



Program Specification for Master Degree: Diagnostic Radiology

Program type: Single

Program code: RAD 824

Department offering the program: Diagnostic and Interventional Radiology

Department

Total credit points: 152

Academic year: 2009/2010

**Program Coordinators: Prof. Dr. Ahmad Sami Saeed
Lecturer Dr. Lamiaa Ibrahim Abdel Rahman Metwally**

External evaluators: Prof. Waheed Tantawy

I. Program aims

The program is a professional degree that enables candidates to specialize in the area of diagnostic radiology. The candidates should achieve satisfactory levels of basic knowledge and clinical background in all sub-specialities in radiology practice, interact with community problems, respect ethical values according to community culture, and promote their medical standards through engaging in continuing medical education. The program also aims to introduce the candidate to the basics of scientific medical research.

II. Intended learning outcomes of program (ILOs)

- 1. Knowledge and understanding: By the end of the program the candidate should;**
 - a) Recognize the basic scientific knowledge related to diagnostic radiology including principles of physics, radiobiology (including radiation protection), radiological anatomy, positions, techniques, and basic radiology.
 - b) Recognize the clinical knowledge, that is medical, surgical and pathological, relating to the specific body systems.
 - c) Identify and discuss different diagnostic modalities in radiology needed to diagnose the nature of different lesions.
 - d) Distinguish the basic radiological appearances of different pathologies.
 - e) Recognize basic concepts of radiological techniques, indications, contraindications and potential complications of radiological procedures

- f) Identify the management of procedural complications.
- g) Describe different diagnostic modalities for diagnosing various lesions.

2. Intellectual skills: By the end of the program the candidate should be able to;

- a) Develop skills and audit methodology that are necessary to structure and perform research and audit under appropriate guidance.
- b) Review published articles critically and to perform effective literature searches on a given topic.
- c) Interpretation of the effective application of research findings in everyday practice will be also required.

3. Professional and practical skills: By the end of the program the candidates should be able to;

- a) Demonstrate the principles of the procedure including, where applicable, complications and interpretation of results and has witnessed the procedure being performed. (Level 1)
- b) Apply the procedure under direct supervision. (Level 2)
- c) Apply the procedure under indirect supervision. (Level 3)
- d) Apply the procedure competently and independently (has achieved independent competence) (Level 4)

4. General and transferable skills: By the end of the program the candidates should be able to;

- a) Participation in reporting different radiological examinations which are taken during the general throughput of the normal working day of the department of radiodiagnosis.
- b) Performing any routine radiological procedure that might be booked during a normal working day.
- c) Performing and reporting on-call investigations appropriate to the level of training with the appropriate level of supervision.
- d) Attendance at and conducting clinicoradiological conferences and multidisciplinary meetings.
- e) Competence at reviewing studies on a workstation and familiarity with digital image manipulation and post-processing.
- f) Teaching and Training. Appraising and Assessing.
- g) Provision of a good standard of practice and care, treatment in emergencies writing reports, giving evidence and signing documents.
- h) Working with colleagues:
 - treating colleagues fairly
 - working in teams
 - leading teams
 - arranging cover
 - taking up appointments
 - sharing information with colleagues
 - delegation and referral

- assessing conduct or performance of colleagues
- i) Relationships with patients
 - obtaining consent
 - respecting confidentiality
 - maintaining trust
 - good communication
- j) Probity
 - dealing with problems in professional practice
 - handling complaints and formal inquiries

III. Academic standards.

External references for standards:

The curriculum of Radiology offered by the Royal College of Radiologists (England).

IV. Program admission requirements.

According to the Faculty of Medicine, Cairo University Bylaws for Post Graduate Programs (July 2009), applicants should have MBChB or equivalent degree. According to Cairo University requirements, all applicants for postgraduate studies should fulfill preliminary courses on the following subjects; Medical statistics I – English language (Toefl or equivalent degree) – Computer skills (ICDL) or equivalent computer course offered by the medical education center (MEDC). Admission to the program is open during July. Training prior to registration may be accredited according to departmental and hospital evaluation. Admission for the program is open during July.

Post graduate candidates will apply for the master degree in radiology provided that vacancies are available.

V. Program structure and contents.

Program duration: Three years.

Program structure: Total Credit points 152

First part: 1.5 years - (table 1)

63 credit points

Candidate should fulfill the following:

- Compulsory courses; one academic year (30 weeks Starts October)
 - Basic sciences courses 6 credit points
 - Radiation Physics 2 credit points
 - Radiological Anatomy 2 credit points
 - Radiobiology 2 credit points
 - General sciences courses 5 credit points
 - General Medicine 1.5 credit points
 - General surgery 1.5 credit points
 - General Pathology 2 credit points
 - Elective courses 1 credit point

- Scientific activities 1 credit point
- Residency training program Phase 1:
“Basic training” for one and a half year 50 credit points

Second part: 1.5 years - (table 2) 69 credit points

Candidate should fulfill the following:

- Compulsory courses
one academic year (30 weeks) 13 credit points
 - Basic Radiology 10 credit points
 - Radiology Positions & Techniques 3 credit points
- Scientific activities 1 credit point
- Residency training program phase 2:
“Special Radiology” for one and half year 55 credit points

Master Thesis: completed during second part 20 credit points.

Table 1: First part

Courses	Course modules	Credit points	total	ILOs
Compulsory courses (One academic year)				
Radiation Physics	<ul style="list-style-type: none"> • Principles of <ul style="list-style-type: none"> - X-ray - Mammography - CT - MRI - US& Doppler - Gamma camera. - SPECT - PET 	1	2	1a 2a,b,c
		1		
Radiological Anatomy	<ul style="list-style-type: none"> • Anatomy of head& neck. • Anatomy of central nervous system. • Vascular anatomy. • Anatomy of the musculoskeletal system. • Anatomy of chest& heart. • Anatomy of breast • Anatomy of genitourinary system • Anatomy of gastrointestinal system 	1	2	1a 2a,b,c
		1		

Radiobiology	<ul style="list-style-type: none"> Basic interaction of radiation with matter • Cell cycle& division Factors affecting radio-sensitivity- response relationships • Radiation dose • Radiation& mutation • Radiation effects on fetus • Early effect of radiation exposure • Target, radiation effect on DNA& chromosomes • Radiation protection • Nuclear medicine 	1	2	1a 2a,b,c
		1		
General Medicine	<ul style="list-style-type: none"> • General • Special Topics of radiological importance in Chest, Cardiology, Nephrology, Gastro-intestinal tract, endocrinology and Neurology.		1.5	1b 4d
General Surgery	<ul style="list-style-type: none"> • General surgery Topics of radiological importance.		1.5	1b 4d
General Pathology	<ul style="list-style-type: none"> • General • Special 		2	
Elective Courses Candidate choose 2 courses				
(MEDC)	<ul style="list-style-type: none"> ▪ Critical Reading ▪ Scientific writing ▪ EBM ▪ Medical ethics ▪ Medical statistics II 	0.5 0.5 0.5 0.5 0.5	1	2a,b,c 4a,b,c,d,e,f,g,h ,i,j
Scientific activities			1	2a,b,c 4d
Residency training program (phase 1 basic training)			50	1a,b 2a,b,c 4- a,b,c,d,e,f,g,h, l,j

Table 2: Second part

item	Credit points	ILOs.
Basic Radiology Course <ul style="list-style-type: none"> • Neuro-radiology • Head and neck radiology • Musculoskeletal radiology • Cardiothoracic radiology • Gastrointestinal radiology • Genitourinary radiology • Vascular imaging& intervention • Breast imaging • Pediatric radiology • Specific entities: intensive care, ER& oncologic radiology 	10	1a,b,c,d,e,f,g
Radiology positions& techniques	3	1a,e,f 3a,b,c,d
Scientific activities	1	2a,b,c 4d
Master thesis	20	2a,b,c
Residency training program (phase 2)	55	1a,b,c,d,e,f,g 3a,b,c,d 4a,b,c,d,e,f,g,h,l,j

Residency (practical) Training Program

• **Basic Training:**

According the Faculty of Medicine, Cairo University Bylaws for Post Graduate Programs (July 2009), all the students should have a basic radiological training for 18 months. They should spend at least 6 months in a general medicine department and 6 months in emergency department(s). During this period the students will attend the basic sciences courses. They also should complete the elective courses

• **Special Training:**

All students should complete the special part of the residency training program in the diagnostic radiology department. They should spend 18 months in order to acquire the needed credit points. During this period the students will attend the

defined course(s) of the second part and will participate in the scientific activities of the department.

Logbooks should be used for documenting the skills and experience attained and to facilitate reflective learning. Logbooks are mandatory for all interventional procedures irrespective of special interest.

NB: The details and requirements of the training program are illustrated in separate document

Master Thesis

All master-degree students should prepare a thesis/essay in diagnostic radiology. The department and the ethical committees must approve the protocol of the research. The document (should / may) include a review part and a research part. The document supervised by one or more senior staff members and may include other specialties according to the nature of the research. The document should be evaluated and approved by a committee of three professors including one of the supervisors and an external professor.

Scientific Activities:

The students should participate in the scientific activities of the departments such as:

- Journal club once every one- two weeks.
- Seminars (including recent topics and controversial issues) once weekly. Students are expected to participate in the discussions.
- Scientific meetings arranged by the department
- Attendance of Thesis discussions
- Others sharing in the annual meeting scientific department and the joint meeting with other departments.

Each activity is monitored and given credit points registered in a special section in the residency-training logbook. The student should collect the required points before allowed to sit for final exam.

VI. Regulations for progression and program completion

After collecting the required credit points for the respective courses, the first phase of the residency training, and the scientific activities, the student will be eligible to sit for the first part examination. In case the student fails to pass the examination, he may proceed in the clinical training and can resubmit for the next examination. After passing the first part, the student submits a protocol for Master Thesis at the beginning of the second part. Before submitting to the final examination he/she should finish the thesis and get approval, complete phase 2 of special training program, and collect the required credit points. The candidate will receive his degree after passing this final examination. Master degree should be obtained within a maximum of 6 years after registration date.

VII. Assessment

Supervision & Monitoring of the Training Program:

According to the Faculty of Medicine, Cairo University Bylaws for Residency Training Programs, professors carry continuous assessment during the program. A residency-training program logbook will be kept for each student to document all his/her clinical, laboratory and/or operative/procedural activities as well as his/her participation in different scientific activities. The head of the department should allow the students to undergo the final examination when they complete their training program and collect the credit points needed.

A: Assessment Tools:

1. Final Exam Part I

Basic sciences

- Radiation Physics: Two-hour written exam (including short essay) + oral exam
- Radiological Anatomy & Radiobiology: Three-hour written exam (including short essay) + oral exam and multiple choice questions

General sciences:

- General Medicine & general surgery: Three-hour written exam (including short essay + oral exam + clinical exam)
- General Pathology: Two-hour written exam (including short essay) + oral exam

2. Final Exam Part 2

- Basic Radiology: Two written exams, three-hours each (including: paper 1 short essay & paper 2 multiple choice questions + oral exam + clinical exam)
- Radiology positions & Techniques: Three-hour written exam (including short essay + oral exam + clinical exam)

B: ASSESSMENT SCHEDULE:

1. First Part Final Exam:

The Written exam will be held in April/October (four days):

Day one: Radiation Physics (2 hours)

Day two: Radiological Anatomy & Radiobiology (3 hours)

Day three: General Medicine & General Surgery (3 hours)

Day four: General Pathology (2 hours)

This will be followed by the clinical and oral exams in separate days

2. Second Part Final Exam:

The written exam will be held in May/ November (three days):

Day one: Basic Radiology: paper 1 (3 hours)

Day two: Basic Radiology: paper 2 (3 hours)

Day three: Radiology positions & Techniques (3 hours)

This will be followed by the clinical and oral exams in separate days

C: WEIGHING OF ASSESSMENT: Marks allocated to courses

(50 marks for each credit point)

Example

Course	Written	Oral	Clinical/practical	Total
First part				550
Radiation Physics	60	40	-	100
Radiological Anatomy & Radiobiology	120	80	-	200
General Medicine & General Surgery	80	35	35	150
General Pathology	60	40	-	100
Second part				650
Basic Radiology	100+100	150	150	500
Radiology Positions & Techniques	100	25	25	150

Remarks

- It is mandatory to pass the four papers of the Radiology exam.
- Passing mark in a written exam is $\geq 60\%$

VIII. Evaluation of program intended learning outcomes:

Evaluator	Tool	Sample
1. Senior Students	Questionnaire at the end of the program	All the PG students
2. Alumni	The faculty is currently developing an Alumni office for postgraduates	Not yet determined
3. Stakeholders	A meeting will be arranged during the annual conference of the department	Available representatives from: <ul style="list-style-type: none">• Army hospitals• National medical insurance• Medical syndicate• Ministry of health
4. External Evaluators	Review the program and courses Attending the final exam.	Once before implementation Bi-annual report
5. Quality Assurance unit	Annual program review	

Date of approval by department council

Signatures

Program Coordinator

Head of Department

Dr. Lamiaa Ibrahim

Prof. Ahmad Sami