Faculty of Medical Science

Department of Radiology

Program Specifications
Of

Radiology BACHELOR

Content

Introduction:

These are the specification of the academic program Bachelor of Radiology offered by department of Radiology- faculty of medical Sciences-Azal University for human devolvement. The program is designed to produce competent graduated Diagnostic Radiographer who are able to provide radiological care services to the community and contribute in development of Radiological Diagnostic and the profession of Radiology in Yemen.

1. Program Identification and General Information:

Scientific name of the program:	**Bachelor of Radiology**
Total credit hours required to award the degree	**158 hrs**
Number of years needed for completion of the program:	**4 years (8 semesters)+ 6 month internship**
The body responsible for granting the degree:	Azal University for Human Development
The body responsible for the program:	**Department of Radiology -faculty of medical sciences**
Award granted on completion of the program:	**Bachelor of Radiology**
Study system:	• Credit hours-Based system • A total of 54 courses distributed over 8 semesters-4 academic years • Each academic semester is composed of 16 weeks (including the exams period) • Attendance is Obligatory "for NOT LESS THAN 75 % of lectures/practical sections of each course
Study Language of the Program:	English
Entry requirements:	Secondary School certificate with minimum grade adopted annually by the Ministry of Higher Education-Yemen
Departments participating in the program:	Departments in **faculty of Medical Science**
Starting year of the program:	2013
Study methods in the program:	N/A
Location of Delivery:	At the university facility (60th Street-Sana`a)
The program resources:	**Azal University for human devolvement**
Minimum grade requirements:	• 50 % of the mark of each course • Completion of 1200 actual hours "Field Training" Completion of graduation research project
Other admission requirements:	According to the University Rules and Regulations
Date of program development:	**2013/2014**

2. Overview :

The Bachelor of Radiology program offers specializations in Conventional X ray imaging, special and advanced imaging, computed tomography, magnetic resonance imaging and ultrasonography. The program is designed to prepare students to provide high-quality care to patients in a variety of healthcare settings. Bachelor of Radiology prepares clinically competent students in their chosen specialty who will demonstrate effective communication skills, critical thinking skills, and professionalism. Bachelor of Radiology perform imaging examinations that aid in the diagnosis, intervention and treatment of diseases and medical conditions.

3. University Vision, Mission and Goals:

University Vision

Azal university for human developments seeks Leadership locally and regionally in the fields of higher education, scientific research and human development

الرؤية

.أن تكون جامعة ا زال للتنمية البشرية رائدة محليا وإقليمي ا في مجال التعليم العالي والبحث العلمي والتنمية البشرية

University Mission:

Offering opportunities for excellent higher education through leader and competent academic programs that contribute in the improvement of educational outcomes, scientific research and human development and capable to provide the local and regional work market with competitive human professionals.

الرسالة

توفير فرص تعليم جامعي متميز من خلال برامج رائدة ذات جودة عالية تسهم في تحسين مخرجات العملية التعليمية والبحث العلمي والتنمية البشرية لرفد سوق العمل المحلي والإقليمي بكوادر بشرية منافسة.

VALUES

- Quality in education
- Environment supports the competent
- Launching from the work market requirements and needs
- Leadership & Ingenuity
- Human building is our concern
- Human development

القيم

- **الجودة في التعليم**
- **بيئة تحتضن الكفاءات**
- **الانطلاق من متطلبات واحتياجات السوق**
- **الريادة والإبداع**
- **بناء الإنسان محور اهتمامنا •التنمية البشرية**

University Goals:

1. Providing the students with the knowledge and skills in various academic specializations
2. Contributing in the support of scientific research efforts in different fields
3. Alignment of the education outcomes with the development requirements and the needs of work market
4. Offering stimulant opportunities for the success of teaching and learning process
5. Expanding in partnerships and relationships with local, regional and international universities and scientific research institutions
6. Augmenting the university role in community service by providing training and consultant programs in different development fields.

الاهداف

1- .إكساب الطالب المعارف والمهارات في التخصصات الاكاديمية المختلفة. خ
2- .الإسهام في دعم جهود البحث العلمي في المجالات المختلفة
3- .ربط المخرجات التعليمية بمتطلبات التنمية واحتياجات سوق العمل.
4- .توفير فرص محفزة لإنجاح عملية التعليم والتعلم
5- .التوسع في الشراكات وتطوير العلاقة مع الجامعات ومؤسسات البحث العلمي محليا وإقليميا ودوليا.
6- .تعزيز دور الجامعة في خدمة المجتمع بتقديم برامج استشارية وتدريبية في مختلف جوانب التنمية

4. Faculty of medical sciences Vision, Mission and Goals:

VISION

Leadership and excellence in quality of the medical education and scientific research

MISSION

The faculty mission is to offer the students a remarkable high education service in medical sciences that concerns with students` acquiring of scientific knowledge and skills to potentiate their capabilities to compete in work market and make them qualified medical staff able to lead and develop in medical work fields and to be creative and effective elements in their society. The faculty also intends to contribute in progress of medical scientific research and to fulfill the community need with medical services

GOALS

1. Raising and developing Medical Sciences Education and outcomes
2. Achieving superiority in academic, instructional and learning aspects of graduate and postgraduate programs

3. Enhancing the effectiveness of its teaching staff to augment student learning
4. Establishing and improving medical sciences learning environment and resources
5. Potentiating the student's ingenuity and their personal, academic and social development
6. Augmenting the relationship with local, regional and international medical academic institutions in the field of scientific research

5. Department of Radiology Vision, Mission and Goals:

Mission:

Prepare highly skilled and competent Medical Imaging technologists who will be able to work with the advanced state of the art technology in imaging science throughout a variety of health care environments to benefit the community, through faculty and student service, research, and professional expertise

GOALS:

1. Providing each student with the knowledge and experiences necessary to advance both scientifically and humanistic ally in the care and diagnosis of sick persons.
2. Encourage students to assume responsibility for their own continuing education and forming the basis for the self-motivated study necessary for the practicing technician's lifelong expansion of knowledge.
3. Conduct self-evaluation and contribute to the development of knowledge, skills, and practice
4. Prepare student to practice throughout the region and globally, and provide them with the necessary experiences to practice "Diagnostic imaging"
5. Enhance student's knowledge and skills in various academic disciplines related with specialization.
6. Demonstrate the research knowledge and the ability to read, critique, evaluate, and apply the latest developments and technology in the field of medical imaging sciences.

6. Program Mission, Goals, and Outcomes:

Program Mission:

Prepare highly skilled and competent Medical Imaging technologists who will be able to work with the advanced state of the art technology in imaging science throughout a variety of health care environments to benefit the community, through faculty and student service, research, and professional expertise.

Program Goals:

1- Providing each student with the knowledge and experiences necessary to advance both scientifically and humanistic ally in the care and diagnosis of sick persons.
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6- Demonstrate the research knowledge and the ability to read, critique, evaluate, and apply the latest developments and technology in the field of medical imaging sciences.

: The program vision, mission and goals are the same as the department vision, mission and goals because the department, till now, offers one program only

7. Program Standards& Benchmarks:

Academic Standards:

1. Regulations provided by the council of quality assurance and academic accreditation – Ministry of High education & scientific research, Yemen.
2. National Academic Reference Standards (NARS) for Undergraduate Medical Education Programs,

Program Benchmarks:

1- Jordan university of science and technology.

2- king Abdul-Aziz university.

3-Najran university.

4- 6 October university

5- IEC university

8. Learning Outcomes:

A. Knowledge and Understanding:

Upon successful completion of an undergraduate Bachelor of Radiology, graduates should be able to:

A1. Discuss the basic physical concepts related to the generation and its interaction with human body, with regards to the technical procedures in radiography and the application of A.L.A.R.A (As Low As Achievable Reasonable)

A2. Recognize the basic concepts related to health, wellness and illness and other concepts derived from basic sciences and basic medical sciences.

A3. Describe the correct radiological procedures and add any alternative procedures when necessary.

A4. Demonstrate specialized knowledge of medical diagnostic imaging and related subjects required to perform different diagnostic images

B. Cognitive/ Intellectual Skills:

Upon successful completion of an undergraduate Bachelor of Radiology, graduates should be able to:

B1. Analyze the application of basic scientific concepts of radiography tests.

B2. Interpreting the results of radiographic examine a scientifically valid explanation.

B3. Distinguish the composition of the Contrast Media and the necessary methods for its (Contrast Media) usage in diagnostic imaging.

B4. Link between the cause of the pathology and its symptoms, and the role of Radiology in diagnosis & treatment

C. Practical and Professional Skills:

Upon successful completion of an undergraduate Bachelor of Radiology, graduates should be able to:

C1. Perform the imaging procedures commonly encountered in hospitals, medical imaging departments, and in the areas of radiography.

C2. Utilize controls and standards and the application of QA/QC standards to assure the accuracy of imaging.

C3. Measure professionally the amount of radiation and its severity to some organs of the body

C4. Interrupt images on X-ray films, computer screens, and on fluoroscopic screens, US & MRI

D. General and Transferable Skills:

Upon successful completion of an undergraduate Mechatronics Engineering program, graduates should be able to:

D1. Work effectively in a group in the diagnostic imaging department, and during preparation for seminars.

D2. Use the principle of advocacy, empowerment, ethics, and human rights in providing the patient care.

D3. Develop critical thinking competencies.

D4. Use the computer and the Internet efficiently.

Teaching Strategy	Description
Active lectures	Giving a lecture involves outlining lessons, creating a presentation and reciting information to students. This is a standard teaching strategy for many instructors, and in Radiological Imagining Sciences, this strategy can be helpful in courses that teach basic clinical concepts and applications of biology, chemistry and anatomy. Using attractive and organized presentations and allowing students to ask questions throughout can maintain student engagement. lecturing has proven to be one of the most effective ways to present information to large groups of students when you need to cover a lot of material quickly.
Tutorials	Tutorial are provided in many courses depends on the curriculum plan and with different methods such as examples and case studies.
Seminar/ project/presentation	Seminar in Radiological Imagining theory courses typically will include opportunities for discussion and group activities. Class sizes are variable depending on the level of the course. To prepare for discussion, students may be asked to complete readings and other preparatory learning activities.
Interactive class discussions	is a method of teaching whereby learners get together to exchange information, feelings, and opinions with one another and with the educator. Group discussion, as a broad active instructional method, can incorporate other specific types of instruction, such as guided learning, collaborative learning, small-group learning, team-based learning, cooperative learning, case studies, and seminars.
Exercises and home works	Students are given exercises/ home-works during the class
Laboratory based session	The goal of laboratory experiences (labs) is to become practiced and confident in psychomotor skills (skills that require varying levels of well-coordinated physical activity and precise procedures), in order to provide the basis for safe, competent care to patients and families in the clinical setting.
Simulation	Simulations are classroom exercises where you present real-world scenarios that students, often in small groups, have to work through. One tool you can use for simulations is a manikin, which is common in nursing education settings because it allows students to learn and practice important patient care techniques in a safe, controlled environment. You can improve manikin simulation exercises by creating realistic stories for manikins in particular situations to help students better connect with the manikin as if it were an actual patient, thus increasing students' investment in doing well in the exercise.
Role play	Role-playing activities have students play characters in scenarios based on real-world healthcare situations like. This can be a great teaching strategy to build patient-focused interpersonal communication, quick problem-solving and decision-making skills.
Demonstration & Return demonstration	Demonstration is done by the educator to show the learner how to perform a particular skill. Return demonstration is carried out by the learner in an

	attempt to establish competence by performing a task with cues from the educator as needed. These two methods require different abilities by both the educator and the learner. In particular, they are effective in teaching psychomotor domain skills. However, demonstration and return demonstration may be used to enhance cognitive and affective learning, such as when helping a staff member develop interactive skills for crisis intervention or assertiveness training.
Computer laboratory-based sessions	Lab sessions are scheduled as part of Radiological Imagining Sciences courses, and preparation prior to the lab session is expected (assigned readings, assignments, viewing audiovisual resources).
Directed self- study	Students will be encouraged to enhance their self-study.
Case study	In a review of the nursing literature, Popil (2011) identified case studies as a pedagogy that is one of the most powerful tools to teach any practice-based profession including nursing. Reviewing case studies in the classroom can help midwife-in-training contextualize theoretical nursing practices in a real-world situation
Problem based learning	n this strategy, educators present realistic patient scenarios, ask questions, and require students to search for holistic answers. It also encourages active and self-directed learning, self-appraisal, clinical problem-solving skills, teamwork, discipline, and integration of information. This can be used to teach relatively complex or messy problems with broad association with basic science and clinical experience, such as heart failure or pneumonia
Team work (group learning)	The groups technique involves splitting students into groups and dividing their projects into separate parts, such as by individual topic. Each student in the group chooses which topic and part of the project they want to complete. They complete the research, writing or other tasks in their portion and then share what they learned with the rest of the group. Finally, they compile each part together into a cohesive project.
The use of communication and information technology	ICT include devices and applications that provide access to information and enable electronic communications, like sending text messages or engaging in video chats. Mobile phones, smartphones, computers, and laptops are typical ICT devices. The Internet (e.g., the web) is another ICT and plays a special role because it is not a stand-alone device but a network of countless systems and devices.
Assignments	Course assignments were included as a part of the learning process in all evaluated studies, which included activities preparing students to use research or enhance their EBP knowledge and skills. Assignments that were integrated into clinical practice were particularly emphasized in the studies that focused on teaching EBP principles
Field visits	Nursing practice occurs in concentrated blocks of time in a variety of community and institutional settings: hospitals, continuing care centers, schools, etc. These experiences enable students to be comfortable and competent in a variety of health care settings and to put into practice the knowledge and skills that they are learning in the classroom and labs.

9. Graduates Attributes:

Upon successful completion of an undergraduate Program, graduates should be able to:

1. Describe principles of physics and operation of the imaging equipment's
2. Demonstrate knowledge of specified imaging modalities, relevant anatomy, image quality assurance and diagnostic decision making.
3. Perform radiographic procedures ensuring safety of patients and personnel involved
4. Operate and maintain commonly used imaging equipment with safety and efficiency.
5. Provide sufficient information effectively to the patient about the imaging options available, purpose of the procedure, benefits, possible adverse consequences, and limitations.
6. Recognize their role in the health care system and function effectively in a multidisciplinary health care team
7. Engage oneself in self-assessment and structure their continuing professional education to refine existing skills and acquire new skills for patient care and professional advancement.
8. Practice professional and ethical responsibilities with high degree of credibility, integrity and social concern.

10. Teaching and Learning Strategies:

- Interactive Lecture
- Interactive class discussion
- Feed-back learning
- Seminars
- Student Presentation
- Feed-back learning
- Case study
- Demonstration
- Group activities
- Laboratory practice
- Field-training
- Case study.
- Role play
- Directed self- study

• Problem based learning	

11. Assessment Tools:

- Written exam (long essay questions, short answer questions, multiple choice questions, scenario)
- Quizzes
- Group activities
- Written exam
- Assignments
- Quizzes
- Case study questions
- Clinical exam
- Assignments
- Field-training assessment
- Field Reporting
- Field attitude
- Field Exam
- Field Tasks accomplishment
- Graduation Research project assessment
- Practical activities assessment (Practical reporting, Practical exam)

Assessment Strategy	Description
Written exam (long essay questions, short answer questions, multiple choice questions, scenario) (Mid and final Terms)	Multiple choice questions are composed of one question (stem) with multiple possible answers (choices), including the correct answer and several incorrect answers (distractors). Typically, students select the correct answer by circling the associated number or letter, or filling in the associated circle on the machine-readable response sheet. Short answer questions are typically composed of a brief prompt that demands a written answer that varies in length from one or two words to a few sentences. Essay questions provide a complex prompt that requires written responses, which can vary in length from a couple of paragraphs to many pages. Like short answer questions, they provide students with an opportunity to explain their understanding and demonstrate creativity, but make it hard for students to arrive at an acceptable answer by bluffing.
Written assessments such as Quizzes	Quizzes is an assessment tool and the purpose of continuous testing, is to enhance learning and these tests can enhance learning in different ways, for example, by increasing the motivation and changing the learning strategy.
Assignments	
Practical exam • Oral exam	Objective Structured Practical Examination (OSPE) is a new pattern of practical examination. In OSPE each component of clinical competence is tested uniformly and objectively for all the students who are taking up a practical examination at a given place.

• Report/Project assessment	The objective structured clinical examination (OSCE) is used increasingly in nurse education, to assess clinical skill proficiency at pre-registration and postgraduate level. Good preparation for an OSCE is vital for both those running the assessments and for students. Used effectively, OSCEs can help students gain confidence to use their skills in their clinical work.
Graduation research • project assessment (Research Presentation)	Committee from the department and external examiner to discuss the students
Field-training assessment ▪ Field attendance ▪ Field attitude ▪ Field Reporting	Log book Assessment sheet Final oral exam
Home works and assignments	Written assignments are a major instructional and assessment method in nursing and midwifery course with these assignments, students can develop their critical thinking skills, gain experience with different types of writing, and achieve other outcomes specific to a course. Written assignments with feedback from the teacher help students develop their writing ability, which is an important outcome in any program from the beginning level through graduate study
Case studies	case studies allow the learner to integrate theory with real-life situations as they devise solutions to the carefully designed scenarios
Presentations	Such skills allow nurses to share knowledge and expertise and to communicate clearly in a range of workplace scenarios. students are increasingly being asked to present in formal and informal situations, such as conferences, poster presentations, job interviews, case reports and ward-based teaching.

12. Project Assessment:

Each project will be assessed by a committee of three members as follows

	Marks Distribution
Research project supervisor	60
Internal examiner: a member of the department teaching staff.	20
External examiner: a qualified external examiner (either from other departments of the faculty or from another university)	20
Total	100

13. Training Course Assessment:

Field activities Attendance Sheets Logbook Oral final exam Practical exam

14. Alignment of Program Intended Learning Outcomes (PILOs) with Teaching Strategies and Assessment Methods:

PILOs	Teaching Strategy	Assessment Methods
Knowledge and Understanding A1,A2,A3,A4	• Lecture • discussion • Feed-back learning • Seminars • Student Presentation	✚ Written exam (long essay questions, short answer questions, multiple choice questions, scenario) ✚ Quizzes • Assignments
Intellectual Skills B1,B2,B3,B4	▪ Group Discussion ▪ Feed-back learning ▪ Case study ▪ Demonstration	▪ Group activities ▪ Written exam ▪ Assignments ▪ Quizzes ▪ Case study questions
Professional & practical skills C1,C2,C3,C4	• Feed-back learning • Laboratory practice • Field-training • Case study. • Group activities	✚ Written exam ✚ Clinical exam ✚ Assignments ✚ Quizzes ✚ Field-training assessment ▪ Field Reporting ▪ Field Exam

General & Transferable Skills D1,D2,D3,D4	• Field training • Group activities • Case studies demonstrations	✚ Assignments ✚ Graduation Research project assessment ✚ Practical activities assessment ▪ Practical reporting ▪ Practical exam ✚ Field-training assessment ▪ Field attitude ▪ Field Reporting ▪ Field Tasks accomplishment

15. Intended Learning Outcomes Mapping:

See Annexes 6,7, and 8.

(Annex 6: Alignment of Program Themes with Program Intended Learning Outcomes (PILOs))

(Annex 7: Coding System and Alignment of Courses with Program Intended Learning Outcomes (PILOs))

(Annex 8: Matrix of Mapping Program PILO's With Courses)

16. Program Structure:

Requirements					
No	**Requirements**		**No. of Courses**	**Credit Hours**	**Rational Weight %**
1	**University Requirements**	**Compulsory**	**8**	**17**	**10.76%**
		Elective			
2	**Faculty Requirements**	**Compulsory**	**10**	**25**	**15.82%**
		Elective			
3	**Program Requirements**	**Compulsory**	**36**	**116**	**73.42%**
		Elective			
4	**Field training, and the rate of the total hours of the program**	*Field-training for 1440 actual hours is a compulsory requirement for graduation*			
Total:			**54**	**158**	**100%**

15.1. University Requirements (17 hrs)

Compulsory Courses (--- hrs)								
No	Course Code	Course Name	L	T	P	Cr. Hrs.	Prerequisites, Co-requisites	Level/ Semester
1	AZU01	Arabic Language 1	2	--	--	2	None	First/ 1st
2	AZU03	English Language 1	2	--	--	2	None	First/ 1st
3	AZU05	Computer skills	--	--	3	3	None	First/ 1st
4	AZU07	Arab-Israel Conflict	2	--	--	2	None	First/ 1st
5	AZU02	Arabic Language 2	2	--	--	2	AZU01	First/ 2nd
6	AZU04	English Language 2	2	--	--	2	AZU03	First/ 2nd
7	AZU06	Islamic Culture	2	--	--	2	None	First/ 2nd
8	AZU08	National culture	2	--	--	2	None	First/ 2nd
			14		3	17		

17. 15.2. Faculty Requirements (25 hrs)

Compulsory Courses (15 hrs)								
No	Course Code	Course Name	L	T	P	Cr. Hrs.	Prerequisites, Co-requisites	Level / Semester
1	FMS01	Biology	2	-	1	3		
2	FMS02	Medical physics	2	-	1	3		
3	FMS03	General chemistry	2	-	1	3		
4	FMS04	Medical Terminology	3	-	-	3		
5	FMS05	Psychology	2	-	-	2		
6	FMS06	First Aid	2	-	1	3		
7	FMS07	Medical Ethics	2	-	-	2		
8	FMS10	Health Administration	2	-	-	2		
9	FMS08	Medical Statistic	2	-	-	2		
10	FMS09	Research Methodology	2	-	-	2		
			21	-	4	25		

18. 15.3. Program Major (121 hrs)

Compulsory Courses (115 hrs)								
No	Course Code	Course Name	L	T	P	Cr. Hrs.	Prerequisites, Co-requisites	Level / Semester
1	RA111	Introduction to radiology	2		1	3		
2	RA121	Biochemistry I	2		1	3		
3	RA212	Biochemistry II	2	-	1	3		
4	RA122	Anatomy 1	4	-	2	6		
5	RA211	Anatomy II	4	-	2	6		
6	RA123	Radiation physics	2	-	1	3		
7	RA216	Histology	2	-	1	3		

8	RA213	Radiographic Positioning I	2	-	1	3		
9	RA223	Radiographic Positioning II	2	-	1	3		
10	RA214	Radiation protection	2	-	-	2		
11	RA217	Radiographic Imaging I	2	-	1	3		
12	RA225	Radiographic Imaging II	2	-	1	3		
13	RA215	Physiology 1	2	-	-	2		
14	RA224	Physiology II	2	-	1	3		
15	RA221	Pathology	2	-	1	3		
16	RA222	Pharmacology	2	-	-	2		
17	RA226	Radiology Equipment	2	-	1	3		
18	RA311	sectional anatomy Imaging I	2	-	1	3		
19	RA321	sectional anatomy Imaging II	2	-	1	3		
20	RA312	Ultrasound 1	2	-	1	3		
21	RA322	Ultrasound II	2	1	1	4		
22	RA314	Surgery I	2	-	-	2		
23	RA324	Surgery II	2	-	-	2		
24	RA313	Internal medicine I	2	-	-	2		
25	RA323	Internal medicine II	2	-	-	2		
26	RA315	X –ray	4	2		6		
27	RA325	Computed Tomography	2	1	1	4		
28	RA326	Community Medicine	2	-	-	2		
29	RA412	Diagnostic Imaging of Diseases I	4	1	-	5		
30	RA421	Diagnostic Imaging of Diseases II	4	2		6		
31	RA411	Magnetic Resonance Imaging	2	1		3		
32	RA413	Nuclear medicine	2	1	-	3		
33	RA414	Diagnostic Skills	2	1		3		
34	RA423	Quality control Rad management	2	-	1	3		
35	RA422	Radiotherapy	2	1		3		
36	RA424	Project paper	3	-	-	3		
			83	11	22	116		

19. Elective Courses: 3 courses(.....hrs)

Elective Course 1 (3 hrs)								
No	**Course Code**	**Course Name**	**L**	**T**	**P**	**Cr. Hrs.**	**Prerequisites, Co-requisites**	**Level/ Semester**
1	-	Nil	-	-	-	-	-	-
2	-	Nil	-	-	-	-	-	-
3	--	Nil	-	-	-	-	-	-
Elective Course 2 (2 hrs)								
No	**Course Code**	**Course Name**	**L**	**T**	**P**	**Cr. Hrs.**	**Prerequisites, Co-requisites**	**Level/ Semester**
1	-	Nil	-	-	-	-	-	-
2	-	Nil	-	-	-	-	-	-
3	-	Nil	-	-	-	-	-	-
4	-	Nil	-	-	-	-	-	-
Elective Course 3 (3 hrs)								
No	**Course Code**	**Course Name**	**L**	**T**	**P**	**Cr. Hrs.**	**Prerequisites, Co-requisites**	**Level/ Semester**
1	-	Nil	-	-	-	-	-	-
2	-	Nil	-	-	-	-	-	-
3	-	Nil	-	-	-	-	-	-
4	-	Nil	-	-	-	-	-	-

20. Study Plan:

First year: first semester

		Term 1					
No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Cr. Hrs.**	**Prerequisites, Co-requisites**
1	**AZU01**	**Arabic Language I**	**2**	**-**	**-**	**2**	
2	**AZU03**	**English Language I**	**2**	**-**	**-**	**2**	
3	**AZA05**	**Computer Skills**	**-**	**-**	**3**	**3**	
4	**AZA07**	**The Arab- Israeli Conflict**	**2**			**2**	
4	**FMS01**	**Biology**	**2**	**-**	**1**	3	
5	**FMS02**	**Medical physics**	**2**	**-**	**1**	**3**	
6	**FMS03**	**General chemistry**	**2**	**-**	**1**	**3**	
7	**FMS04**	**Medical Terminology**	**3**	**-**	**-**	**3**	
8	**RA111**	**Introduction to radiology**	**2**	**-**	**1**	**3**	
			17	**-**	7	**24**	

First year: first semester

		Term 2					
No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Cr. Hrs.**	**Prerequisites, Co-requisites**
1	**AZU02**	**Arabic Language II**	**2**	**-**	**-**	**2**	**AZU01**
2	**AZU04**	**English Language II**	**2**	**-**	**-**	**2**	**AZU03**
3	**AZU06**	**Islamic Culture**	**2**	**-**	**-**	**2**	
4	**AZU08**	**National Culture**	**2**			**2**	
5	**FMS05**	**Psychology**	**2**	**-**	**-**	**2**	
6	**FMS06**	**First Aid**	**2**	**-**	**1**	**3**	
7	**RA121**	**Biochemistry I**	**2**	**-**	**1**	**3**	
8	**RA122**	**Anatomy 1**	**4**	**-**	**2**	**6**	
9	**RA123**	**Radiation physics**	**2**	**-**	**1**	**3**	**FMS02**
			20	**-**	**5**	**25**	

Second year: first semester

Term 1							
No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Cr. Hrs.**	**Prerequisites, Co-requisites**
1	**RA211**	**Anatomy II**	**4**	**-**	**2**	**6**	**RA122**
2	**RA212**	**Biochemistry II**	**2**	**-**	**1**	**3**	**RA121**
3	**RA213**	**Radiographic Positioning I**	**2**	**-**	**1**	**3**	**RA122& RA211**
4	**RA214**	**Radiation protection**	**2**	**-**	**-**	**2**	**RA123**
5	**RA215**	**Physiology 1**	**2**	**-**	**-**	**2**	**FMS 01**
6	**RA216**	**Histology**	**2**	**-**	**1**	**3**	**FMS 01**
7	**RA217**	**Radiographic Imaging I**	**2**	**-**	**1**	**3**	**FMS 02**
			16	**-**	**6**	**22**	

Second year: second semester

Term 2							
No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Cr. Hrs.**	**Prerequisites, Co-requisites**
1	**FMS07**	**Medical Ethics**	**2**	**-**	**-**	**2**	**-**
2	**RA221**	**Pathology**	**2**	**-**	**1**	**3**	**RA216**
3	**RA222**	**Pharmacology**	**2**	**-**	**-**	**2**	**-**
4	**RA223**	**Radiographic Positioning II**	**2**	**-**	**1**	**3**	**RA213**
5	**RA224**	**Physiology II**	**2**	**-**	**1**	**3**	**RA215**
6	**RA225**	**Radiographic Imaging II**	**2**	**-**	**1**	**3**	**RA217**
7	**RA226**	**Radiology Equipment**	**2**	**-**	**1**	**3**	**FMS02**
			14	**-**	**5**	**19**	

Third year: first semester

Term 1							
No.	Course Code	Course Name	L	T	P	Cr. Hrs.	Prerequisites, Co-requisites
1	FMS08	Medical Statistic	2	-	-	2	-
2	RA311	sectional anatomy Imaging I	2	-	1	3	RA211
3	RA312	Ultrasound 1	2	-	1	3	RA211
4	RA313	Internal medicine I	2	-	-	2	-
5	RA314	Surgery I	2	-	-	2	RA211
6	RA315	X –ray	4	2		6	RA213&RA225
			14	2	2	18	

Third year: second semester

Term 2							
No	Course Code	Course Name	L	T	P	Cr. Hrs.	Prerequisites, Co-requisites
1	RA321	sectional anatomy Imaging II	2	-	1	3	RA311
2	RA322	Ultrasound II	2	1	1	4	RA312
3	RA323	Internal medicine II	2	-	-	2	RA313
4	RA324	Surgery II	2	-	-	2	RA314
5	RA325	Computed Tomography	2	1	1	4	RA311
6	RA326	Community Medicine	2	-	-	2	FMS08
			12	2	3	17	

Fourth year: first semester

Term 1							
No.	Course Code	Course Name	L	T	P	Cr. Hrs.	Prerequisites, Co-requisites
1	FMS09	Research Methodology	2	-	-	2	FMS08
2	RA411	Magnetic Resonance Imaging	2	1		3	FMS02
3	RA412	Diagnostic Imaging of Diseases I	4	1	-	5	RA223
4	RA413	Nuclear medicine	2	1	-	3	FMS02
5	RA414	Diagnostic Skills	2	1		3	RA315
			12	4		16	

Fourth year: second semester

Term 2							
No.	Course Code	Course Name	L	T	P	Cr. Hrs.	Prerequisites, Co-requisites
1	FNS10	Health Administration	2	-	-	2	-
2	RA421	Diagnostic Imaging of Diseases II	4	2		6	RA412
3	RA422	Radiotherapy	2	1		3	RA413
4	RA423	Quality control Rad management	2	-	1	3	-
5	RA424	Project paper	3	-	-	3	All Course
			13	3	1	17	

21. Distribution of Total Credit Hours:

Level	Term	University Requirements		Faculty Requirements		Program Requirements		Program Electives		Training		Total Cr. Hrs		Total Cr. Hrs./ Level
		No. of Courses	Credit Hours	No. of Courses	Credit Hours	No. of Courses	Credit Hours	No. of Courses	Credit Hours	No. of Courses	Credit Hours	No. of Courses	Credit Hours	
First	First	4	9	4	12	1	3					9	24	49

	Second	**4**	**8**	**2**	**5**	**3**	**12**					**9**	**25**	
Second	**First**					**7**	**22**					**7**	**22**	**41**
	Second			**1**	**2**	**6**	**17**					**7**	**19**	
Third	**First**			**1**	**2**	**5**	14			1	2	**6**	18	**35**
	Second					**6**	**15**			**2**	**2**	**6**	**17**	
Fourth	**First**			**1**	**2**	**4**	**10**			**4**	**4**	**5**	**16**	**33**
	Second			**1**	**2**	**4**	12			2	3	**5**	17	
Total:		**8**	17	10	**25**	36	**105**			-	**11**	54	**158**	**158**
Percentage:		10.**76%**		**15.82%**		**66.46%**				**6.96%**		**100**		

22. Admission Requirements:

1. Admissions to the program shall be made as per the admission rules set by the Ministry of Higher Education and Scientific Research as well as University admission guidelines.
2. General Secondary school certificate (Science Section) or any equivalent certificate with grade as specified in the admission rules made by Ministry of Higher Education and Scientific Research.
3. Pass the aptitude test and personal interview.
4. Any necessary requirement for specialization, decided by the Scientific Section.

23. Attendance and Graduation Requirements:

1. Student attendance should not be less than 75%.
2. Student will graduate after successfully passing all program requirements.
3. Total credit hours for the program is 158 credit hours.
4. Minimum score for any student to pass any credit hours course is 50% degree.

24. Grading System:

From 90% to 100% of total marks	Excellent
From 80% to less than 90%	Very Good
From 65% to less than 80%	Good
From 50% to less than 65%	Pass
Less than 50%	Poor/Fail

25. Facilities Required for Running the Program:

1. Sufficient Classrooms furnished with all necessary pieces and equipment.
2. Labs as per the courses specifications.
3. Computer Labs.
4. Academic and administrative staff offices. 5. Hospitals and health centers for field training
6. Sufficient Classrooms furnished with all necessary pieces and equipment.

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1. Sources of learning:

Learning source	Detail
White Boards	At least One at each classroom
Library	**Office equipment** Reading tables, Computer tables, chairs , Shelves for books and periodicals
	Books and Periodicals suitable number of books and periodicals that comprehend all courses
	Electronic Books the library computers will be supplied with a variety number of electronic books and CDs that comprehend a lot of courses
Information technology sources	**Computer desktops** 8 computers at the library and 20 at the computer lab.)
	Data show projectors 2
	Printer/ s at the library, computer lab, at the photocopy services center
	Photocopy machine: at the library , at the photocopy services center
	Scanner: at the library, the computer lab, at the photocopy services center
	Internet links at: the library , at the computer lab
Labs	**Clinical labs (fundamental of nursing skills, microbiology, parasitology, biochemistry)**
Health services	**for field training**

2. Program Policies:

Based on University Regulations	
1.	**(Class Attendance) :** A student should attend not less than 75 % of total hours of the subject; otherwise he/she will not be able to take the exam and will be considered as exam failure. If the student is absent due to illness, he/she should bring a proof statement from university Clinic. If the absent is more than 25% of a course total contact hours, student will be required to retake the entire course again.

2.	**(Tardy) :** For late in attending the class, the student will be initially notified. If he repeated lateness in attending class he/she will be considered as absent.
3.	**(Exam Attendance/Punctuality) :** A student should attend the exam on time. He/she is permitted to attend an exam half one hour from exam beginning, after that he/she will not be permitted to take the exam and he/she will be considered as absent in exam.
4.	**(Assignments & Projects) :** In general one assignment is given to the students after each chapter; the student has to submit all the assignments for checking on time, mostly one week after given the assignment.
5.	**(Cheating) :** For cheating in exam, a student will be considered as fail. In case the cheating is repeated three times during his/her study the student will be disengaged from the Faculty.
6.	**(Plagiarism) :** Plagiarism is the attending of a student the exam of a course instead of another student. If the examination committee proofed a plagiarism of a student, he/she will be disengaged from the Faculty. The final disengagement of the student from the Faculty should be confirmed from the Student Council Affair of the university or according to the university roles.
7.	**(Other policies) :** - Mobile phones are not allowed to use during a class lecture. It must be closed; otherwise the student will be asked to leave the lecture room. - Mobile phones are not allowed in class during the examination. - Lecture notes and assignments might be given directly to students using soft or hard copy.

To be filled by the university

3. Faculty to Conduct the Program:

Rank or Administrative position	General Specialization	Specialization	Required Number	Full-time	Part- time	Student/ Lecturer ratio	Total
Professor							
Associate Professor							
Assistant Professor	10						
Lecturer							
	5						
Demonstrator							
Technician	1						
Lecturer							
	5						
Administrator							
	4						
Others							

4. Learning Resources:

Learning Resources	Required Material
References and Textbooks	suitable number of books for all subjects
Scientific Journals	suitable number of periodicals for all subjects
Computers and Electronic Devices	10 computers at the library and 20 at the computer lab.)
Computer software	
Library needs	the library computers will be supplied with a variety number of electronic books and CDs that comprehend a lot of courses
Other Resources	**Printer/ s** at the library, computer lab, at the photocopy services center **Photocopy machine : at** the library , at the photocopy services center **Scanner: at**

	the library, the computer lab, at the photocopy services center

5. Lecture Rooms:

#	Lecture Rooms	Qty	Capacity
1	Ibn arbiter		
2	Underground classroom		
3	Classroom 4		
4	Ibn Cina		
5	Ibn Hayan		
6	616		
7	Radiology classroom		
8	Ibn anaphias		

6. Program Evaluation and improvement:

#	Stakeholders Targeted	Assessment method	Sample
1	50 % of the students registered in the program	Self-report Questionnaire	**Final Year students**
2	50 % of the graduates	Every 2 years Questionnaire	**Graduates from the program**
3	Administration and nursing supervisors. Representatives in the hospitals	Every 3 years (Questionnaire & Meeting)	**Employer**
4	**Quality assurance Unit**		
5	**External evaluators**	Report	From external Universities
	External examiner	Report	From external Universities

7. Consultancy Committee:

#	Consultant Name	Specialization	Working at	Comments
1				
2				
3				

8. Evaluation Committee:

#	Evaluator Name	Specialization	Working at	Comments
1	External evaluator 1	-	CAQA	
2	External evaluator 2	Technology of Diagnostic Radiology	Another university	
3	External evaluator 3	Medical Diagnostic ultrasound	Another university	
4	Internal evaluator: Head of Radiology department	Diagnostic Radiology	At the university	
5	Internal evaluator: Quality assurance	Quality assurance	Development & Quality Assurance Center	
6	Internal evaluator: Manager of marketing at the university	Business administration / Marketing	At the university	