of: - Diagnostic nuclear medicine: - Cardiac. - Tumor imaging. -Therapeutic nuclear medicine: - Liver catheter.		

B- Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Correlates the facts of Nuclear medicine with clinical reasoning, diagnosis and management of common diseases related to Radio diagnosis.	Didactic (lectures, seminars, tutorial)	-Written and oral examination -Log book

C- Practical skills = 0 hours

D-General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Use information technology to manage information, access on-line medical information; for the important topics.	-Observation and supervision -Written and oral communication	Log book

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
B. Elicit information using effective nonverbal, explanatory, questioning, and writing skills.	-Observation and supervision -Written and oral communication	Log book
C. Write a report in common condition mentioned in A.A and A.B		

Professionalism

ILOs	Methods of teaching/ learning	Methods of Evaluation
D. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society	-Observation -Senior staff experience	Logbook

Systems-Based Practice

ILOs	Methods of teaching/ learning	Methods of Evaluation
E. Work effectively in relevant health care delivery settings and systems.	-Observation -Senior staff experience	Logbook

4. Contents (topic s/modules/rotations)
Course Matrix (UNIT 11)

Time Schedule: Second Part

Topic	Covered ILOs			
	Knowledge A	Intellectual B	Practical skill C	General Skills D
Principles of :				
-Nuclear medicine instrumentation. - Hybrid imaging (PET/CT, SPECT/CT) . - PET MRI.	**A**	**A**	**A & B**	**A-E**
Diagnostic nuclear medicine: Cardiac. Tumor imaging. -Therapeutic nuclear medicine: Liver catheter	**B**	**A**	**A & B**	**A-E**

5.Unit Methods of teaching/learning:

1. Didactic (lectures, seminars, tutorial)
2. Observation and supervision
3. Written & oral communication
4. Senior staff experience

6. Unit Methods of teaching/learning: for students with poor achievements

1. Extra Didactic (lectures, seminars, tutorial) according to their needs
2. Extra Laboratory work according to their needs

7. Unit assessment methods:

i. Assessment tools:

1. Written and oral examination
2. Assessment of practical skills)
3. Log book

ii. Time schedule: At the end of the Second part

iii. Marks: 150

8. List of references

i. Lectures notes

- Course notes
- Staff members print out of lectures and/or CD copies

ii. Essential books

- Paige A Bennett, Umesh Oza: Diagnostic Imaging: Nuclear Medicine E-Book. 2nd Edition: 2015

iii. Recommended books

- Marcello F. Di Carli (Editor), Martin J. Lipton: Cardiac PET and PET/CT Imaging. 2007th Edition: 2007.
- Andrew B. Newberg, Abass Alavi: PET in the Aging Brain, An Issue of PET Clinics (The Clinics: Radiology). 1st edition:2010
- -Gary V. Heller and Robert C. Hendel: Handbook of Nuclear Cardiology: Cardiac SPECT and Cardiac PET. 2013th Edition: 2012

iv. Periodicals, Web sites, … etc

- Imaging
- www.pubmed.com
- www.eanm.org

v. others: None

Course 5 - Recent Advance in different medical imaging techniques and its application

1. Course data

- **Course Title: Recent Advance in different medical imaging techniques and its applications**
- **Course code: RAD328A**
- **Speciality is Radio diagnosis**
- **Number of credit point : didactic 3 credit points (75%) , practical 1 (25%) hours, Total 4.**
- **Department (s) delivering the course: Radio diagnosis**
- **Course coordinator: Prof. Ahmad Moustafa.**
  Assistant coordinator (s) Prof. Samy A. El Aziz
  Prof. Gehan Sayed Ahmed
- **Date last reviewed:** 6-2022
- **Requirements (prerequisites) if any : None**

2. Course aim

The student should acquire in depth Recent Advance in different medical imaging techniques necessary for Radio diagnosis.

3. Intended learning outcomes (ILOs):

A- Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A. Mention in details Principles of : -Functional MRI. • Diffusion MRI. • Perfusion MRI. • MR Spectroscopy. • MR Tractography. -Dynamic contrast enhanced MRI. -MSCT angiography (aortic, coronary and peripheral angiography). -Whole body MSCT Perfusion. -Elastography (US & MRI). -Contrast enhanced US	-Lectures	-Written and oral examination - Log book

B- Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Correlates the facts of Recent Advance in different medical imaging with clinical reasoning, diagnosis and management of common diseases related to Radio diagnosis.	Didactic (lectures, seminars, tutorial)	-Written and oral examination -Log book

C- Practical Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
A-Order the following non invasive/invasive diagnostic procedures -Functional MRI. - Diffusion MRI. - Perfusion MRI. - MR Spectroscopy. - MR Tractography. -Dynamic contrast enhanced MRI. -MSCT angiography (aortic, coronary and peripheral angiography). -Whole body MSCT Perfusion. -Elastography (US & MRI). -Contrast enhanced US	-Clinical round with senior staff Observation -Post graduate teaching	-Written and oral examination -Log book
B. Interpret the following non invasive/invasive diagnostic procedures -Functional MRI. - Diffusion MRI. - Perfusion MRI. - MR Spectroscopy. - MR Tractography. -Dynamic contrast enhanced MRI. -MSCT angiography (aortic, coronary and peripheral angiography). -Whole body MSCT Perfusion. -Elastography (US & MRI). -Contrast enhanced US		

D-General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Use information technology to manage information, access on-line medical information; for the important topics.	-Observation and supervision -Written and oral communication	Log book

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
B. Elicit information using effective nonverbal, explanatory, questioning, and writing skills.	-Observation and supervision -Written and oral communication	Log book
C. Write a report in common condition mentioned in A.A and A.B		

Professionalism

ILOs	Methods of teaching/ learning	Methods of Evaluation
D. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society	-Observation -Senior staff experience	Logbook

Systems-Based Practice

ILOs	Methods of teaching/ learning	Methods of Evaluation
E. Work effectively in relevant health care delivery settings and systems.	-Observation -Senior staff experience	Logbook

4. Contents (topic s/modules/rotations)
Course Matrix (UNIT 11)

Time Schedule: Second Part

Topic	Covered ILOs			
	Knowledge A	Intellectual B	Practical skill C	General Skills D
Principles of :				
-Functional MRI. • Diffusion MRI. • Perfusion MRI. • MR Spectroscopy. • MR Tractography. -Dynamic contrast enhanced MRI. -MSCT angiography (aortic, coronary and peripheral angiography). -Whole body MSCT Perfusion. -Elastography (US & MRI). -Contrast enhanced US	A	A	A -B	A-E

5.Unit Methods of teaching/learning:

1 Didactic (lectures, seminars, tutorial)
2 Observation and supervision
3 Written & oral communication
4 Senior staff experience

6. Unit Methods of teaching/learning: for students with poor achievements

1. Extra Didactic (lectures, seminars, tutorial) according to their needs
2. Extra Laboratory work according to their needs

7. Unit assessment methods:

i. Assessment tools:

1. Written and oral examination
2. Assessment of practical skills)
3. Log book

ii. Time schedule: At the end of the Second part

iii. Marks: 200

8. List of references

i. Lectures notes

- Course notes
- Staff members print out of lectures and/or CD copies

ii. Essential books

- Manoj Mannil and Sebastian F.-X. Winklhofer: Neuroimaging Techniques in Clinical Practice: Physical Concepts and Clinical Applications. 1st edition: 2020

iii. Recommended books

- Sudhakar K. Venkatesh: Advanced MR Techniques for Imaging the Abdomen and Pelvis, An Issue of Magnetic Resonance Imaging Clinics of North America. 2nd edition: 2020.
- Sangam Kanekar: Advanced Neuroimaging in Brain Tumors, An Issue of Radiologic Clinics of North America. 2nd edition: 2021.
- Pamela W. Schaefer: Stroke Imaging Update, An Issue of Neuroimaging Clinics. 1st edition: 2011

iv. Periodicals, Web sites, … etc

- Imaging
- www.pubmed.com
- www.eanm.org

v. others: None

Course 6 Radio-diagnosis

Name of department:

Faculty of medicine

Assiut University

2022 - 2023

1. Course data

- **Course Title: Radio-diagnosis.**
- **Course code: RAD328B.**
- **Speciality: Radio-diagnosis**
- **Number of Credit point : 24 (16.3%) practical** 123 **(83.7%).total** 147
- **Department (s) delivering the units : Department of Radiology – Faculty of Medicine – Assuit University**
- **Coordinator (s):**
  - **Course coordinator: Prof. Samy A. El Aziz**
  - **Assistant coordinator (s) Prof. Gehan Sayed Ahmed**
  - **Dr. Mohamed Abdel-Tawab**
- **Date last reviewed:** 6-2022
- **Requirements (prerequisites) if any : None**
- **Requirements from the students to achieve course ILOs are clarified in the joining log book.**

This course consist of 10 units:

- 1-Unit (Module) 1Genitourinary tract
- 2- Unit (Module) 2 Musculoskeletal (MSK) system
- 3- Unit (Module) 3 Chest and cardiovascular system
- 4- Unit (Module) 4 Gastrointestinal tract
- 5- Unit (Module) 5 Neuro-radiology, head and neck
- 6- Unit (Module) 6 Pediatric radiology
- 7- Unit (Module) 7 Ultrasound
- 8- Unit (Module) Emergency radiology
- 9- Unit (Module) 9 Interventional radiology
- 10- Unit (Module) 10 Breast radiology

2. Course Aims

1. Provide well trained, competent clinical radiologist capable of being appointed as and to undertake the duties of consultant radiologist
2. Develop the radiologist knowledge and skills that can be utilized to plan, deliver and evaluate diagnostic radiographic application within legal, ethical and professional framework.
3. Write a comprehensive report on radiological study with clinical- radiological interpretation and to deduce the correct diagnosis or the possible differential diagnosis.
4. Have a sufficient preliminary knowledge about the use of Computers and computer sciences in radiological diagnosis and management.

3. Intended learning outcomes (ILOs):

Unit (Module) 1Genitourinary tract

A-Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A. Illustrate in details basic cross sectional genitourinary tract anatomy on CT/ CT urography and MRI/MR urography.	- Didactic lectures Clinical rotation in the in-patient and outpatient X-ray units.	- Written and oral exam -Daily work. -Behavior with the technical personnel, senior resident and staff. -Clinical evaluation at end of rotation. -Log book
B. Illustrate the relationship between contrast administration and patho-physiology of diseases including: -Dynamic bolus enhancement on cross sectional imaging studies and IVU. -Arterial phase CT or MR used for tumor diagnosis. -Arterio-venous shunt diagnosis.		

-Parenchymal phase CT for inflammatory manifestation of renal parenchyma including: Acute pyelonephritis. -Renal and peri-renal abscess. -Xantho-granulomatous pyelonephritis. -TB. -Emphysematous pyelitis. -Tissue viability and revascularization in trauma.		
C .List a large variety of congenital anomalies of GU tract: -Fusion anomalies. -Partial and complete duplications of the collecting systems. -Renal agenesis. -Renal tubular ectasia. -Uterine anomalies.		
D. Know different types of renal, ureteric and urinary bladder and prostate neoplasm in different imaging modalities. -Understand patterns of genitourinary differential diagnosis such as: -Renal masses. -Uni- or bilateral renal enlargements. -Filling defects. -Ureter deviation (both medial and lateral). -Bladder displacement.		
E. Give the interpretation, identification and management of the following with imaging: -Plain abdominal films for bowel gas pattern and recognition of masses and calcification. -Renal renal stone disease. -Contrast examination for Hydronephrosis and uretral obstruction. -Urothelial abnormalities.		

-Renal cysts and tumors. -Medullary sponge kidney. -BPH. -Urinary Bladder lesion. -Urethral stricture and diverticula. -HSG appearance of intra-vasation, uterine synechiae, filling defects, hydrosalpinx, congenital anomalies.		
F. Understand the renal cystic diseases: -Multi-cystic renal diseases. -Simple renal cyst. -Complex renal cysts.		
G. Describe diagnosis of female pelvic disorders including: -Pelvic inflammatory disease. -Endometriosis. -Ovarian cysts and masses. -Uterine fibroids. -uterine tumors. -Female and male infertility. -Erectile dysfunction.		

B-Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Design / present case in common problem related to Genitourinary system.	Clinical rounds Senior staff experience	Portfolios Procedure/case presentation Log book
B. Apply the basic and clinically supportive sciences which are appropriate to the Genitourinary related conditions / problem / topics.		
C. Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to Genitourinary system.		
D. Plan research projects.		
E. Write scientific papers.		
F. Lead risk management activities as a part of clinical governs as hypersensitivity to ionic contrast media		
G. Plain quality improvement activities in the field of medical education and clinical practice in Genitourinary system.		
H. Create and innovate plans, systems, and other issues for improvement of performance in Genito-urinary system.		
I. Present and defend his / her data in front of a panel of experts		
J. Formulate management plans and alternative decisions in different situations in the field of the Genito- urinary system.		

C-Practical skills (Patient Care)

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Perform the protocols of CT examination: -Patient preparation. -Contrast injection. -CT urography. -CT angiography for renal arteries.	-Didactic clinical rotation. -Rotation in inpatient and outpatient clinics. -Direct observation. -Case presentation.	-Portfolios. -Procedure log book. -Oral exam. Written exam. -Global rating.
B. Prescribe MR urography and MR-angiography and application of CT-and MR-angiogram of renal vascular conditions.		
C. Prescribe cavernosography as regard: -Indication. -Contra-indications. -Modification of the basic technique.		
D. Participates with senior staff in performance of interventional procedures: -Percutaneous biopsy. -Percutaneous abscess drainage.		
E. Counsel and educate patients and their family about Genitourinary diseases		
F. Use information technology to support patient care decisions and patient education for the Genitourinary related conditions.		

G. Provide health care services aimed at preventing the Genitourinary diseases		
H. Work with health care professionals, including those from other disciplines, to provide patient-focused care .		
I-Write competently all forms of patient charts and sheets including reports evaluating these charts and sheets (Write and evaluate a consultation note, Inform patients of a diagnosis and therapeutic plan, completing and evaluating comprehensive, timely and legible medical records)	Clinical round with senior staff	

D-General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Perform practice-based improvement activities using a systematic methodology in the common Genitourinary problems (plain and conduct audit cycles)	Case log. -Observation and supervision. -Written and oral communication.	Portfolios. Global rating.
B. Locate, appraises, and assimilates evidence from scientific studies related to patients' health problems.		
C. Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness		
D. Use information technology to manage information, access on-line medical information; and support their own education		
E. Lead the learning of students and other health care professionals.		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
F. Create and sustain a therapeutic and ethically sound relationship with patients	observation and supervision. -Didactic.	Record review
G. Perform the following oral communications: -Technologists regarding quality of exposure and patient positioning. -Patient. -Referring physician		
H. Fill the following reports: Radiological findings in Genitourinary system		
I. Work effectively with others as a member or leader of a health care team .		

Professionalism

ILOs	Methods of teaching/ Learning	Methods of Evaluation
J. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.		1. Objective structured clinical examination 2. Patient survey
K. Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and		1. 360o global rating

business practices.		
L. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

Systems-Based Practice

ILOs	Methods of teaching learning	Methods of Evaluation
M. Work effectively in different health care delivery settings and systems.		1. 360o global rating
N. Practice cost-effective health care and resource allocation that does not compromise quality of care		1. Check list evaluation of live or recorded performance
O. Advocate for quality patient care and assist patients in dealing with system complexities		1. 360o global rating 2. Patient survey
P. Partner with health care managers and health care providers to assess, coordinate, and improve health care and predict how these activities can affect system performance		

Unit (Module) 2
Muscloskeletal system

A-Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A- Mention the normal CT and MRI anatomy of the axial and appendicular skeleton.	- Didactic lectures Clinical rotation in the in-patient and outpatient X-ray units.	- Written and oral exam -Daily work. -Behavior with the technical personnel, senior resident and staff. -Clinical evaluation at end of rotation. -Log book
B- Illustrate systematic approach to relatively common dysplasia and congenital conditions: -Achondroplasia. -Osteogenesis imperfecta. -Osteopetrosis. -Paget's disease. -Fibrous dysplasia.		
C- Illustrate a systemic assessment of Benign and malignant bone tumors. -Classification of bone tumors.		

-Radiographic findings of benign and malignant features of bone tumor. -Cartilaginous origin. -Osseous origin. -Fibrous origin. -Myelogenous origin. -Cyst. -Metastasis. D- Illustrate a systematic assessment of a solitary lesion of bone and be able to categorize the lesion. Develop an appropriate differential diagnosis.		
E- Illustrate a systematic approach to articular disease: • Classification of articular disease. • Radiographic findings. -Infection. -Inflammatory/immune. -Degenerative. -Neuropathic. -Metabolic and endocrine. -synovial tumor. • Know common joint pathology on MRI: -Meniscal tears. -Tendon and ligament injury. -Fracture. -Chondral disease. -Labral pathology.		
F- Recognize radiological findings in infectious lesions: -Classification. -Radiographic findings. G- Recognize and describe common location and radiological manifestations of osteonecrosis.		

H- Recognize radiological findings of hematopoietic and storage disease: -Sickle cell anemia. -Thalassemia. -Mastocytosis. -Gaucher's disease. -Reticulo-endothelioses.		
I- Recognize radiological findings of endocrine disease including: -Classification. -Radiographic findings of *Osteoporosis. *Osteomalacia. *Hyper-parathyroidism. -Endocrine disorders originating from: *Thyroid. *Parathyroid. *Adrenals. *Gonads. *Diabetes. -Radiographic findings of -Hypo and hyper-vitaminosis (vitamin A and D J- Illustrate soft tissue lesions: -Classification of soft tissue lesion. -Radiographic findings of soft tissue lesion.		

B-Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
A- Design / present case in common problem related to MSK system.	Clinical rounds Senior staff experience	Portfolios Procedure/case presentation Log book
B- Apply the basic and clinically supportive sciences which are appropriate to the MSK related conditions / problem / topics.		
C- Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to MSK system.		
D- Plan research projects.		
E- Write scientific papers.		
F- Lead risk management activities as a part of clinical governs.		
G- Plain quality improvement activities in the field of medical education and clinical practice in MSK system.		
H- Create and innovate plans, systems, and other issues for improvement of performance in MSK system.		
I- Present and defend his / her data in front of a panel of experts		
J. Formulate management plans and alternative decisions in different situations in the field of the MSK system.		

C-Practical skills (Patient Care)

ILOs	Methods of teaching/ learning	Methods of Evaluation
A- Prescribe and perform the protocols of CT examination in MSK system: -Axial cuts. -Bone and soft tissue window setting. -IV contrast.	-Didactic clinical rotation. -Rotation in inpatient and outpatient clinics. -Direct observation. -Case presentation.	-Portfolios. -Procedure log book. -Oral exam. Written exam. -Global rating.
B- Elicit knowledge of MRI safety issues including: -contraindication to scanning and use of contrast. -Demonstrate learning of the use of various pulse sequences and planes of imaging used in MSK disorders.		
C- Use information of bone density measurements: dual energy X-ray absorptiometry (DEXA).		
D- Perform different imaging modalities for soft tissue as: -Plain X-ray. -CT. -MRI. -US.		
E- Participates with the senior staff in performance of interventional procedures: -Percutaneous biopsy: -Evaluation of the patients. -Knowledge of appropriate indication and contra-indication. -Complication.		

-Appropriate approach for biopsy.		
F-Use information technology to support patient care decisions and patient education for the MSK related conditions.		
G- Provide health care services aimed at preventing the MSK diseases		
H-Work with health care professionals, including those from other disciplines, to provide patient-focused care .		
I-Write competently all forms of patient charts and sheets including reports evaluating these charts and sheets (Write and evaluate a consultation note, Inform patients of a diagnosis and therapeutic plan, completing and evaluating comprehensive, timely and legible medical records)	Clinical round with senior staff	

D-General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A- Perform practice-based improvement activities using a systematic methodology in the common MSK problems (plain and conduct audit cycles)	Case log. -Observation and supervision. -Written and oral communication.	Portfolios. Global rating.
B- Locate, appraises, and assimilates evidence from scientific studies related to patients' health problems.		
C- Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness		
D- Use information technology to manage information, access on-line medical information; and support their own education		
E- Lead the learning of students and other health care professionals.		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
F- Create and sustain a therapeutic and ethically sound relationship with patients	Observation and supervision. -Didactic.	Record review
G- Perform the following oral communications:- -Technologists regarding quality of exposure and patient positioning. -Patient. -Referring physician		
H- Fill the following reports: Radiological findings in MSK system		
I- Work effectively with others as a member or leader of a health care team		

Professionalism

ILOs	Methods of teaching/ Learning	Methods of Evaluation
J- Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.		1. Objective structured clinical examination 2. Patient survey
K- Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information,		1. 360o global rating

informed consent, and business practices.		
L- Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

Systems-Based Practice

ILOs	Methods of teaching learning	Methods of Evaluation
M- Work effectively in different health care delivery settings and systems including good administrative and time management.	Didactic. Observation and supervision	1. 360o global rating
N- Practice cost-effective health care and resource allocation that does not compromise quality of care		1. Check list evaluation of live or recorded performance
O- Advocate for quality patient care and assist patients in dealing with system complexities		1. 360o global rating 2. Patient survey
P- Partner with health care managers and health care providers to assess, coordinate, and improve health care and predict how these activities can affect system performance		

Unit (Module) 3 Chest and Cardiovascular system

A-Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A- Know different signs in chest radiology: -Air bronchogram. -Atelectasis. -Air crescent sign. -Silhouette sign. -Other signs. Recognize a unilateral hyper lucent lung: -on chest radiograph or CT. -Causes. -Appropriate differential diagnosis.	Clinical rotation, didactic lectures and conferences. -case presentation	- Written and oral exam -Daily work. -Behavior with the technical personnel, senior resident and staff. -Clinical evaluation at end of rotation. -Log book
B- Knows and recognize Pulmonary vasculature as regard: -Pulmonary embolism. -Causes of pulmonary hypertension. -Examination of the lower limb veins as source of embolus.		
C- Describe the mediastinal masses and mediastinal and hilar lymph node enlargement as regard: -Causes of mediastinal masses and localization of the mass.		

-Causes of lymph node enlargement. -Recognize Cystic mediastinal masses. -State solitary and multiple pulmonary nodules as regard: -Definition of solitary pulmonary nodule and a pulmonary mass. -Causes of solitary nodule. -Causes of cavitary pulmonary nodule. -Demonstrate benign and malignant neoplasm of the lung: -Types of bronchogenic carcinoma. -TNM classification for staging. -causes of extra-thoracic metastases. -State the role of imaging of tumor. -Define primary pulmonary lymphoma.		
D- Know and recognize the following on Interstitial lung disease ILD): -patterns of ILD on chest radiograph and CT. -Make specific diagnosis of ILD when supportive findings are present. -Changes of congestive heart failure on chest X-ray. -Terms of asbestosis related pleural disease. -Honeycombing of chest radiograph and CT (HRCT). -Radiographic classification of sarcoidosis. -Causes of unilateral ILD. knows categories, recognize pattern of alveolar lung disease (ALD): -Acute ALD. -Chronic ALD. -Causes of adult respiratory distress syndrome. -Predisposing factors. -Pattern of ALD on radiography and CT chest. -Recognize atelectasis, airways and obstructive lung disease: -partial or complete collapse.		

-Distinguish lung collapse from massive pleural effusion. -Types and causes of bronchiectasis. -Appearance of cystic fibrosis. -Pulmonary emphysema. -Recognize congenital lung disease: -Differences between intra-lobar and extra-lobar sequestration.		
E- Know radiographic manifestation of pulmonary infection including: -pulmonary TB. -Pulmonary aspergillus disease. -Intracavitary fungus ball. -Immune compromised patient. -Pneumonia. - **Viral pneumonia and CT apperance of COVID-19 pnemonia** **-radiographic and CT pattern of GGO** -Radiographic and CT appearance of miliary pattern and DD.		
F- List the findings that indicate each of the following and identify on chest radiograph for cardiac valve diseases: -enlarged right atrium. -enlarged left atrium. -enlarged RT. ventricle. -enlarged left ventricle. -recognize Ischemic heart diseases as regard: -Complication of acute myocardial infarction. -Identify left heart failure on chest radiograph. -Define and state the myocardial disease: -types of cardio-myopathy. -Cardiac tumors. -Recognize, pericardial disease: -Pericardial calcification.		

-Pericardial cyst. -Pericardial effusion. -Constrictive pericarditis. -Pericardial metastases. -Demonstrates congenital heart diseases.		
G- Recognize lesions of the chest wall, pleura and diaphragm: -Causes of pleural effusion. -Recognize pneumo-thorax. -Pleural calcification. -Recognize pleural based mass. -Recognize unilateral elevation of the diaphragm. -Recognize diffuse pleural thickening. -Recognize the radiographic and CT findings of malignant mesothelioma.		

B-Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
A- Design and present case in common problem related to Chest and Cardiovascular system.	Clinical rounds Senior staff experience	Portfolios Procedure/case presentation Log book
B- Apply the basic and clinically supportive sciences which are appropriate to the Chest and Cardiovascular related conditions / problem / topics.		
C- Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to Chest and Cardiovascular system.		
D- Plan research projects.		
E- Write scientific papers.		
F- Lead risk management activities as a part of clinical governs.		
G- Plan quality improvement activities in the field of medical education and clinical practice in Chest and Cardiovascular system.		
H- Create / innovate plans, systems, and other issues for improvement of performance in Chest and Cardiovascular system.		
I- Present and defend his / her data in front of a panel of experts		

C-Practical skills (Patient Care)

ILOs	Methods of teaching/ learning	Methods of Evaluation
A- Perform the protocols of CT chest examination: -Thin section. -High resolution. -Expiratory images. -Prone images. -Use of IV contrast. -Multi-detector CT. -CT angiography.	-Didactic clinical rotation. -Rotation in inpatient and outpatient clinics. -Direct observation. -Case presentation.	-Portfolios. -Procedure log book. -Oral exam. Written exam. -Global rating.
B- Participate with the senior staff in performance of CT guided needle biopsy as regard: -Indication. -Contra-indication. -Procedure. -Preparation. -Complication.		
C- Participate with the staff in the performance of angiography: -Indication and contra-indication. -Different angiographic procedures. -complication. -Post procedural care.		
D- Participate with senior staff in arteriography and therapeutic angiography: -Transluminal angioplasty. -Embolization. -Balloon occlusion. -Intra-arterial drug therapy.		

E- Perform contrast venous system examination: Phlebography: -Indication and contra-indication and different techniques.		
F- Perform ventilation and perfusion isotope scanning in cases of pulmonary embolism.		
G- Provide health care services aimed at preventing the Chest and Cardiovascular diseases		
H-Work with health care professionals, including those from other disciplines, to provide patient-focused care .		
I-Write competently all forms of patient charts and sheets including reports evaluating these charts and sheets (Write and evaluate a consultation note, Inform patients of a diagnosis and therapeutic plan, completing and evaluating comprehensive, timely and legible medical records)	Clinical round with senior staff	

D-General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A- Perform practice-based improvement activities using a systematic methodology in the common Chest and Cardiovascular problems (plain and conduct audit cycles)	Case log. -Observation and supervision. -Written and oral communication.	Portfolios. Global rating.
B- Locate, appraises, and assimilates evidence from scientific studies related to patients' health problems.		
C- Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness		
D- Use information technology to manage information, access on-line medical information; and support their own education		
E- Lead the learning of students and other health care professionals.		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
F- Create and sustain a therapeutic and ethically sound relationship with patients	Observation and supervision. -Didactic.	Record review
G- Perform the following oral communications:- -Technologists regarding quality of exposure and patient positioning. -Patient. -Referring physician		
H- Fill the following reports: Radiological findings in Chest and Cardiovascular system.		
I- Work effectively with others as a member or leader of a health care team.		

Professionalism

ILOs	Methods of teaching/ Learning	Methods of Evaluation
J- Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.	Didactic Observation and supervision	1. Objective structured clinical examination 2. Patient survey
K- Demonstrate a commitment to ethical principles pertaining to provision or		1. 360o global rating

withholding of clinical care, confidentiality of patient information, informed consent, and business practices.		
L- Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

Systems-Based Practice

ILOs	Methods of teaching learning	Methods of Evaluation
M- Work effectively in different health care delivery settings and systems including good administrative and time management.	Didactic. Observation and supervision	1. 360o global rating
N- Practice cost-effective health care and resource allocation that does not compromise quality of care		1. Check list evaluation of live or recorded performance
O- Advocate for quality patient care and assist patients in dealing with system complexities		1. 360o global rating 2. Patient survey
P- Partner with health care managers and health care providers to assess, coordinate, and improve health care and predict how these activities can affect system performance		

Unit (Module) 4
Gastrointestinal tract system

A-Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A- Demonstrate normal anatomic features and variant: -Cross sectional imaging for the: -Abdomen and peritoneal cavity. -Retro-peritoneal spaces and planes. -Vascular anatomy and variant: abdominal aorta and mesenteric vessels.		
B- Recognize and accurately describe imaging findings in different diseases of the pharynx and esophagus: -Benign disease: -Functional swallow and motility disorders. -Pouch, webs and diverticula. -Inflammatory/ infectious disorders. -Tumors. -Trauma, foreign body and fistula. -Extrinsic compression. -Aberrant vessels. -Mediastinal mass. -Varices. -Malignant lesions. -Post operative evaluation. -Manifestation of systemic diseases. -Gastro-esophageal junction disorders.		
C- Know different imaging findings in stomach lesions: -Peptic ulcer disease. -Gastritis. -Tumors.		

-Post operative stomach and duodenum. -Learns imaging findings in small bowel lesions: -Obstruction. -Infection. -Crohns. -Mal-absorption. -Vascular lesion and trauma. -Tumors. -Post operative and post radiation. - Knows different imaging findings in colon and appendix lesions: -Obstruction. -Infection: TB. -Non infectious colitis. -Inflammatory bowel disease. -Diverticulosis. -Appendicitis. -Tumors. -Post operative and post radiation. II.3 demonstrate different imaging findings in stomach lesions: -Peptic ulcer disease. -Gastritis. -Tumors. -Post operative stomach and duodenum. -Learns imaging findings in small bowel lesions: -Obstruction. -Infection. -Crohns. -Mal-absorption. -Vascular lesion and trauma. -Tumors. -Post operative and post radiation. - Knows different imaging findings in colon and appendix lesions: -Obstruction.		

-Infection: TB. -Non infectious colitis. -Inflammatory bowel disease. -Diverticulosis. -Appendicitis. -Tumors. -Post operative and post radiation.		
D- Illustrate different hepatic lesions: -Focal liver disease. -Diffuse liver disease. -Trauma. -Infection. -Recognizes imaging findings in splenic lesion: -trauma. -Systemic disease. -Splenic masses.		
E- List a systematic approach to pancreatic lesion: -Pancreatitis. -Trauma. -Pancreatic tumors. -Calcification. -Gall bladder and biliary tree lesions.		
F- List in details vascular lesions: -Abdominal aorta *Aneurysm. *Dissection. *Vasculitis. -Mesentric arteries and veins: -Vasculitis, atherosclerosis, emboli.		
G- Mention systemic diseases and GIT manifestation: -trauma. -Ischemia. -Crohns. -Connective tissue disorders. -Polyposes.		

-Radiation. -Metastasis.		
H- Recognize and define peritoneal cavity as regard: -Distribution of fluid collection. -Diseases of the peritoneum: -Inflammatory. -Primary tumors. -Metastatic tumors. -Demonstrates retro-peritoneum as regard: -Normal anatomy: -Retroperitoneal spaces and planes. -Benign diseases. -Malignant tumors.		

B-Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
A- Design / present case in common problem related to Gastrointestinal system.	Clinical rounds Senior staff experience	Portfolios Procedure/case presentation Log book
B- Apply the basic and clinically supportive sciences which are appropriate to the Gastrointestinal related conditions / problem / topics.		
C- Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to Gastrointestinal system.		
D- Plan research projects.		
E- Write scientific papers.		
F- Lead risk management activities as a part of clinical governs.		
G- Plain quality improvement activities in the field of medical education and clinical practice in Gastrointestinal system.		
H- Create / innovate plans, systems, and other issues for improvement of performance in Gastrointestinal system.		
I- Present and defend his / her data in front of a panel of experts		

C-Practical skills (Patient Care)

ILOs	Methods of teaching/ learning	Methods of Evaluation
A- Perform and apply the protocols of the others different imaging modalities: -CT examination: -Procedure: preparation. -Oral contrast agent. -CT enema examination. -IV contrast agent. -Tri-phasic CT dynamic study. -CT-angiogram. -US examination. -MRI examination and MR cholangiography.	-Didactic clinical rotation. -Rotation in inpatient and outpatient clinics. -Direct observation. -Case presentation.	-Portfolios. -Procedure log book. -Oral exam. Written exam. -Global rating.
B- Participate with senior staff in performance of percutaneous trans-hepatic cholangiography: -External biliary drainage. -Trans-tubal cholangiography. -Mesenteric angiography		
C- Work with health care professionals, including those from other disciplines, to provide patient-focused care .		

D-General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A- Perform practice-based improvement activities using a systematic methodology in the common Gastrointestinal problems (plain and conduct audit cycles)	Case log. -Observation and supervision. -Written and oral communication.	Portfolios. Global rating.
B- Locate, appraises, and assimilates evidence from scientific studies related to patients' health problems.		
C- Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness		
D- Use information technology to manage information, access on-line medical information; and support their own education		
E- Lead the learning of students and other health care professionals.		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
F- Create and sustain a therapeutic and ethically sound relationship with patients	Observation and supervision. -Didactic.	Record review
G- Perform the following oral communications:- -Technologists regarding quality of exposure and patient positioning. -Patient. -Referring physician		
H- Fill the following reports: Radiological findings in Gastrointestinal system		
I- Work effectively with others as a member or leader of a health care team		

Professionalism

ILOs	Methods of teaching/ Learning	Methods of Evaluation
J- Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.		1. Objective structured clinical examination 2. Patient survey
K- Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.		1. 360o global rating
L- Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

Systems-Based Practice

ILOs	Methods of teaching/ learning	Methods of Evaluation
M- Work effectively in different health care delivery settings and systems including good administrative and time management.		1. 360o global rating
N- Practice cost-effective health care and resource allocation that does not compromise quality of care		1. Check list evaluation of live or recorded performance
O- Advocate for quality patient care and assist patients in dealing with system complexities		1. 360o global rating 2. Patient survey
P- Partner with health care managers and health care providers to assess, coordinate, and improve health care and predict how these activities can affect system performance		

Unit (Module) 5
Neuroradiology, head and Neck system

A-Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A- Mention detailed knowledge of intra-cranial anatomy as displayed on multi-planar images. -Become familiar with the complex anatomy of the orbit, temporal bone, skull base, soft tissue of the neck as displayed on CT and MRI in multiple planes. -Learn to identify normal osseous structures of the spine, inter-vertebral disc, support ligaments and the contents of thecal sac (spinal cord and nerve roots) on CT and MRI. -A thorough knowledge of the vascular anatomy of the cerebral circulation.	Clinical rotation, didactic lectures and conferences. -case presentation	- Written and oral exam -Daily work. -Behavior with the technical personnel, senior resident and staff. -Clinical evaluation at end of rotation. -Log book
B- Recognize the abnormal findings in congenital malformation of the brain: -Disorders of neural tube closure. -Disorders of cleavage, sulcation, diverticulation and cellular migration. -Recognizes posterior fossa malformation and cysts. -Recognizes neurocutaneous syndromes: -Neurofibromatosis. -Tuberous sclerosis.		

-Sturge Weber syndrome. -Von-Hippel Lindau disease. -Recognizes and describe common location and findings of inherited metabolic, white matter and degenerative disease.		
C- Illustrate systemic approach to tumors and tumor like conditions of the; -Brain -Sellar and para-sellar region. -Posterior fossa.		
D- Illustrate a systematic assessment and imaging findings of infection of: -Brain and its lining. -Congenital and neonatal infections. -Encephalitis. -TB and fungus infection.		
E- Describe imaging findings of congenital anomalies of the spine and spinal cord: -Open and occult spinal dysraphism. -Split notochord syndromes. -Miscellaneous. -Demonstrates a systematic assessment of cysts, tumors and tumors like lesion of the spine and spinal cord. -Demonstrate learning of non-neoplastic disorders of the spine and spinal cord: -Infection. -Demyelinating diseases. -Vascular lesion. -Degenerative diseases. -Disk bulges and prolapsed disk.		
F- Recognize and define intra-cranial hemorrhage and imaging findings in: -CT. -MRI and factors influencing signal. -Non traumatic intracranial hemorrhage.		

-Cerebral aneurysms. -Recognizes the causes and describe the imaging findings in stroke.		
G- Recognize and define the imaging findings in: -Para-nasal sinuses lesions (inflammatory lesions and tumors). -Orbital lesions and lacrimal apparatus. -Mandible: cysts and tumors. -Thyroid gland and laryngeal lesion. -Demonstrate a systematic approach to --CP-angle mass lesion and tinnitus. -Temporal bone diseases.		
H- Define the imaging findings in: -Neck lesions: larynx, thyroid gland and DD. Of neck masses.		

B-Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
A- Design / present case in common problem related to Neuroradiology ,Head and Neck system.	Clinical rounds Senior staff experience	Portfolios Procedure/case presentation Log book
B- Apply the basic and clinically supportive sciences which are appropriate to the Neuroradiology ,Head and Neck related conditions / problem / topics.		
C- Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to Neuroradiology		

,Head and Neck system.		
D- Plan research projects.		
E-Write scientific papers.		
F-Lead risk management activities as a part of clinical governs.		
G-Plain quality improvement activities in the field of medical education and clinical practice in Neuroradiology ,Head and Neck system.		
H-Create / innovate plans, systems, and other issues for improvement of performance in Neuroradiology ,Head and Neck system.		
I-Present and defend his / her data in front of a panel of experts		
J-Formulate management plans and alternative decisions in different situations in the field of the		

C-Practical skills (Patient Care)

ILOs	Methods of teaching/ learning	Methods of Evaluation
A-Perform and apply protocols of CT and MRI examination as regard: -CT: -Imaging parameters including window and level settings, slice thickness, inter-slice gap, helical imaging parameters and image reconstruction algorithm. -Elicit the typical CT density of commonly occurring processes: such as edema, air, calcium, blood and fat. MRI: -Elicit commonly used pulse sequences. - Elicit the intensity of normal tissues on routine pulse sequences.	-Didactic clinical rotation. -Rotation in inpatient and outpatient clinics. -Direct observation. -Case presentation.	-Portfolios. -Procedure log book. -Oral exam. Written exam. -Global rating.
B- Perform CT and MR angiogram and MR venogram in neuroradiology and participates with the senior staff in performance of cerebral angiography.		
C- Assist senior staff in the performance of image guided biopsy and perform CT myelography under the supervision of attending staff. D- Work with health care professionals, including those from other disciplines, to provide patient-focused care .		
E-Write competently all forms of patient charts and sheets including reports evaluating these charts and sheets (Write and evaluate a consultation note, Inform patients of a diagnosis and therapeutic plan, completing and evaluating comprehensive, timely and legible medical records)	Clinical round with senior staff	

D-General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A- Perform practice-based improvement activities using a systematic methodology in the common Neuroradiolgy ,Head and Neck problems (plain and conduct audit cycles)	Case log. -Observation and supervision. -Written and oral communication.	Portfolios. Global rating.
B- Locate, appraises, and assimilates evidence from scientific studies related to patients' health problems.		
C- Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness		
D- Use information technology to manage information, access on-line medical information; and support their own education		
E- Lead the learning of students and other health care professionals.		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
F- Create and sustain a therapeutic and ethically sound relationship with patients	Observation and supervision. -Didactic.	Record review
G- Perform the following oral communications:- -Technologists regarding quality of exposure and patient positioning. -Patient. -Referring physician		
H- Fill the following reports: Radiological findings in Neuroradiolgy ,Head and Neck system		
I- Work effectively with others as a member or leader of a health care team .		

Professionalism

ILOs	Methods of teaching/ Learning	Methods of Evaluation
J- Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.	Observation Senior staff experience	1. Objective structured clinical examination 2. Patient survey
K- Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.		1. 360o global rating
L- Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

Systems-Based Practice

ILOs	Methods of teaching/ learning	Methods of Evaluation
M- Work effectively in different health care delivery settings and systems including good administrative and time management.	Observation -Senior staff experience	1. 360o global rating
N- Practice cost-effective health care and resource allocation that does not compromise quality of care		1. Check list evaluation of live or recorded performance
O- Advocate for quality patient care and assist patients in dealing with system complexities		1. 360o global rating 2. Patient survey
P- Partner with health care managers and health care providers to assess, coordinate, and improve health care and predict how these activities can affect system performance		

Unit (Module) 6
Pediatric Radiology

A-Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A- Recognize normal vs. abnormal findings in Genitourinary tract: i. Duplication of the Collecting System/Ureters ii. Multicystic Dysplastic Kidneys iii. Posterior Urethral Valves iv. Testicular Torsion v. Ureteropelvic Junction Obstruction vi. Vesicoureteral Reflux	-Didactic lectures. -Direct observation	-written and oral examination -Global rating. Log book
B- Recognize normal vs. abnormal findings in Chest -Childhood Pneumonia -Neonatal Chest - Pulmonary Edema - Esophagus and Airway -Esophageal Atresia -Esophageal Foreign Body -Gastroesophageal Reflux		
C- Recognize normal vs. abnormal findings in GI tract - Appendicitis - Congenital Duodenal Obstruction -Hypertrophy Pyloric Stenosis -Intussusceptions - Jejunal and Ileal Stenosis/Atresia -Malrotation and Midgut Volvulus - Newborn Lowe Intestinal Obstruction - Omphalocele, gastroschisis, and diaphragmatic hernia		

- Pneumoperitoneum		
D- Recognize normal vs. abnormal Musculoskeletal: -Legg-Calve-Perthes Disease - Septic Arthritis and Toxic Synovitis - Slipped Capital Femoral Epiphysis		
E- Know normal vs. abnormal findings in Neuro-imaging: -Newborn Cranial Ultrasound -Trans-cranial Doppler head ultrasound -Brain -Spine -Sensorineural hearing loss in children -Mid-face anomalies and syndromes -Advanced Pediatric neuro-imaging and MR spectroscopy.		
F- Know Update Information on classification of vascular malformations.		
G- Know normal vs. abnormal findings in ENT lesions: -Pediatric Parotid and Peri-parotid disease -Sub-mandibular disease. -Neck masses.		

B-Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
A- Design / present case in common problem related to Pediatric Radiology.	-Didactic (lectures, seminars, tutorial)	-Written and oral examination -Log book
B- Apply the basic and clinically supportive sciences which are appropriate to the Pediatric Radiology related conditions / problem / topics.		
C- Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to Pediatric Radiology		
D- Plan research projects.		
E-Write scientific papers.		
F-Lead risk management activities as a part of clinical governs.		
G-Plain quality improvement activities in the field of medical education and clinical practice in Pediatric Radiology.		
H-Create and innovate plans, systems, and other issues for improvement of performance in Pediatric Radiology		
I-Present and defend his / her data in front of a panel of experts		

C-Practical skills (Patient Care)

ILOs	Methods of teaching/ learning	Methods of Evaluation
A- Use Adequate knowledge needed for the examinations requested.	-Didactic ultrasound clinical rotation. -Rotation in inpatient and outpatient clinics. -Direct observation. -Case presentation.	Daily work. -Log book. -Oral and clinical examination.
B- Perform trans-cranial US		
C- Elicit positioning techniques and technical factors leading to optimum chest, abdomen, GI and GU radiographs of the infant and older child		
D- Use the proper procedure for fluoroscopy of an infant/older child.		

D-General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A- Perform practice-based improvement activities using a systematic methodology in the common Pediatric Radiology problems (plain and conduct audit cycles)	Case log. -Observation and supervision. -Written and oral communication.	Portfolios. Global rating.
B- Locate, appraises, and assimilates evidence from scientific studies related to patients' health problems.		
C- Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness		
D- Use information technology to manage information, access on-line medical information; and support their own education		
E- Lead the learning of students and other health care professionals.		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
F-Create and sustain a therapeutic and ethically sound relationship with patients	-Observation and supervision. -Didactic.	Record review
G-Perform the following oral communications:- -Technologists regarding quality of exposure and patient positioning. -Patient. -Referring physician		
H- Fill the following reports: Radiological findings in Pediatric Radiology		
I-Work effectively with others as a member or leader of a health care team .		

Professionalism

ILOs	Methods of teaching/ Learning	Methods of Evaluation
J- Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.	Didactic Observation and supervision	1. Objective structured clinical examination 2. Patient survey
K- Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.		1. 360o global rating
L-Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

Systems-Based Practice

ILOs	Methods of teaching/ learning	Methods of Evaluation
M-Work effectively in different health care delivery settings and systems including good administrative and time management.	Didactic. Observation and supervision	1. 360o global rating
N-Practice cost-effective health care and resource allocation that does not compromise quality of care		1. Check list evaluation of live or recorded performance
O-Advocate for quality patient care and assist patients in dealing with system complexities		1. 360o global rating 2. Patient survey
P-Partner with health care managers and health care providers to assess, coordinate, and improve health care and predict how these activities can affect system performance		

Unit (Module) 7
Ultrasound

A-Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A- Know adequate information about -Transducer components. -Doppler phenomenon and -pulse echo-imaging.	- Didactic lectures Clinical rotation in the in-patient and outpatient X-ray units.	- Written and oral exam -Daily work. -Behavior with the technical personnel, senior resident and staff. -Clinical evaluation at end of rotation. -Log book
B- Know adequate information about artifacts -underlying principles. -Beam width artifacts. -Refractive artifacts. -Doppler artifacts.		
C- Illustrate: -Image processing and display. -Bio-effects and safety: -Thermal and non-thermal effect on tissues. -Relative effects of gray scale, M-mode, pulsed wave		

Doppler, color flow imaging, power imaging, and harmonics.		
D- Know adequate information about imaging applications/ equipment operation: -Transducer choice. -Frequency. -Shape: linear, sector, curved. -Approach: external or endo-cavitary. -Image orientation. -Image recording options.		

B-Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Design / present case in common problem related to Ultrasound.	Clinical rounds Senior staff experience	Portfolios Procedure/case presentation Log book
B. Apply the basic and clinically supportive sciences which are appropriate to Ultrasound. related problems.		
C. Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to Ultrasound.		
D. Plan research projects.		
E-Write scientific papers.		
F-Lead risk management activities as a part of clinical governs.		
G-Plain quality improvement activities in the field of medical education and clinical practice in Ultrasound.		
H-Create and innovate plans, systems, and other issues for improvement of performance in Ultrasound		
I-Present and defend his / her data in front of a panel of experts		
J-Formulate management plans and alternative decisions in different situations in the field of the Ultrasound.		

C-Practical skills (Patient Care)

ILOs	Methods of teaching/ learning	Methods of Evaluation
A- Perform trans-abdominal and pelvic ultrasound of the: -Abdominal viscera. -Adrenal glands. -Peritoneal cavity. -GIT: appendicitis, mass, pyeloric stenosis and intussusceptions. -Retro-peritoneum: mass and adenopathy. -Uterus: normal size, shape, endometrial thickness, hyperplasia, polyps, leiomyoma, adenomyosis, tumors. -Cervix: mass, stenosis, tumors. -Ovary: normal size and shape. Physiological variation. Infection, tumors -Prostate: Normal sizes, shape, cystic or solid mass, abscess. -Scrotum: normal size and shape of testis. Infection, tumors, torsion, trauma, sepermatocele, calcification, varicocele and hydrocele.	-Didactic clinical rotation. -Rotation in inpatient and outpatient clinics. -Direct observation. -Case presentation.	-Portfolios. -Procedure log book. -Oral exam. Written exam. -Global rating.
B- Perform Duplex US for: -Abdominal aorta: normal appearance and measurement, aneurysm -Inferior vena cava: normal appearance, thrombosis -Lower extremity deep vein thrombosis -Hematoma -Iatrogenic pseudoaneurysm -Hepatic vasculature: pulsed Doppler and color - Doppler imaging of the portal veins, splenic vein, hepatic arteries and hepatic veins, including normal direction of flow		

Hemodynamics of cirrhosis, portal hypertension and varices, portal vein thrombosis -Renal transplant: arterial resistive index (rejection, acute tubular necrosis), transplant vein thrombosis, renal infarction, post-biopsy complications, renal arterial stenosis -Liver transplants, including hepatic artery stenosis or thrombosis (resistive index), portal vein thrombosis, post-biopsy complications, inferior vena cava stenosis -Pancreas transplant: arterial and venous anastomosis, patency and stenosis -TIPS evaluation and complications -Erectile dysfunction (penile Duplex).		
C- Use adequate knowledge of in Examination protocols for: -Peripheral vascular aneurysm, including iliac and popliteal arteries -Upper extremity venous thrombosis: subclavian and internal jugular vein thrombosis, axillary and brachial vein thrombosis -Carotid artery: normal, atherosclerotic plaque, carotid artery stenosis and occlusion -Iatrogenic arteriovenous fistula -Pre-graft vein mapping -Lower extremities: chronic venous insufficiency -Arterial bypass graft Hemodialysis graft/fistula -Carotid artery: waveform analysis, stenosis, dissection, pseudoaneurysm, stent -Vertebral artery: subclavian steal syndrome.		
D- Perform specific application for US. Neck: -Thyroid gland.		

-Cystic neck masses and adenopathy. Chest: pleural fluid.		
E- Conduct Techniques for ultrasound guided aspiration of fluid collection and biopsy including: -Informed consent. -Sterile technique. -Pre-procedural evaluation of coagulation laboratory studies and anticoagulation medication. -Procedure and post procedure care.		
F- Perform musculoskeletal US: -Mass -Hematoma -Baker's cyst, including rupture -Cellulitis -Abscess -Normal tendon appearance Foreign body Soft tissue gas Joint fluid Muscle tear -Tendon tear, inflammation Rotator cuff tear		

D-General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A- Perform practice-based improvement activities using a systematic methodology in the common Ultrasound problems (plain and conduct audit cycles)	Case log. -Observation and supervision. -Written and oral communication.	Portfolios. Global rating.
B- Locate, appraises, and assimilates evidence from scientific studies related to patients' health problems.		
C- Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness		
D- Use information technology to manage information, access on-line medical information; and support their own education		
E- Lead the learning of students and other health care professionals.		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
F. Create and sustain a therapeutic and ethically sound relationship with patients	Observation and supervision. -Didactic.	Record review
G. Perform the following oral communications:- -Technologists regarding quality of exposure and patient positioning. -Patient. -Referring physician		
H. Fill the following reports: Radiological findings in Ultrasound		
I. Work effectively with others as a member or leader of a health care team.		

Professionalism

ILOs	Methods of teaching/ Learning	Methods of Evaluation
J. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.	Observation Senior staff experience	1. Objective structured clinical examination 2. Patient survey
K. Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.		1. 360o global rating
L. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

Systems-Based Practice

ILOs	Methods of teaching/ learning	Methods of Evaluation
M. Work effectively in different health care delivery settings and systems.	Didactic. Observation and supervision	1. 360o global rating
N. Practice cost-effective health care and resource allocation that does not compromise quality of care		1. Check list evaluation of live or recorded performance
O. Advocate for quality patient care and assist patients in dealing with system complexities		1. 360o global rating 2. Patient survey
P. Partner with health care managers and health care providers to assess, coordinate, and improve health care and predict how these activities can affect system performance		

Unit (Module) 8
Emergency Radiology

A-Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A- Illustrate the principals of imaging and findings in Central Nervous System emergency: - Skull fractures - Extra-axial hemorrhages -Parenchymal injuries -Subarachnoid hemorrhage - Vascular injuries - Penetrating injuries - Non-traumatic hemorrhage a. subarachnoid hemorrhage b. parenchymal hemorrhage - Central Nervous system infections - Dural sinus thrombosis - Pituitary apoplexy - Spinal trauma a. spinal cord contusion b. spinal epidural hematoma c. nerve root avulsion	- Didactic lectures Clinical rotation in the in-patient and outpatient X-ray units.	- Written and oral exam -Daily work. -Behavior with the technical personnel, senior resident and staff. -Clinical evaluation at end of rotation. -Log book
B- Describe trauma to face and Neck: - Facial fractures - Soft tissue injuries of the orbit a. Post bulbar emphysema and hemorrhage b. Extra-ocular muscle entrapment c. Ocular injuries Rupture Laceration Lens dislocation		

Vitreous hemorrhage Subchoroidal hemorrhage -Laryngeal trauma		
C- Recognize principals of imaging in GU trauma: -identify bulbo-membranous urethral junction. -Bladder, uretral and renal injuries. -Know diagnosis, classification and management of gynecological and obstetrics emergency. - Uterine trauma - Cervico-vaginal trauma - Feto-placental trauma - Ovarian torsion - Pelvic inflammatory disease - Spontaneous abortion - Fetal demise - Subchorionic hemorrhage - Ectopic pregnancy - Placental abruption and hemorrhage		
D- Describe different types of chest trauma: - Chest trauma a. Rib fracture b. Sternal and manubrial fractures c. Hemothorax d. Pneumothorax and pneumomediastinum e. Mediastinal hemorrhage f. Pulmonary contusion, laceration, hematoma g. Tracheobronchial injury h. Esophageal tear i. Diaphragm injury - Pulmonary embolism - Airway foreign bodies - ARDS: near-drowning, fat embolism syndrome - Esophageal rupture		
E- know Cardiovascular Emergencies:		

1. Myocardium and Pericardium a. Myocardial infarction b. Myocardial laceration c. Myocardial contusion d. Pericardial effusion. tamponade e. Pneumopericardium. tamponade 2.Aorta a. Aortic trauma b. Aortic dissection c. Aortic aneurysm 3. Pulmonary Edema. various etiologies 4. Thrombo-embolic disease a. Deep venous thrombosis b. Pulmonary embolism		
F- Know Abdominal Trauma a. Hemoperitoneum and intraperitoneal fluid b. Hemodynamic status assessment c. Retroperitoneal hemorrhage d. Gas collections: intraperitoneal and retroperitoneal e. Active arterial extravasation on CT f. Splenic injuries g. Liver injuries h. Gallbladder and biliary injuries i. Bowel injuries j. mesenteric injuries k. Pancreatic injuries l. Adrenal injuries m. Abdominal wall injuries and diaphragmatic hernias -Know Non traumatic abdominal conditions Gastrointestinal hemorrhage Bowel obstruction Bowel infarction Appendicitis Diverticulitis Infectious enteritis and colitis		

G- Recognize Pediatric Emergencies: 1. Brain A. Trauma B. Infection C. Non-traumatic hemorrhage -Neonatal germinal matrix hemorrhage D. Imaging the child with seizures 2. Head & Neck a. Trauma b. Infection c- Retropharyngeal abscess 3. Spine a- Trauma b. Epidural abscess 4. Chest a. Trauma . Pulmonary contusion/laceration . Thoracic air leak . Mediastinal hemorrhage . Esophageal and airways injury . Chest wall injury b. Foreign body aspiration c. Neonatal respiratory distress d. Respiratory distress syndrome e. Meconium aspiration syndrome f. Congestive heart failure and pulmonary edema 5. Abdomen a. Trauma b. Non-traumatic hemorrhage - Adrenal hemorrhage c. Infection/Inflammation - Appendicitis - Pancreatitis - Bowel obstruction - Midgut malrotation		

-Bowel atresias - Intestinal intussusceptions - Meconium ileus, meconium plug syndrome & meconium peritonitis d. GI bleeding 6. Pelvic trauma 7. Scrotum a. Trauma b. Infection/Inflammatory . Neonatal testicular torsion . Testicular torsion in older children 8. Musculoskeletal trauma		

B-Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
A- Design and present case in common problem related to Emergency Radiology.	Clinical rounds Senior staff experience	Procedure/case presentation Log book and Portfolios
B- Apply the basic and clinically supportive sciences which are appropriate to the Emergency Radiology related conditions / problem / topics.		
C- Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to Emergency Radiology		
D- Plan research projects.		
E-Write scientific papers.		
F-Lead risk management activities as a part of clinical governs.		
G-Plain quality improvement activities in the field of medical education and clinical practice in Emergency Radiology.		
H-Create / innovate plans, systems, and other issues for improvement of performance in Emergency Radiology		
I-Present and defend his / her data in front of a panel of experts		
J-Formulate management plans and alternative decisions in different situations in the field of the Emergency Radiology		

C-Practical skills (Patient Care)

ILOs	Methods of teaching/ learning	Methods of Evaluation
A- Use clinical and radiological data on patient's disease. When indicated this includes discussing the case with the emergency department staff, reviewing the patient's chart and examining the patient.	-Didactic clinical rotation. -Rotation in inpatient and outpatient clinics.	-Portfolios. -Procedure log book. -Oral exam. Written exam. -Global rating.
B- Conduct diagnostic plan based on the clinical presentation prior imaging.		
C- Aid technologist in performing the correct X-ray/ CT exam. Responsibly and safely assuring that the correct exam is ordered and performed.		
D- Conduct diagnosis based on specific treatments and operative procedures performed by the clinician treating the patient.		
E- Use more advanced thoracic imaging techniques such as HRCT, MRI of great vessels		
F- Use the findings on plain films and the findings of other modalities such as US, CT, MRI to reach final diagnosis.		
G-Write competently all forms of patient charts and sheets including reports evaluating these charts and sheets (Write and evaluate a consultation note, Inform patients of a diagnosis and therapeutic plan, completing and evaluating comprehensive, timely and legible medical records)	Clinical round with senior staff	

D-General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A- Perform practice-based improvement activities using a systematic methodology in the common Emergency Radiology problems (plain and conduct audit cycles)	Case log. -Observation and supervision. -Written and oral communication.	Portfolios. Global rating.
B- Locate, appraises, and assimilates evidence from scientific studies related to patients' health problems.		
C- Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness		
D- Use information technology to manage information, access on-line medical information; and support their own education		
E- Lead the learning of students and other health care professionals.		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
F. Create and sustain a therapeutic and ethically sound relationship with patients	Observation and supervision. -Didactic.	Record review
G. Perform the following oral communications:- -Technologists regarding quality of exposure and patient positioning. -Patient. Referring physician		
H. Fill the following reports: Radiological findings in Emergency Radiology		
I. Work effectively with others as a member or leader of a health care team .		

Professionalism

ILOs	Methods of teaching/ Learning	Methods of Evaluation
J. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.	Didactic Observation and supervision	1. Objective structured clinical examination 2. Patient survey
K. Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.		1. 360o global rating
L. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

Systems-Based Practice

ILOs	Methods of teaching/ learning	Methods of Evaluation
M. Work effectively in different health care delivery settings and systems.	Didactic. Observation and supervision	1. 360o global rating
N. Practice cost-effective health care and resource allocation that does not compromise quality of care		1. Check list evaluation of live or recorded performance
O. Advocate for quality patient care and assist patients in dealing with system complexities		1. 360o global rating 2. Patient survey
P. Partner with health care managers and health care providers to assess, coordinate, and improve health care and predict how these activities can affect system performance		

Unit (Module) 9
Interventional Radiology

A-Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A- Recognize the indications, contraindications, technique, and expected benefits of most interventional diagnostic and therapeutic procedures	Clinical rotation, didactic lectures and conferences	- Written and oral exam -Daily work. -Behavior with the technical personnel, senior resident and staff. -Clinical evaluation at end of rotation. -Log book
B- Know the common health problems treated by the interventional radiology service, including: -Pleural effusion -Ascites -Solid tumors requiring biopsy -Thyroid disease -Abscess -Pneumothorax -Psueudoaneurysm		
C- Conduct basic interventional radiology skills considered necessary in the practice of general radiology, including: -US-guided venous access – internal jugular,		

peripheral, femoral. -Ultrasound-guided thoracentesis -Ultrasound-guided paracentesis -CT-guided biopsy -Ultrasound-guided biopsy -CT-guided abscess drainage -CT-guided and fluoroscopy-guided chest tube placement -Ultrasound-guided thrombin injection		

B-Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
A- Design and present case in common problem related to Interventional Radiology.	Clinical rounds Senior staff experience	Portfolios Procedure/case presentation Log book
B- Apply the basic and clinically supportive sciences which are appropriate to the Interventional Radiology related conditions / problem / topics.		
C- Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to Interventional Radiology		
D- Plan research projects.		
E-Write scientific papers.		
F-Lead risk management activities as a part of clinical governs.		
G-Plain quality improvement activities in the field of medical education and clinical practice in Interventional Radiology.		
H-Create and innovate plans, systems, and other issues for improvement of performance in Interventional Radiology		
I-Present and defend his / her data in front of a panel of experts		
J- Formulate management plans and alternative decisions in different situations in the field of the Interventional Radiology.		

C-Practical skills (Patient Care)

ILOs	Methods of teaching/ learning	Methods of Evaluation
A- Perform (under supervision) as reasonable variety of basic interventional procedures: •Basic angiography - femoral arterial puncture, catheter placement and supervision of image acquisition. • CT/US-guided biopsy, aspiration and drainages •Renal access procedures (nephrostomy & ureteral stent placement) •Biliary access procedures (percutaneous transhepatic cholangiogrphy, external and internal biliary drainage/stent placement)	-Didactic clinical rotation. - Direct observation.	-Portfolios. -Procedure log book. -Oral exam. Written exam. -Global rating.

D-General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Perform practice-based improvement activities using a systematic methodology in the common Interventional Radiology problems (plain and conduct audit cycles)	Case log. -Observation and supervision. -Written and oral communication.	Portfolios. Global rating.
B. Locate, appraises, and assimilates evidence from scientific studies related to patients' health problems.		
C. Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness		
D. Use information technology to manage information, access on-line medical information; and support their own education		
E. Lead the learning of students and other health care professionals.		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
F. Create and sustain a therapeutic and ethically sound relationship with patients	Observation and supervision. -Didactic.	Record review
G. Perform the following oral communications:- -Technologists regarding quality of exposure and patient positioning. -Patient. -Referring physician		
H. Fill the following reports: Radiological findings in Interventional Radiology		
I. Work effectively with others as a member or leader of a health care .		

Professionalism

ILOs	Methods of teaching/ Learning	Methods of Evaluation
J. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.	Didactic Observation and supervision	1. Objective structured clinical examination 2. Patient survey
K. Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.		1. 360o global rating
L. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

Systems-Based Practice

ILOs	Methods of teaching/ learning	Methods of Evaluation
M. Work effectively in different health care delivery settings and systems.	Didactic. Observation and supervision	1. 360o global rating
N. Practice cost-effective health care and resource allocation that does not compromise quality of care		1. Check list evaluation of live or recorded performance
O. Advocate for quality patient care and assist patients in dealing with system complexities		1. 360o global rating 2. Patient survey
P. Partner with health care managers and health care providers to assess, coordinate, and improve health care and predict how these activities can affect system performance		

Unit (Module) 10
Breast Radiology

A-Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A. Know screening mammography -Knowledge of practical aspects of performance and interpretation of screening mammography -Mammographic audit -Cost effectiveness screening -Randomized clinical trials, case control studies, and follow-up studies: purpose, methods, and results -Controversies regarding screening women aged 40 to 49 years.	Clinical rotation, didactic lectures and conferences.	- Written and oral exam -Daily work. -Behavior with the technical personnel, senior resident and staff. -Clinical evaluation at end of rotation. -Log book
B. Recognize normal structures on a mammogram, US and MRI.		
C. Describe Breast ultrasound -Equipment and physical principles -Technique -Hands-on experience -Indications -Normal sonographic anatomy -Features of cysts -Differential features of benign and malignant solid		

masses -Limitations -Need for correlation with mammography		
D. Mention basics of a diagnostic work up including magnification views, additional views, etc. This includes the appropriate designation of the additional views obtained.		
E. Know the interpretation of mammogram and ultrasound.		
F. Recognize in details Breast ultrasound Equipment and physical principles Technique Hands-on experience Monticciolo page 5 Indications Normal sonographic anatomy Features of cysts Differential features of benign and malignant solid masses Limitations Need for correlation with mammography. - Select cases appropriate for ultrasound and interpret ultrasound examinations		
G. Know Breast MRI -Indications -Technique -Characteristics of benign and malignant breast masses -Implant rupture		

B-Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Design / present case in common problem related to Breast Radiology.	Clinical rounds Senior staff experience	Portfolios Procedure/case presentation Log book
B. Apply the basic and clinically supportive sciences which are appropriate to the Breast Radiology related conditions / problem / topics.		
C. Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to Breast Radiology		
D. Plan research projects.		
E. Write scientific papers.		
F. Lead risk management activities as a part of clinical governs.		
G. Plain quality improvement activities in the field of medical education and clinical practice in Breast Radiology.		
H. Create / innovate plans, systems, and other issues for improvement of performance in Breast Radiology		
I. Present and defend his / her data in front of a panel of experts		
J- Formulate management plans and alternative decisions in different situations in the field of the Breast Radiology		

C-Practical skills (Patient Care)

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Use optimal mammographic positioning, technique to reach correct diagnosis	-Didactic clinical rotation. -Direct observation.	Portfolios. Procedure log book. -Oral exam. Written exam. -Global rating.
B. Elicit the technical factors unique to the production of a mammogram.		
C. Perform interventional U/S procedures, including cyst aspiration, ultrasound guided core biopsies, stereotactic biopsies and needle localization guided by U/S or X-ray.		
D. Perform Interventional procedures -Needle wire localization -Stereotactic core biopsy -Ultrasound guided core biopsy and FNA; -Sonographic guided cyst aspiration -Specimen radiography, including paraffin block radiography.		

D-General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Perform practice-based improvement activities using a systematic methodology in the common Breast Radiology problems (plain and conduct audit cycles)	Case log. -Observation and supervision. -Written and oral communication.	Portfolios. Global rating.
B. Locate, appraises, and assimilates evidence from scientific studies related to patients' health problems.		
C. Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness		
D. Use information technology to manage information, access on-line medical information; and support their own education		
E. Lead the learning of students and other health care professionals.		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
F. Create and sustain a therapeutic and ethically sound relationship with patients	Observation and supervision. -Didactic.	Record review
G. Perform the following oral communications:- -Technologists regarding quality of exposure and patient positioning. -Patient. -Referring physician		
H. Fill the following reports: Radiological findings in Breast Radiology		
I. Work effectively with others as a member or leader of a health care team.		

Professionalism

ILOs	Methods of teaching/ Learning	Methods of Evaluation
J. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.	Didactic Observation and supervision	1. Objective structured clinical examination 2. Patient survey
K. Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.		1. 360o global rating
L. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

Systems-Based Practice

ILOs	Methods of teaching/ learning	Methods of Evaluation
M. Work effectively in different health care delivery settings and systems good administrative and time management.	Didactic. Observation and supervision	1. 360o global rating
N. Practice cost-effective health care and resource allocation that does not compromise quality of care		1. Check list evaluation of live or recorded performance
O. Advocate for quality patient care and assist patients in dealing with system complexities		1. 360o global rating 2. Patient survey
P. Partner with health care managers and health care providers to assess, coordinate, and improve health care and predict how these activities can affect system performance		

4. Contents (topic s/modules/rotation
Course Matrix (Units 1-10)

Time Schedule: / Second part

Topic	Covered ILOs			
	Knowledge A	Intellectual B	Practical skill C	General Skills D
Unit 1 genitourinary				
basic cross sectional genitourinary tract anatomy on CT/ CT urography and MRI/MR urography.	A	A-J	A,B	A-P
patho-physiology of renal diseases	B	-	-	A-P
congenital anomalies of GU	C	A-J	A,B,E-I	A-P
different types of renal, ureteric and urinary bladder and prostate neoplasm in different imaging modalities.	D,E	A-J	D,E-I	A-P
renal cystic diseases:	F	A-J	D,E-I	A-P
Male and female pelvic disorders	G	A-J	C	A-P
Unit 2 Musculoskeletal				
normal CT and MRI anatomy of the axial and appendicular skeleton	A	A-J	A,B,F-I	A-P
				A-P
common dysplasia and congenital conditions	B	A-J	A,B,D,F-I	A-P
Benign and makignant bone tumors	C	A-J	A,B.D,E,F-I	A-P
articular disease	E	A-J	A,B,D,F-I	A-P
infectious lesions	F	A-J	A,B,D,F-I	A-P
common location and	G	A-J	A,B,C,D,F-I	A-P

radiological manifestations of osteonecrosis				
hematopoietic and storage disease	H	A-J	A,B,D,F-I	A-P
endocrine diseases	I	A-J	A,B,D,E,F-I	A-P
soft tissue lesions	J	A-J	A,B,D,E,F-I	A-P
Unit 3 chest and cardiovascular disease				
Pulmonary vasculature	B	A-J	A,C,D,F,G-I	A-P
mediastinal masses and mediastinal and hilar lymph node enlargement	C	A-J	A,B,G-I	A-P
Interstitial lung disease ILD	A,D	A-J	A,G-I	A-P
alveolar lung disease (ALD)	A,D	A-J	A,G-I	A-P
atelectasis, airways and obstructive lung disease	A,D	A-J	A,G-I	A-P
pulmonary infection	A,E	A-J	A,BG-I	A-P
- **Viral pneumonia and CT apperance of COVID-19 pnemonia** **-radiographic and CT pattern of GGO**	A,E	A-J	A,BG-I	A-P
cardiac valve diseases	F	A-J	A,G-I	A-P
Ischemic heart diseases	F	A-J	A,B,G-I	A-P
myocardial disease	F	A-J	A,G-I	A-P
pericardial disease	F	A-J	A,G-I	A-P
congenital heart diseases	F	A-J	A,G-I	A-P
lesions of the chest wall, pleura and diaphragm	G	A-J	A,BG-I	A-P
Unit 4 Gastrointestinal tract system				
normal anatomic features and variant	A	A-J	A,C	A-P
imaging findings in different diseases of the pharynx and esophagus	B	A-J	A,C	A-P

imaging findings in stomach lesions	C	A-J	A,C	A-P
hepatic lesions	D	A-J	A,B,C	A-P
pancreatic lesions	E	A-J	A,C	A-P
vascular lesions	F	A-J	A,C	A-P
systemic diseases and GIT manifestations	G	A-J	A,C	A-P
peritoneal cavity	H	A-J	A,C	A-P
Unit 5 neuroradiology ,head and neck system				
Intra-cranial anatomy	A	A-J	A,D,E	A-P
congenital malformation of the brain	B	A-J	A,D,E	A-P
tumors and tumor like conditions	C	A-J	A,C,D,E	A-P
systematic assessment and imaging findings of infection	D	A-J	A,D,E	A-P
congenital anomalies of the spine and spinal cord	E	A-J	A,B,D,E	A-P
intra-cranial hemorrhage	F	A-J	A,B,D,E	A-P
Para-nasal sinuses ,orbital and mandible lesions	G	A-J	D,E	A-P
Neck lesions	H	A-J	B,D,E	A-P
Unit 6 Pediatric radiology				
normal vs. abnormal findings in Genitourinary tract	A	A-J	A,C	A-P
normal vs. abnormal findings in Chest	B	A-J	A,C,D	A-P
normal vs. abnormal findings in GI tract	C	A-J	A,C	A-P
normal vs. abnormal Musculoskeletal	D	A-J	A,C	A-P
normal vs. abnormal findings in Neuro-imaging	E	V	A,B,C	A-P
Update Information on	F	A-J	A,B,C	A-P

classification of vascular malformations				
normal vs. abnormal findings in ENT lesions	G	A-J	A,C	A-P

Unit 7 Ultrasound				
Know adequate information about -Transducer components. -Doppler phenomenon and -pulse echo-imaging.	A	A-J	-	A-P
adequate information about artifacts	B	A-J	-	A-P
Image processing and display. -Bio-effects and safety	C	A-J	-	A-P
adequate information about imaging applications/ equipment operation	D	A-J	-	A-P
Unit 8 Emergency radiology				
principals of imaging and findings in Central Nervous System emergency	A	A-J	A,B,C,D,F,G	A-P
trauma to face and Neck	B	A-J	A,B,,C,D,F,G	A-P
imaging in GU trauma	C	A-J	A,B,,C,D,F,G	A-P
diagnosis, classification and management of gynecological and obstetrics emergency	D	A-J	A,B,,C,D,F,G	A-P
different types of chest trauma	E	A-J	A-G	A-P
Cardiovascular Emergencies	F	A-J	A,B,C,D,F,G	A-P
Abdominal Trauma	G	A-J	A,B,C,D,F,G	A-P
Pediatric Emergencies	H	A-J	A,B,C,D,F,G	A-P

Unit 9 Interventional radiology				
indications, contraindications, technique, and expected benefits of most interventional diagnostic and therapeutic procedures	A	A-J	A	A-P
common health problems treated by the interventional radiology service	B	A-J	A	A-P
basic interventional radiology skills	C	A-J	A	A-P
Unit 10 Breast radiology				
screening mammography	A	A-J	A	A-P
normal structures on a mammogram, US and MRI.	B	A-J	A,B	A-P
Breast ultrasound	C	A-J	A,B	A-P
basics of a diagnostic work up including magnification views	D	A-J	A,B	A-P
interpretation of mammogram and ultrasound.	E	A-J	A,B	A-P
details Breast ultrasound	F	A-J	A,B,D	A-P
Breast MRI	G	A-J	-	A-P

5. Methods of teaching/learning:

1. Lectures
2. Training
3. Clinical rotations
4. (service teaching) Observation
5. Post graduate teaching
6. Perform under supervision of senior staff
7. Simulations
8. Senior staff experience

6. Methods of teaching/learning: for students with poor achievements

1. Extra Didactic (lectures, seminars, tutorial) according to their needs
2. Extra training according to their needs

7. Assessment methods:

i. Assessment tools:

1. Written and oral examination
2. Log book
3. Objective structure clinical examination (OSCE)
4. Portfolios
5. Simulation
6. Record review (report)
7. 360o global rating

ii. Time schedule: At the end of second part.

iii. Marks: 1200

8. List of references

i. Lectures notes

- Staff members print out of lectures and/or CD copies

ii. Recommended books

1-Osborn AG: Diagnostic imaging: Brain 3rd edition: 2008
2-Stoller DW: Magnetic resonance imaging in orthopedics and Sports medicine: 1st edition: 2008.
3-Graniger and Allison: Diagnostic radiology: A textbook of medical imaging, 7th edition: 2020
4-Hagga JR, Lanzieri CF, Gilkeson: CT and MR imaging of the whole body, 6th edition: 2016
5-Peter M.Som, and Hugh D Curtin: Head and neck imaging, 5th edition: 2011
6-Harris JH, Harris WH: The Radiology of Emergency Medicine. Williams & Wilkins, Baltimore, 5th Edition, 2013.
7- Daniel B. Nissman: Emergency and Trauma Radiology A Teaching File. LWW Teaching File Series, 1st Edition, 2016
8- Brandt C. Wible: Diagnostic Imaging: Interventional Procedures, 2nd Edition: 2017.
9- Brian Strife MD and Jeffrey Elbich: Vascular and Interventional Radiology: A Core Review, 2nd Edition: 2019
10- Jeffrey Geschwind MD and Michael Dake: Abrams' Angiography: Interventional Radiology, Lippincott Williams & Wilkins, 3rd Edition: 2013.
11- Laszlo Tabar, Peter B. Dean: Teaching Atlas of Mammography, 3rd Edition: 2011.

iii. Periodicals, Web sites, … etc

- American journal of radiology.
- European journal of radiology.
- Radiology journal.
- Radiologic clinics of North America
- Egyptian Journal of radiology

Contributor	Name	Signature	Date
Program Principle Coordinator:	**Prof. Dr Samy Abdel-Aziz**		6-2022
Head of the Responsible Department (Program Academic Director):	**Prof. Dr Mostafa Hashem**		6-2022

ANNEX 2
Program Academic Reference Standards (ARS)

1- Graduate attributes for medical doctorate in Radio diagnosis

***The Graduate (after residence training and medical doctorate years of study) must*:**

1- Demonstrate competency and mastery of basics, methods and tools of scientific research and clinical audit in Radio diagnosis

2- Have continuous ability to add knowledge to Radio diagnosis through research and publication.

3- Appraise and utilise relevant scientific knowledge to continuously update and improve clinical practice.

4- Acquire excellent level of medical knowledge in the basic biomedical, behavioural and clinical sciences, medical ethics and medical jurisprudence and apply such knowledge in patient care and scientific research.

5- Function as a leader of a team to provide patient care that is appropriate, effective and compassionate for dealing with health problems and health promotion.

6- Identify and create solutions for health problems in Radio diagnosis

7- Acquire an in depth understanding of common areas of Radio diagnosis

, from basic clinical care to evidence based clinical application, and possession of required skills to manage independently all problems in these areas.

8- Demonstrate leadership competencies including interpersonal and communication skills that ensure effective information exchange with individual patients and their families and teamwork with other health professions, the scientific community and the public.

9- Function as teacher in relation to colleagues, medical students and other health professions.

10- Master decision making capabilities in different situations related to Radio diagnosis.

11- Show leadership responsiveness to the larger context of the health care system, including e.g. the organisation of health care, partnership with health care providers and managers, practice of cost-effective health care, health economics, and resource allocations.

12- Demonstrate in depth awareness of public health and health policy issues including independent ability to improve health care, and identify and carryout system-based improvement of care.

13- Show model attitudes and professionalism.

14- Demonstrate commitment for lifelong learning and maintenance of competence and ability for continuous medical education and learning in subsequent stages and in Radio diagnosis or one of its subspecialties.

15- Use recent technologies to improve his practice in Radio diagnosis.

16- Share in updating and improving clinical practice in Radio diagnosis

2- Competency based Standards for medical in Radiodiagnosis

22.1- Knowledge and understanding

By the end of the program, the graduate should demonstrate satisfactory knowledge and understanding of

2-1-A- Established, updated and evidence- based theories, basics and developments of Radio diagnosis and relevant sciences.

2-1-B- Basics, methods and ethics of medical research.

2-1-C- Ethical and medicolegal principles of medical practice related to Radio diagnosis

2-1-D- Principles and measurements of quality in Radio diagnosis

2-1-E- Principles and efforts for maintainace and improvements of public health.

2- Intellectual skills

By the end of the program, the graduate should be able to demonstrate the following

2-2-A- Application of basic and other relevant science to solve Radio diagnosis related Problems.

2-2-B- Problem solving based on available data.

2-2-C- Involvement in research studies related to Radio diagnosis

2-2-D- Writing scientific papers.

2-2-E- Risk evaluation in the related clinical practice.

2-2-F- Planning for performance improvement in Radio diagnosis

2-2-G- Creation and innovation in Radio diagnosis

2-2-H- Evidence – based discussion.

2-2-I- Decision making in different situations related to Radio diagnosis

2.3- Clinical skills

By the end of the program, the graduate should be able to

- ***Competency-based outcomes for Patient Care:-***

2-3-A- MD students must be able to provide extensive level of patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health extensive level means in depth understanding and from basic science to evidence – based clinical application and possession of skills to manage independently all problems in Radio diagnosis

2-3-B- Master patient care skills relevant to Radio diagnosis for patients with all diagnoses and procedures.

2-3-C- Write and evaluate reports for situations related to the Radio diagnosis**.**

2.4- General skills

By the end of the program, the graduate should be able to

- ***Competency-based outcomes for Practice-based Learning and Improvement***

2-4-A-Master practice-based learning and improvement skills that involves investigation and evaluation of their own patient care, appraisal and assimilation of scientific evidence, improvements in patient care and risk management

2-4-B- Use competently all information sources and technology to improve his practice.

2-4-C- Master skills of teaching and evaluating others.

- ***Competency-based objectives for Interpersonal and Communication Skills***

2-4-D-Master interpersonal and communication skills that result in effective information exchange and teaming with patients, their families, and other health professionals.

- ***Competency-based objectives for Professionalism***

2-4-E-Master Professionalism behavior, as manifested through a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

- ***Competency-based objectives for Systems-based Practice:***

2-4-F-Demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively use system resources to provide care that is of optimal value.

2-4-G- Participate in improvement of the education system.

2-4-H- Demonstrate skills of leading scientific meetings including time management

2-4-O- Demonstrate skills of self and continuous learning.

Annex 3, Methods of teaching/learning

Annex 3, Methods of teaching/learning

	Patient Care	**Medical knowledge**	**Practice-based learning/ Improvement**	**Interpersonal and communication skills**	**Professionalism**	**Systems-based practice**
Didactic (lectures, seminars, tutorial)	X	X		X	X	X
journal club,	X	X	X			
Educational prescription	X	X	X	X	X	X
Present a case (true or simulated) in a grand round	X	X	X	X	X	
Observation and supervision	X		X	X	X	X
conferences		X	X	X		X
Written assignments	X	X	X	X	X	X
Oral assignments	X	X	X	X	X	X

Teaching methods for knowledge

- ❖ Didactic (lectures, seminars, tutorial)
- ❖ journal club
- ❖ Critically appraised topic
- ❖ Educational prescription (a structured technique for following up on clinical questions that arise during rounds and other venues).
- ❖ Present a case (true or simulated) in a grand round
- ❖ Others

Teaching methods for patient care

- ❖ Observation and supervision /Completed tasks procedure/case logs
- ❖ On-the-job" training without structured teaching is not sufficient for this skill (checklists).
- ❖ Simulation is increasingly used as an effective method for skill/ teamwork training.

Teaching methods for other skills

- ❖ Written communication (e.g., orders, progress note, transfer note, discharge summary, operative reports, and diagnostic reports).
- ❖ Oral communication (e.g., presentations, transfer of care, interactions with patients, families, colleagues, members of the health care team) and/or non verbal skills (e.g., listening, team skills)
- ❖ Professionalism, including medical ethics, may be included as a theme throughout the program curriculum that includes both didactic and experiential components (e.g., may be integrated into already existing small group discussions of vignettes or case studies and role plays, computer-based modules) and may be modeled by the faculty in clinical practice and discussed with the resident as issues arise during their clinical practice.

Annex 4, Assessment methods

Annex 4, ILOs evaluation methods for MD students.

Method	Practical skills	K	Intellectual	General skills			
	Patient Care	K	I	Practice-based learning/ Improvement	Interpersonal and communication skills	Professionalism	Systems-based practice
Record review	X	X	X		X	X	X
Checklist	X				X		
Global rating	X	X	X	X	X	X	X
Simulations	X	X	X	X	X	X	
Portfolios	X	X	X	X	X		
Standardized oral examination	X	X	X	X	X		X
Written examination	X	X	X	X			X
Procedure/ case log	X	X					
OSCE	X	X	X	X	X	X	X

Annex 4, Glossary of MD students assessment methods

- Record Review – Abstraction of information from patient records, such as medications or tests ordered and comparison of findings against accepted patient care standards.

- Chart Stimulated Recall – Uses the MD doctor's patient records in an oral examination to assess clinical decision-making.

- Mini clinical evaluation: Evaluation of Live/Recorded Performance (single event) – A single resident interaction with a patient is evaluated using a checklist. The encounter may be videotaped for later evaluation.

- Standardized Patients (SP) – Simulated patients are trained to respond in a manner similar to real patients. The standardized patient can be trained to rate MD doctor's performance on checklists and provide feedback for history taking, physical examination, and communication skills. Physicians may also rate the MD doctor's performance.

- Objective Structured Clinical Examination (OSCE) – A series of stations with standardized tasks for the MD doctors to perform. Standardized patients and other assessment methods often are combined in an OSCE. An observer or the standardized patient may evaluate the MD doctors.

- Procedure or Case Logs – MD doctors prepare summaries of clinical experiences including clinical data. Logs are useful to document educational experiences and deficiencies.

- PSQs – Patients fill out Patient Survey questionnaires (PSQs) evaluating the quality of care provided by MD doctors.

- Case /problems – assess use of knowledge in diagnosing or treating patients or evaluate procedural skills.
- Models: are simulations using mannequins or various anatomic structures to assess procedural skills and interpret clinical findings. Both are useful to assess practice performance and provide constructive feedback.
- 360 Global Rating Evaluations – MD doctors, faculty, nurses, clerks, and other clinical staff evaluate MD doctors from different perspectives using similar rating forms.
- Portfolios – A portfolio is a set of project reports that are prepared by the MD doctors to document projects completed during the MD study years. For each type of project standards of performance are set. Example projects are summarizing the research literature for selecting a treatment option, implementing a quality improvement program, revising a medical student clerkship elective, and creating a computer program to track patient care and outcomes.
- Examination MCQ – A standardized examination using multiple-choice questions (MCQ). The in-training examination and written board examinations are examples.
- Examination Oral – Uses structured realistic cases and patient case protocols in an oral examination to assess clinical decision-making.
- Procedure or Case Logs – MD doctors prepare summaries of clinical experiences including clinical data. Logs are useful to document educational experiences and deficiencies.
- PSQs – Patients fill out Patient Survey questionnaires (PSQs) evaluating the quality of care provided by MD doctors.

Annex 5, program evaluation tools

By whom	Method	sample
Quality Assurance Unit	Reports Field visits	#
External Evaluator (s):According to department council External Examiner (s): According to department council	Reports Field visits	#
Stakeholders	Reports Field visits questionnaires	#
Senior students	questionnaires	#
Alumni	questionnaires	#

Annex 6, Program Correlations:

مصفوفة توافق المعايير القومية القياسية العامة لبرامج الدكتوراه مع المعايير الأكاديمية المعتمدة من كلية الطب □ جامعة أسيوط لدرجة الدكتوراه في الأشعة التشخيصية

I- General Academic Reference Standards (GARS) versus Program ARS

1- Graduate attributes

Faculty ARS	NAQAAE General ARS for Postgraduate Programs
1- Demonstrate competency and mastery of basics, methods and tools of scientific research and clinical audit in radio diagnosis	1-إتقان أساسيات و منهجيات البحث العلمي
2- Have continuous ability to add knowledge new developments to radio diagnosis through research and publication.	2-العمل المستمر علي الإضافة للمعارف في مجال التخصص
3- Appraise and utilise scientific knowledge to continuously update and improve clinical practice and relevant basic sciences.	3-تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
4- Acquire excellent level of medical knowledge in the basic biomedical, clinical, behavioural and clinical sciences, medical ethics and medical jurisprudence and apply such knowledge in patient care and scientific	4-دمج المعارف المتخصصة مع المعارف ذات العلاقة مستنبطا و مطورا للعلاقات البينية بينها
5- Function as a leader of a team to provide patient care that is appropriate, effective compassionate for dealing with health and Problems and health promotion. 7- Acquire an in depth understanding of common areas of speciality, from basic clinical care to evidence based clinical application, and possession of skills to manage independently all problems in these areas.	5-إظهار وعيا عميقا بالمشاكل الجارية و النظريات الحديثة في مجال التخصص
6- Identify and create solutions for health problems in radio diagnosis	6-تحديد المشكلات المهنية و إيجاد حلولا مبتكرة لحلها
5- Function as a leader of a team to provide patient care that is appropriate, effective and compassionate for dealing with health problems and health promotion.	7-إتقان نطاقا واسعا من المهارات المهنية في مجال التخصص

7- Acquire an in depth understanding of common areas of radio diagnosis, from basic clinical care to evidence based clinical application, and possession of skills to manage independently all problems in these areas.	
16- Share in updating and improving clinical practice in radio diagnosis 9- Function as teacher in relation to colleagues, medical students and other health professions.	8- التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية
15- Use recent technologies to improve his practice in radio diagnosis	9-استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية
8- Demonstrate leadership competencies including interpersonal and communication skills that ensure effective information exchange with individual patients and their families and teamwork with other health professions, the scientific community and the public. 5- Function as a leader of a team to provide patient care that is appropriate, effective and compassionate for dealing with health problems and health promotion.	10-التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة
10- Master decision making capabilities in different situations related to radio diagnosis	11-اتخاذ القرار في ظل المعلومات المتاحة
11- Show leadership responsiveness to the larger context of the health care system, including e.g. the organisation of health care, partnership with health care providers and managers, practice of cost-effective health care, health economics, and resource allocations.	12-توظيف الموارد المتاحة بكفاءة و تنميتها والعمل على إيجاد موارد جديدة
12- Demonstrate in depth awareness of public health and health policy issues including independent ability to improve health care, and identify and carryout system-based improvement of care.	13-الوعي بدوره في تنمية المجتمع والحفاظ على البيئة

13- Show model attitudes and professionalism.	14-التصرف بما يعكس الالتزام بالنزاهة و المصداقية و قواعد المهنة
14- Demonstrate commitment for lifelong learning and maintenance of competence and ability for continuous medical education and learning in subsequent stages and in radio diagnosis or one of its subspecialties. 15- Use recent technologies to improve his practice in radio diagnosis	15-الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للآخرين

2- Academic standards

Faculty ARS	NAQAAE General ARS for Postgraduate Programs
2.1. A- Established, updated and evidence- based theories, basics and developments of radio diagnosis and relevant sciences.	2-1-أ- النظريات و الأساسيات والحديث من المعارف في مجال التخصص والمجالات ذات العلاقة
2.1. B- Basic, methods and ethics of medical research.	2-1-ب –أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة
2.1. C- Ethical and medicologal principles of medical practice related to radio diagnosis	2-1-ج- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص
2.1. D- Principles and measurements of quality in radio diagnosis.	2-1-د مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص
2.1. E- Principles and efforts for maintains and improvements of public health.	2-1-هـ – المعارف المتعلقة بآثار ممارسته المهنية على البيئة وطرق تنمية البيئة وصيانتها
2.2. A- Application of basic and other relevant science to solve radio diagnosis related problems.	2–2–أ –تحليل و تقييم المعلومات في مجال التخصص و القياس عليها و الاستنباط منها
2.2.B- Problem solving based on available data.	2–2–ب –حل المشاكل المتخصصة استنادا علي المعطيات المتاحة
2.2.C- Involvement in research studies related to radio diagnosis	2–2–ج –إجراء دراسات بحثية تضيف إلى المعارف
2.2. D- Writing scientific papers.	2–2–د– صياغة أوراق علمية
2.2. E- Risk evaluation in the related clinical practice	2–2—هـ . تقييم المخاطر في الممارسات المهنية
2.2.F- Planning for performance improvement in radio diagnosis.	2–2–و –التخطيط لتطوير الأداء في مجال التخصص

2-2-G- Creation and innovation in the radio diagnosis	2-2-ز- الابتكار /الإبداع
2.2. H- Evidence – based discussion.	2-2-ح- الحوار والنقاش المبني علي البراهين والأدلة
2.2.I- Discussion making in different situations related to radio diagnosis	2-2-ط -اتخاذ القرارات المهنية في سياقات مهنية مختلفة
2.3. A- MD students must be able to provide extensive level of patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health extensive level means in depth understanding and from basic science to evidence – based clinical application and possession of skills to manage independently all problems in radio diagnosis. 2.3. B- Master patient care skills relevant to radio diagnosis or patients with all diagnoses and procedures.	2-3-أ -إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص
2.3. C- Write and evaluate reports for situations related to the field of radio diagnosis	2-3-ب- كتابة و تقييم التقارير المهنية.
2.4.A-Master practice-based learning and improvement skills that involves investigation and evaluation of their own patient care, appraisal and assimilation of scientific evidence, improvements in patient care and risk management	2-3-ج -تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص
2.4.B- Use competently all information sources and technology to improve his practice.	2-3-د - استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية
2.4.A-Master practice-based learning and improvement skills that involves investigation and evaluation of their own patient care, appraisal and assimilation of scientific evidence, improvements in patient care and risk management 2.4.G- Participate in improvement of the education system.	2-3-ه . -التخطيط لتطوير الممارسة المهنية وتنمية أداء الآخرين

II-Program ARS versus program ILOs

Comparison between ARS- ILOS for medical doctorate

(ARS)	(ILOs)
2-1- Knowledge and understanding	***2-1- Knowledge and understanding***
2-1-A- Established, updated and evidence-based Theories, Basics and developments of radio diagnosis and relevant sciences.	**2-1-A**- Demonstrate in-depth knowledge and understanding of theories, basics and updated biomedical, clinical epidemiological and socio behavioral science relevant to his speciality as well as the evidence – based application of this knowledge to patient care.
2-1-B Basic, methods and ethics of medical research.	**2-1-B-** Explain basics, methodology, tools and ethics of scientific medical, clinical research.
2-1-C- Ethical and medicologal principles of medical practice related to radio diagnosis field.	**2-1-C-** Mention ethical, medico logical principles and bylaws relevant to his practice in the field of radio diagnosis
2-1-D- Principles and measurements of qu in the radio diagnosis	**2-1-D-** Mention principles and measurements of quality assurance and quality improvement in medical education and in clinical practice of radio diagnosis
2-1-E-Principles and efforts for maintains and improvements of public health.	**2-1-E-** Mention health care system, public health and health policy, issues relevant to this speciality and principles and methods of system – based improvement of patient care in common health problems of the field of radio diagnosis
***2-2- Intellectual skills*:**	***2-2- Intellectual skills:***
2-2-A-Application of basic and other relevant science to solve radio diagnosis related problems.	**2-2-A-** Apply the basic and clinically supportive sciences which are appropriate to radio diagnosis related conditions / problem / topics.

2-2-B-Problem solving based on available data.	**2-2-B-** Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to radio diagnosis
2-2-C- Involvement in research studies related to the radio diagnosis .	**2-2-C-** Plain research projects.
2-2-D Writing scientific papers.	**2-2-D-** Write scientific paper.
2-2-E-Risk evaluation in the related clinical practice.	**2-2-E-** Participate in clinical risk management as a part of clinical governance.
2-2-F-Planning for performance improvement in the radio diagnosis	**2-2-F-** Plan for quality improvement in the field of medical education and clinical practice in his speciality.
2-2-G-Creation and innovation in the speciality field.	**2-2-G-** Create / innovate plans, systems, and other issues for improvement of performance in his practice.
2-2-H-Evidence – based discussion.	**2-2-H-** Present and defend his / her data in front of a panel of experts.
2-2-I-Decision making in different situations related to radio diagnosis fields.	**2-2-I-** Formulate management plans and alternative decisions in different situations in the field of the radio diagnosis

continuous (ARS)	continuous (ILOs)
2-3- Clinical skills:	***2/3/1/Practical skills (Patient care :)***
2-3-A- MD students must be able to provide extensive level of patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health extensive level means in depth understanding and from basic science to evidence – based clinical application and possession of skills to manage independently all problems in his field of practice.	**2-3-1-A-** Provide extensive level of patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. ***p.s.*** Extensive level means in-depth understanding from basic science to evidence – based clinical application and possession of skills to manage independently all problems in field of practice.
2-3-B- Master patient care skills relevant to radio diagnosis for patients with all diagnoses and procedures.	**2-3-1-B-** Provide extensive level of patient care for patients with all common diagnoses and for uncomplicated procedures related to radio diagnosis
	2-3-1-C- Provide extensive level of patient care for non-routine, complicated patients and under increasingly difficult circumstances, while demonstrating compassionate, appropriate and effective care.
	2-3-1-D- Perform diagnostic and therapeutic procedures considered essential in the field of radio diagnosis
	2-3-1-E- Handles unexpected complications, while demonstrating compassion and sensitivity to patient needs and concerns.
	2-3-1-F- Communicate effectively and demonstrate caring and respectful behaviors when interacting with patients and their families in the radio diagnosis related situations.
	2-3-1-G- Gather essential and accurate

	information about patients of the radio diagnosis related conditions. **2-3-1-H** Make informed decisions about diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence and clinical judgment for the radio diagnosis related conditions. **2-3-1-I-** Develop and carry out patient management plans for radio diagnosis related conditions. **2-3-1-J-** Counsel and educate patients and their families about radio diagnosis related conditions. **2-3-1-K-** Use information technology to support patient care decisions and patient education in all radio diagnosis related clinical situations. **2-3-1-L-** Perform competently all medical and invasive procedures considered essential for the radio diagnosis related conditions / area of practices. **2-3-1-M-** Provide health care services aimed at preventing the radio diagnosis related health problems. **2-3-1-N-** Lead health care professionals, including those from other disciplines, to provide patient-focused care in radio diagnosis related conditions**.**

2-3-C- Write and evaluate reports for situations related to the field radio diagnosis	**2-3-1-O-** Write competently all forms of patient charts and sheets including reports evaluating these charts and sheets.(Write and evaluate a consultation note, Inform patients of a diagnosis and therapeutic plan, completing and evaluating comprehensive timely and legible medical records).
2-4- General skills **2-4-A-** Master practice-based learning and improvement skills that involves investigation and evaluation of their own patient care, appraisal and assimilation of scientific evidence, improvements in patient care and risk management	***2/3/2 General skills*** **2-3-2-A-** Demonstrate the competency of continuous evaluation of different types of care provision to patients in the different area of radio diagnosis **2-3-2-B-** Appraise scientific evidence. **2-3-2-C-** Continuously improve patient care based on constant self-evaluation and life-long learning. **2-3-2-D**. Participate in clinical audit and research projects. **2-3-2-E-** Practice skills of evidence-based Medicine (EBM). **2-3-2-G-** Design logbooks. **2-3-2-H-** Design clinical guidelines and standard protocols of management. **2-3-2-I-** Appraise evidence from scientific studies related to the patients' health problems.

2-4-B- Use competently all information sources and technology to improve his practice.	**2-3-2-J-** Apply knowledge of study designs and statistical methods to the appraisal of clinical studies. **2-3-2-K**- Use information technology to manage information, access on-line medical information; for the important topics.
2-4-C- Master skills of teaching and evaluating others.	**2-3-2-F-** Educate and evaluate students, residents and other health professionals.
2-4-D- Master interpersonal and communication Skills that result in effective information exchange and teaming with patients, their families, and other health professionals.	**2-3-2-L**- Master interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals, including:- • Present a case. • Write a consultation note. • Inform patients of a diagnosis and therapeutic plan Completing and maintaining comprehensive. • Timely and legible medical records. • Teamwork skills. **2-3-2-M-** Create and sustain a therapeutic and ethically sound relationship with patients. **2-3-2-N**- Elicit and provide information using effective nonverbal, explanatory, questioning, and writing skills. **2-3-2-O-** Work effectively with others as a member or leader of a health care team or other professional group.
2-4-E- Master Professionalism behavior, as manifested through a commitment to carrying out professional responsibilities, adherence to ethical	**2-3-2-P-** Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society.

principles, and sensitivity to a diverse patient population.	**2-3-2-Q-** Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices. **2-3-2-R-** Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities.
2-4-F- Demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively use system resources to provide care that is of optimal value. **2-4-G**- Participate in improvement of the education system.	**2-3-2-S-** Work effectively in health care delivery settings and systems related to radio diagnosis including good administrative and time management. **2-3-2-T-** Practice cost-effective health care and resource allocation that does not compromise quality of care. **2-3-2-U-** Advocate for quality patient care and assist patients in dealing with system complexities. **2-3-2-V-** Design, monitor and evaluate specification of under and post graduate courses and programs.
2-4-H- Demonstrate skills of leading scientific meetings including time management	**2-3-2-W-** Act as a chair man for scientific meetings including time management **2-3-2-S -** Work effectively in health care delivery settings and systems related to radio diagnosis including good administrative and time management.
2-4-O- Demonstrate skills of self and continuous learning.	From A to H

III-Program matrix
Knowledge and understanding

Course	Program covered ILOs				
	2/1/A	2/1/B	2/1/C	2/1/D	2/1/E
Course 1 : Medical statistics		✓			
Course 2 : Research Methodology		✓			
Course 3 : Medicolegal Aspects & Ethics in Medical Practice and Scientific Research			✓		
Course 4 Nuclear medicine	✓				
Course 5: Recent Advance in different medical imaging techniques and its applications	✓				
Course 6 : **Radio-diagnosis**	✓	✓	✓	✓	✓

Intellectual

Course	Program covered ILOs								
	2/2/A	2/2/B	2/2/C	2/2/D	2/2/E	2/2/F	2/2/G	2/2/H	2/2/I
Course 1 : Medical statistics			✓	✓				✓	
Course 2 : Research Methodology			✓	✓				✓	
Course 3 : Medicolegal Aspects & Ethics in Medical Practice and Scientific Research								✓	
Course 4 Nuclear medicine	✓								
Course 5: Recent Advance in different medical imaging techniques and its applications	✓								
Course 6 : **Radio-diagnosis**	✓	✓	✓	✓	✓	✓	✓	✓	✓

Practical Skills (Patient Care)

Course	Program covered ILOs							
	2/3/1/A	2/3/1/B	2/3/1/C	2/3/1/D	2/3/1/E	2/3/1/F	2/3/1/G	2/3/1/H
Course 1 : Medical statistics								
Course 2 : Research Methodology								
Course 3 : Medicolegal Aspects & Ethics in Medical Practice and Scientific Research				✓				✓
Course 4 Nuclear medicine								
Course 5: Recent Advance in different medical imaging techniques and its applications	✓							
Course 6 : **Radio-diagnosis**	✓	✓	✓	✓	✓	✓	✓	✓

Course	Program covered ILOs						
	2/3/1/I	2/3/1/J	2/3/1/K	2/3/1/L	2/3/1/M	2/3/1/N	2/3/1/0
Course 1 : Medical statistics							
Course 2 : Research Methodology							
Course 3 : Medicolegal Aspects & Ethics in Medical Practice and Scientific Research	✓			✓			✓
Course 4 Nuclear medicine							
Course 5: Recent Advance in different medical imaging techniques and its applications							
Course 6 : **Radio-diagnosis**	✓	✓	✓	✓	✓	✓	✓

General Skills

Course	Program covered ILOs							
	2/3/2/A	2/3/2/B	2/3/2/C	2/3/2/D	2/3/2/E	2/3/2/F	2/3/2/G	2/3/2/H
Course 1 : Medical statistics		✓						
Course 2 : Research Methodology		✓		✓	✓			
Course 3 : Medicolegal Aspects & Ethics in Medical Practice and Scientific Research								
Course 4 Nuclear medicine								
Course 5: Recent Advance in different medical imaging techniques and its applications								
Course 6 : **Radio-diagnosis**	✓	✓	✓	✓	✓	✓	✓	✓

Course	Program covered ILOs							
	2/3/2/I	2/3/2/J	2/3/2/K	2/3/2/L	2/3/2/M	2/3/2/N	2/3/2/O	2/3/2/P
Course 1 : Medical statistics	✓		✓					
Course 2 : Research Methodology	✓	✓						
Course 3 : Medicolegal Aspects & Ethics in Medical Practice and Scientific Research	✓	✓						✓
Course 4 Nuclear medicine			✓	✓		✓		✓
Course 5: Recent Advance in different medical imaging techniques and its applications			✓	✓		✓		✓
Course 6 : **Radio-diagnosis**	✓	✓	✓	✓	✓	✓	✓	✓

General Skills

Course	Program covered ILOs							
	2/3/2/ Q	2/3/2/ R	2/3/2/ S	2/3/2/ T	2/3/2/ U	2/3/2/ V	2/3/2/ W	2/3/2/ Q
Course 1 : Medical statistics								
Course 2 : Research Methodology								
Course 3 : Medicolegal Aspects & Ethics in Medical Practice and Scientific Research								
Course 4 Nuclear medicine			✓					
Course 5: Recent Advance in different medical imaging techniques and its applications								
Course 6 : **Radio-diagnosis**	✓	✓	✓	✓	✓	✓	✓	✓

Annex 7, Additional information:

Department information:

Radiological department include:

*Multiple X-ray machines.
*CR units (computerized radiography).
*Ultra-sound unit include ultrasound black and white machines and color Duplex machines.
*Digital subtraction unit for all special techniques.
*Angiographic unit for vascular imaging and interventional vascular procedures.
*Computerized tomography units (single slice CT, Helical CT and Multi-detectors CT).
*Picture archiving communicating system (PACS).
*Magnetic resonance imaging unit.
*Pediatric radiology unit.
*Chest X-ray in patient unit.
*Bone densitometry unit.
*Daily ultrasound out patient clinics.
*Daily X-ray out patient clinics.
*Seminar room with data show.
*Scientific Library (radiological books), MD, MSc thesis.

Department quality control insurance for completing the program:

- Evaluation by the Department head and staff members.
- Regular assessments.
- Log book monitoring.
- Recent equipments and Specialized Units.

(end of the program specifications)