



Faculty of Medicine
Suez Canal University

Radiology Department
Program Specification- MSc

PROGRAM SPECIFICATIONS

Program Title

Master Degree of Diagnostic Radiology

Code:

DRDR

Program Specification

A- Basic Information

1- Program Title: **Master Degree of Radiology**



Faculty of Medicine
Suez Canal University

Radiology Department
Program Specification- MSc

2- Program Type: **Single** Double Multiple

3- Department (s): **Radiology Department**

4- Coordinator: **Prof. Azza Abd EL-Hamid, MD**

5- External Evaluator(s) :

Prof. Awad Bessar, MD (Professor of Diagnostic Radiology, Zagazig University)

Prof. Mahmood Dawod, MD (Professor of Diagnostic Radiology, Tanta University)

6- Last date of program specifications approval: **The bylaws of the Master program in Radiology in the Faculty of Medicine, Suez Canal University were approved by the Supreme Council of Universities in 2016.**

7-Date of specification revision approval: **2017**

8- Number of credit points for this degree: **120 CP**

B- Professional Information

1- Program Aim

The overall goals of the program are:

1. Students are expected to demonstrate and apply knowledge of accepted standards of clinical medicine in their respective specialty area, remain current with new developments in medicine specially radiology, and participate in life-long learning activities, including research.
2. Students must demonstrate the ability to effectively diagnose patients by different radiologic and imaging modalities, practice basic interventional techniques with supervision and provide medical care that incorporates the patient empathy, awareness of behavioral issues, the incorporation of preventive medicine, and health promotion.
3. Students are expected to demonstrate interpersonal and communication skills that enable them to establish and maintain professional relationships with patients, families, and other members of health care teams.
4. Students must demonstrate the ability to critically evaluate their methods of clinical practice, integrate evidence-based medicine into patient care, show an understanding of research methods, and improve patient care practices.
5. Students are expected to demonstrate an understanding of health care delivery systems, provide effective and qualitative patient care within the system, and practice cost-effective medicine.

2- Intended Learning Outcomes (ILOs) of the program a-

Knowledge and Understanding

- a1- Recognize medical knowledge about established and evolving biomedical, clinical, and cognate sciences, as well as the application of this knowledge to patient care.
- a.2 Elicit knowledge of basic sciences relevant to Radiology such as radiologic anatomy, physics, basic introduction to nuclear medicine and radiobiology as well as pathology of all organ systems, fundamental research design and methodologies, and instrumentation and technology related to the field.



Faculty of Medicine
Suez Canal University

Radiology Department
Program Specification- MSc

- a.3 Demonstrate ability to gain fundamental understanding of the basic physical principles of different techniques including conventional radiology, digital radiology, CT, MRI, ultrasound, Doppler studies and nuclear medicine together with understanding physical principles of all machines used in the field of radiology.
- a.4 Demonstrate up to date knowledge of the imaging and radiologic techniques and basic interventions used in the current practice of Radiology. This knowledge base will be applied to ensure safe and competent clinical practice.
- a.5 State indications and contraindications in every technique of Radiologic practice and management of complications of each technique.
- a.6 Recognize radiologic and imaging manifestations of different pathologic conditions of all body systems in all ages, showing an ability to correlate those findings with the clinical data of the patients .to reach to the most probable diagnosis.
- a.7 Demonstrate ability to review pertinent radiological, and relevant clinical data for the patient.
- a.8 Conduct the education in the principles of bioethics and statistics as applied to medical care, and the residents must participate in decision-making involving ethical issues that arise in the diagnosis and management of their patients. a9- Demonstrate basic knowledge of different instruments quality control

b- Intellectual Skills

By the end of this program, participants should be able to:

- b1- Review results of history, clinical examination and imaging finding into meaningful diagnostic formulation.
- b2- Set learning objectives.
- b3- Put a plan and design for learning objectives.
- b4- Identify points of weakness and strength in learning achievement.
- b5- Design research study and write scientific paper
- b6- Write comprehensive radiological report
- b7- Evaluate different ordinary and technological tools in radiology
- b8- Use and analyze data from different and available resources to reach provisional diagnosis and solve problem in the specialty
- b9- Critically evaluate their methods of clinical practice, integrate evidence-based medicine into patient care

c- Professional and Practical Skills

- c1- Perform efficiently and independently simple radiological techniques Demonstrate effectiveness in developing appropriate doctor-patient relationships.
- c2- Perform with assistant advanced radiological techniques
- c3- Perform proper post-processing tasks for imaging studies of different systems
- c4- Use after consultation the suitable contrast material and its optimal use according to the imaging technique and the clinical problem and manage its complications
- c5- Manage contrast reactions
- c4- Evaluate patients safety and manage risk
- c6- Exhibit effective listening, written and oral communication skills in professional interactions with patients, families and other health professionals.
- c7- Conduct both individual consultations and presentations at multidisciplinary conferences that are focused, clear, and concise.



Faculty of Medicine
Suez Canal University

Radiology Department
Program Specification- MSc

c8- Choose effective modes of communication (listening, nonverbal, explanatory, questioning) and mechanisms of communication (face-to-face, telephone, e-mail, written), as appropriate. c9- Demonstrate skills in obtaining informed consent, including effective communication to patients about procedures, alternative approaches, and possible complications of laboratory-based patient care diagnostic and therapeutic activities, such as those related to transfusion medicine. c10- Communicate medical problems and patient options at appropriate levels of understanding. c11- Maintain comprehensive, timely, and legible medical records. c12- Elicit medical information in effective ways. c13- Use different resources to reach conventional diagnosis.

c14- Use technology for development of his professional

c15- Perform post processing on radiologic machines work stations using computer skills **d-**

General and transferable skills

d1- Work effectively with others as a member or leader of a health care team d2-

Manage time and resources. d3- Use computer and information technology efficiently in reporting and presentation. d4- Identify points of strength and weakness in gaining professional skills. d5- Communicate ideas effectively with colleagues and other specialist d6- Evaluate junior colleagues and teach them d7- Adopt Self and continuous learning

d8- Be aware about his and other safety from radiation hazards

3- Academic Standards

3a External References for Standards:

The National Academic Reference Standards (ARS) of NAQAAE

3b Comparison of Provision to External References

4- Curriculum Structure and Contents

4a- Program duration: the program lasts for a minimum of 2 academic years and maximum 5 years, as specified in the internal bylaws for postgraduate studies based on credit points system in the Faculty of Medicine, Suez Canal University approved on February 7th, 2016.

4b- Master Program Credit points (CP) structure: Total needed credit points for getting master degree 120 CP

The program consists of **First part 30 CP, Thesis 30 CP, and Second part 60 CP**

1. The first part of the program: 30 CP, its duration (15 weeks) for one academic semester. It includes
 - a. A course in Research Methodology planned and held in the Community Medicine Department of the Faculty of Medicine, Suez Canal University. This part includes 4 CP.
 - b. A courses in Research ethics planned and held in the Forensic and Toxicology Department of the Faculty of Medicine, Suez Canal University. This part includes 2 CP.
 - c. One elective course, the students should select one elective among six courses. This part includes 2 CP.
 - d. The specialized courses in radiology:
 - i. Technology and radiologic anatomy, planned and held in the radiology Department. It includes 10 CP.



- ii. Radiobiology and isotopes, planned and held in the nuclear medicine and oncology department. It includes 5 CP.
2. Master thesis: 30 CP, not included in the total marks for master degree, the candidate has the right to register the thesis protocol after 6 months from the degree registration. The thesis defense is allowed after 6 months from the date of the faculty council approval on the thesis protocol and passing the first part exam.
3. The second part of the program: 60 CP, its duration (45 weeks) for 3 consecutive academic semesters. The second part comprises the specialized courses in the radiology department, planned and held in the Medical Education Department. This part lasts for 1.5 years ending by written and practical exams:
- Radiology basic courses, 15CP
 - Clinical radiology courses, 40 CP
 - Scientific activities in radiology, 5CP.

4bi- No. of hours per week: 2 CP / week which equivalent 50 hours/ week, including lectures, tutorials, self-learning and hands-on training.

4bii- No. of credit Points: the Master program is 120 Credit Points

Every credit point include 25 working hour (30% = 7 hours for face to face learning activities, and 70% =18 hours for self-learning activities).

5- Program Courses

5.1- Level/Year of Program: 1st part MSc (Compulsory)

Courses			Assessment				
Code No.	Course Title	No. of Credit	Written Exam			Oral exam	Practical or clinical Exam
			No of Papers	Duration (hours)	Marks		
RB	Research methodology and Biostatistics	4	1	2	80		
RE	Research Ethics	2	1	1	40		
DRDR01	Physics for imaging	7	1	3	105	35	
DRDR02	Technology for imaging and radiologic anatomy	10	1	3	100		100
DRDR03	Radiobiology and isotopes	5	1	3	75	25	
E	Elective Course*	2	1	1	40		
Total		30 credit points			600 marks**		

***E: Student should select one course of the following as an elective course:**



Faculty of Medicine
Suez Canal University

Radiology Department
Program Specification- MSc

One elective course has 2 CP. The students should select one elective in first part of the Master degree.

- E01 Evidence Based medicine (Community Department)
- E02 Scientific Writing (Medical Education Department)
- E03 Quality in Medical Education (Medical Education Department)
- E04 Infection Control (Microbiology Department)
- E05 Critical Appraisal (Community Department)
- E06 Communication Skills (Medical Education Department)

5.2- Level/Year of Program: 2nd part MSc (Compulsory)

Courses			Assessment					
Code No.	Course Title	No. of Credit points	Written Exam			Oral exam	Practical or clinical Exam	Continues assessment Portfolio
			No of papers	Duration (hours)	Marks			
DRDR04	Radiology	15	2	3 / each paper	165 / each paper	110	330	330
	Clinical training	40						
	***Scientific activities	5 (not included in the total marks)						
Total		60 credit points			**1100 score			

*Portfolio scores distributed in the different parts of the portfolio and its total score included among the total mark of the second part

**Scientific activities are not included in the total marks

5.3- Thesis (30 CP): A faculty senior & junior supervisor from the staff members are nominated by the department council to prepare a proposal of the thesis protocol after the selection of a subject that is complementary to the research plans of the department. Data collection, methodologies, study question, time table, ethical considerations and budget are formulated by the candidate under guidance of his supervisors into a research project. The research protocol is then peer reviewed by two different staff members nominated by the Head of the department who share their ideas and comments with the supervisors to reach to the final form. The research protocol is discussed then openly in one of the department councils to be approved and diverted to the Faculty research committee where it is subjected to a critical appraisal to meet the research basic standards set by the committee. The final approvals of the research protocol are then issued by the committee of post graduate studies, the Faculty and University Council to be registered. The candidate has the right to register his/her thesis protocol after 6 months from the degree registration. The first time



Faculty of Medicine
Suez Canal University

Radiology Department
Program Specification- MSc

for thesis defense after 6 months from the date of the faculty council approval on the thesis protocol and passing the first part exam.

N.B. Thesis represents 30 credit points not included in the total mark for master degree.

6- Program Admission Requirements

- The program accepts candidates with Bachelor degree in Medicine and Surgery with minimum good grade & very good.
- Registration for the program opens 2 times/year, according to the internal bylaws for postgraduate studies of the Faculty of Medicine, Suez Canal University.

7- Student Assessment Methods

- 7.1 Written (MEQ)** to assess the cognitive domain.
- 7.2 MCQs** to assess the cognitive domain
- 7.3 Oral Viva Cards** to assess higher cognitive and attitude domains.
- 7.3 Observations** to assess practical and presentation skills.
- 7.4 Portfolio** to assess the cognitive, psychomotor and the affective domains.

8- Weighting of Assessments

Total marks for master degree 1700

Type of exam

First part (30 credit points= 600 mark)

- Written exam 440
- Oral and practical exam 160
- **Total 600**

Second part (60 credit points including 5 credit points not included in the total marks =1100 mark)

- Oral exam 110
- Practical exam 330
- Written exam 330
- Portfolio 330

Total 1100

Total of the Master degree 1700

9- Regulations for Progression and Program Completion



Faculty of Medicine
Suez Canal University

Radiology Department
Program Specification- MSc

The regulations for program completion follow the regulations of Master degree of radiology in the Faculty of Medicine, Suez Canal University approved by the Supreme Council of Universities.

First part

Passing level 60% of total marks of the exam

At least 50% passing level of the total written exam marks

Second part

Passing level 60% of total marks of the exam

Passing level 60% is prerequisite for MSC degree

Thesis/Assay

Passing thesis defense is prerequisite for getting MSc. Degree

10- Evaluation of Program Intended Learning Outcomes (ILOs)

Evaluator	Tool	Sample
1- Postgraduate students	Needs assessment questionnaires	Random sample of participants
2- Alumni	Selfadministered questionnaires	Comprehensive sample
3- Stakeholders	Selfadministered questionnaires	Random sample
4-External Evaluator(s) (External Examiner(s))	External audit of the program specifications	
5- Other		

Head of Radiology Department

Prof. Tarek El-Kammash, MD *Date:*

A comparison of radiology intended learning outcomes of Master program to the Generic Academic Reference Standards (ARS) for postgraduate programs

The overall goals of the program are:

1. Students are expected to demonstrate and apply knowledge of accepted standards of clinical medicine in their respective specialty area, remain current with new developments in medicine specially radiology, and participate in life-long learning activities, including research.



2. Students must demonstrate the ability to effectively diagnose patients by different radiologic and imaging modalities, practice basic interventional techniques with supervision and provide medical care that incorporates the patient empathy, awareness of behavioral issues, the incorporation of preventive medicine, and health promotion.
3. Students are expected to demonstrate interpersonal and communication skills that enable them to establish and maintain professional relationships with patients, families, and other members of health care teams.
4. Students must demonstrate the ability to critically evaluate their methods of clinical practice, integrate evidence-based medicine into patient care, show an understanding of research methods, and improve patient care practices.
5. Students are expected to demonstrate an understanding of health care delivery systems, provide effective and qualitative patient care within the system, and practice cost-effective medicine.

Benchmark	Program ILOs Covered (By No.)
2.1: Knowledge and understanding	
By the end of the postgraduate master program the candidate should be able to know and understand the following:	
2.1.01 Theories, basic and specific knowledge related to his specialty as well as basic sciences related to practice in his field	a1,2,3
2.1.02 exchangeable effect of professional practice and its reflection on the environment	d8
2.1.03 most up-to-date information related to his specialty	a4
2.1.04: Basic of ethics and medico legal aspects of professional practice, related to the specialty	a8
2.1.05 basis and principles of quality assurance in professional practice related to the specialty	d9
2.1.06 basis and ethics of scientific researches	a8
2.2- Intellectual Skills	
By the end of the postgraduate master program the candidate should be able to:	
2.2.01 Analyze and evaluate knowledge to solve problems related to his specialty	b8
2.2.02 solve specific problems with insufficient data	b8
2.2.03 Integrate different information to solve professional problems	b9
2.2.04 Perform scientific research or write scientific background for a research problem	a2, b5
2.2.05 Risk assessment in professional practices	c4
2.2.06 Plan to improve performance related to specialty	c10, d4
2.2.07 professional decision making in relation to different professional sequences	c8
2.3- Practical and Clinical Skills	
By the end of the postgraduate master program the candidate should be able to:	
2.3.01 Demonstrate essential practical skills related to his specialty	c1,c2,c3
2.3.02 Write and evaluate professional reports	b6, d3
2.3.03 Evaluate different methods and tools available related to specialty	b7



Faculty of Medicine
Suez Canal University

Radiology Department
Program Specification- MSc

2.4 General and transferable skills

By the end of the postgraduate master program the candidate should be able to

2.4.01 Communicate ideas and arguments effectively	d5
2.4.02 Use information technology to serve in the development of professional practice	d3
2.4.03 perform self evaluation and specify his own educational needs	d4
2.4.04 Use different resources to obtain knowledge and information.	b8, c13, d2
2.4.05 state regulations and outcomes for evaluation of others	d6
2.4.06 Work effectively within team and lead a team effectively indifferent professional situations	d1
2.4.07 Manage time effectively	c11, d2
2.4.08 Adopt the principles of self and lifelong learning	d7