

21 September University – for Medical and Applied Science



Medical Imaging Technology

Program Specifications

Preparation Committee:

1. Dr. Awadh Ali Alkubati
2. Dr. Sadam Alzawfi
3. Dr. Fares Mahdi

2023 م - 1444 هـ

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* * *

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1. Program Identification and General Information:

1	Scientific name of the program:	Medical Imaging Technology
2	Total credit hours required to award the degree	147 Credit Hours
3	Number of years needed for completion of the program:	4 Years [8 Academic semesters] + [1 semesters (Summer Training)]
4	The body responsible for granting the degree:	21 September University - for Medical and Applied Sciences
5	The body responsible for the program:	Department of Medical Imaging Technology Faculty of Applied Science
6	Award granted on completion of the program:	Bachelor of Science in Medical Imaging Technology (Secondary Specialist),
7	Study system:	Regular attendance (Semester based System)
8	Study Language of the Program:	English
9	Entry requirements:	Secondary School Certificate (Scientific)
10	Departments participating in the program:	Department of Biomedical Engineering Technology Department of Medicine Department of Laboratory
11	Starting year of the program:	1445 هـ – 2023/2024 م
12	Study methods in the program:	Full time
13	Location of Delivery:	21 September University - for medical and Applied Sciences campus
14	The program resources:	21 September University - for Medical and Applied Sciences
15	Minimum grade requirements:	Following the Admission Rules made by Ministry of Higher Education and Scientific Research- Republic of Yemen.
16	Other admission requirements:	21 September University Admission and Regulations Rules.
17	Date of current development of the program:	Aug 2023 – 1445 محرم
18	Prepared by:	1- Dr. Awadh Ali Alkubati 2- Dr. Sadam Alzawfi 3- Dr. Fares Mahdi
19	Program coordinator:	Dr. Awadh Ali Abdo Mohammed

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2. Introduction:

The Medical Radiology and Imaging Technology program at 21 September university is a highly competitive hands-on learning experience dedicated to providing high-quality education and clinical practicum designed to help students get a job in the medical field. It is responsive to the diverse needs of the local and regional medical community.

During study students learn to use radiologic equipment, such as X-rays, CT scan, ultrasounds, Panorama, and MRIs, to provide images of tissues, organs, bones, and vessels in the body. Other more specialised settings in which radiographers may work in include fluoroscopy, mammography, nuclear medicine, bone mineral densitometry and interventional radiology. Graduated students may work in hospitals and clinics, education, research and industry fields. Besides caring for patients, radiographers are also actively involved in other areas of healthcare such as research, education and administration.

Promising Jobs:

Graduates from the Medical Radiology and Imaging Technology programme may work as:

1. X-Ray Radiologic Technologist.
2. Medical imaging department managers.
3. Medical imaging application specialists in medical equipment companies
4. Administrators
5. Researchers
6. Ultrasound Technician
7. Nuclear medicine Technologist
8. Mammographer
9. Magnetic Resonance Imaging Technologist
10. Computed Tomography (CT) Scan Technologist

3. University Vision, Mission, Values, Objectives, and Goals:

University vision:

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A Contemporary University with National Responsibility and Faith Identity

University Mission:

Leadership of transformation headway in managing and providing the health care with all partners via having the distinction standard in education and applied and medical researches that meet the needs of Yemeni people and regional influence.

University Core values:

- Leadership and Influence
- Work effectively with a time
- Excellence and Innovation

Special University Goals:

- 1- Ensuring the application of quality standards and having the distinction standards in medical and applied sciences, scientific research and community service.
- 2- Adopting student-cantered learning, the partnership with them for life, consolidating the principles of national responsibility and faith identity, looking after them and developing their capabilities after graduation and during work.
- 3- Attracting and Employing scientists, cadres and talents to gain minds and put an end for the “brain drain” in a way that promotes and ensures the availability of thinkers, businessmen and good citizens.
- 4- Developing the distinguished academic infrastructure continuously and establishing modern research and service centres with high efficiency that can give a real effect locally and regionally.
- 5- Enhancing the university status as a preferred partner for local, regional and international partnership through implementing creative styles of education, exchanging researches and knowledge, and providing real and effective outcomes for developing professional practices to benefit from them locally and regionally.

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4. Faculty Vision, Mission, Values, and Objectives:

Faculty Vision:

A contemporary college in the field of applied medical sciences and scientific research with national responsibility and faith identity

كلية معاصرة في مجال العلوم الطبية التطبيقية والبحث العلمي بمسؤولية وطنية وهوية إيمانية

Faculty Mission:

Participate in leading the transformation for the better in providing high-quality diagnostic and health care services according to the latest techniques and contemporary technology through excellence in research and applied medical education to meet the needs of Yemeni society with its specificity and regional influence.

المشاركة في قيادة التحول نحو الأفضل في تقديم خدمات التشخيص والرعاية الصحية عالية الجودة وفق أحدث التقنيات والتكنولوجيا المعاصرة من خلال التميز في البحوث والتعليم الطبي التطبيقي لتلبية احتياجات المجتمع اليمني بخصوصيته والتأثير الإقليمي.

Faculty Values:

- | | |
|------------------------------------|------------------------|
| 1-Respect and Appreciation | 1. الاحترام والتقدير |
| 2 .Commitment and professionalism | 2. الالتزام والمهنية |
| 3 .Loyalty | 3. الإخلاص |
| 4 .Transparency and Accountability | 4. الشفافية والمساءلة |
| 5 .Social Responsibility | 5. المسؤولية المجتمعية |
| 6. National Identity | 6. الهوية الوطنية |

Faculty Goals:

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1. Preparing a graduate capable of interacting positively with community problems.
2. Providing the student with modern skills and providing him with a culture of self-reliance in innovation, development and innovation.
3. Attracting and retaining distinguished faculty members.
4. Providing a stimulating environment for teaching and learning.
5. Ensuring a high-quality level of education and training through which the graduate gains basic academic knowledge and scientific and clinical applications in a way that suits the needs of the labor market.
6. Creating postgraduate programs, enhancing scientific research, and working to develop the capabilities of faculty members to be familiar with everything that is modern in the educational process.

1. إعداد خريج قادر على التفاعل بإيجابية مع مشكلات المجتمع .
2. تزويد الطالب بمهارات حديثة وتزويده بثقافة الاعتماد على النفس في التجديد والتطوير والابتكار .
3. استقطاب أعضاء هيئة تدريس متميزين والمحافظة عليهم.
4. توفير بيئة محفزة للتعليم والتعلم.
5. ضمان مستوى تعليمي وتربوي جودة عالية يكسب الخريج من خلاله المعرفة الأكاديمية الأساسية والتطبيقات العلمية والإكلينيكية بما يتناسب مع احتياجات سوق العمل .
6. استحداث برامج دراسات عليا وتعزيز البحث العلمي والعمل على تنمية قدرات أعضاء هيئة التدريس للإلمام بكل ما هو حديث في العملية التعليمية .

5. Department Vision, Mission, and Objectives :

Department Vision:

"To lead in educating and training anesthesia professionals, committed to national responsibility and faith-based values, providing exceptional medical services that align with advancements in applied medical sciences and scientific research " لتقديم خدمات طبية متميزة تواكب التطورات الحديثة في العلوم الطبية التطبيقية والبحث العلمي

Department Mission:

"Prepare highly qualified anesthesia specialists committed to national responsibility and faith-based values, capable of delivering exceptional healthcare services while staying abreast of the latest developments in applied medical science

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تأهيل كوادر متخصصة في مجال التخدير، تتمتع بكفاءة عالية ومعرفة علمية متقدمة، قادرة على تقديم رعاية صحية متميزة،
".والالتزام بالمسؤولية الوطنية والقيم الإيمانية، مع مواكبة التطورات الحديثة في العلوم الطبية التطبيقية والبحث العلمي

Department Objectives:

- 1- Training Specialized Personnel: Preparing highly qualified anesthesia specialists with advanced scientific knowledge capable of delivering exceptional healthcare services.**
- 2- Commitment to National and Ethical Values: Instilling national responsibility and ethical values in the professional practices of graduates.**
- 3- Keeping Abreast of Modern Developments: Continuously updating curricula and educational programs to align with the latest advancements in applied medical sciences and research.**
- 4- Enhancing Scientific Research: Encouraging and supporting scientific research in the field of anesthesia to improve healthcare quality and advance medical knowledge.**
- 5- Community Service: Providing medical and educational services to the community and contributing to raising health awareness.**
- 6- Continuous Education: Offering continuous education and training opportunities for medical personnel to ensure their skills and knowledge remain current.**
- 7- Collaboration with Health Institutions: Building effective partnerships with hospitals and medical centers to provide practical training environments for students.**
- 8- Quality Assurance: Implementing quality standards in education and training to ensure the graduation of qualified personnel who meet labor market needs**

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6. Biomedical Engineering Technology Program Mission and Objectives:

Program Mission:

Preparing distinguished graduates in the fields of radiology and medical imaging with competitive capabilities through academic programs, modern curricula, and an educational environment that stimulates creativity and scientific research, keeping pace with technological development, distinguished staff, and effective partnership to meet the needs of the local and regional community with high standards.

Program Objectives:

- PEO1.** Explain the required anatomical structures in different imaging modalities.
- PEO2.** Apply appropriate patient positioning to produce a diagnostic radiographic image.
- PEO3.** Utilize radiographic exposure factors to optimize image quality and minimize patient dose.
- PEO4.** Assess the processes required to produce diagnostic images for medical evaluation.
- PEO5.** Apply the principles of radiation protection to patient, self and others.
- PEO6.** Apply principles of ethical and/or professional health practice appropriate to the discipline.
- PEO7.** Prepare the graduate for scientific research.

خطأ! لم يتم العثور على مصدر المرجع.

7. Program Standards & Benchmarks:

Academic Standards:

1. National Academic Reference Standards (NARS) For Undergraduate Engineering Programs, Yemen, First Edition, Council for Accreditation & Quality Assurance, Yemen, May 2018.
2. Criteria for Accrediting Engineering Programs, (Bioengineering, Biomedical Engineering), 2019-2020, Accreditation Bureau for Engineering and Technology (ABET).

Governmental Rules and Regulations:

1. Act No. 13/2005 of the Law of private universities, higher institutes and colleges, Yemen.
2. The executive regulations of Act No. 13/2005 of the Law of private universities, higher institutes and colleges, Yemen.
3. 21 September University - for Medical and Applied Sciences .

Annex- 1, Academic Standards Curriculum Criteria of Accreditation Board

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Program Benchmarks:

1. Sana'a University, B.Sc. (Bachelor of Science in Radiography and Medical Diagnostic imaging), Faculty of Applied Medical Sciences, Department of Radiography / Medical Diagnostic Imaging , Yemen
<https://su.edu.ye/cams/en/bachelor/radiology-medical-diagnostic-imaging/>
2. University of Science and Technology, B.Sc Bachelor Degree in Radiography And Medical Imaging Technology), College of Medicine and Health Sciences, Radiography And Medical Imaging, Yemen.
<https://ust.edu.ye/en/radiography-and-medical-imaging/>
3. King Abdulaziz university, B.Sc.(Bachelor Degree in Diagnostic Radiology) , Faculty of Applied Medical Sciences, Department of Diagnostic Radiology Department. KSA
[https://rad.kau.edu.sa/Default-142003-EN /](https://rad.kau.edu.sa/Default-142003-EN/)
4. Jordan University of Science and Technology, B.Sc.(BSc in Radiologic Technology), Faculty of Applied Medical Sciences, Department of Diagnostic Radiology and Nuclear Medicine, Jordan.
<https://www.just.edu.jo/ar/FacultiesandDepartments/FacultyofAppliedMedScs/Depts/AlliedMedSciences/Pages/default.aspx>
5. MAHSA University, B.Sc.(Bachelor of Medical Imaging (Hons)), Faculty of Health Sciences, Department of Medical Imaging, Malaysia.
<https://mahsa.edu.my/faculties/Health/bachelor-medical.php>
6. Singapore Institute of Technology. B.Sc (Diagnostic Radiography), School of Allied Health, Department of Health and Social Sciences, Singapore.
<https://www.singaporetech.edu.sg/undergraduate-programmes/diagnostic-radiography>
7. GD Goenka University. Bachelor In Medical Radiology and Imaging Technology, School of Medical and Allied Sciences, Department of Medical Radiology and Imaging Technology, India. <https://www.gdgoenkauniversity.com/course/school-of-medallied/bachelor-of-science-in-radiology-and-imaging-technology>
8. University of Hartford. BS in Radiologic Technology, College of Education, Nursing and Health Professions, Department of Health Sciences, USA. https://uhart-pssba-001.hartford.edu/PROD/bwckctlg.p_disp_listcrse?term_in=202340&subj_in=RAD&crse_in=101&sched_in=1
9. Marian University_Wisconsin. BS in Radiologic Technology, Marian College _ Radiologic Technology, Department of Radiologic Technology, USA.
<https://www.marianuniversity.edu/campus-programs/bs-radiologic-technology/>

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8. Graduate Attributes:

After successfully completing the program, the graduate should be able to:

1. Demonstrate understanding of basic Biomedical Sciences in diagnostic imaging.
2. Apply knowledge of Anatomy, Physiology, sectional anatomy, Radiation safety, imaging quality control in medical imaging procedures.
3. Demonstrate an in-depth knowledge of the relationship between quality of medical image and imaging technical factors, and how imaging technical factors are related to medical diagnosis decision.
4. Use critical thinking and problems solving skills in medical imaging acquisition to make evidence-based decisions.
5. Communicate effectively and demonstrate professionalism in dealing with patients, their families and other health care workers.
6. Maintain confidentiality, adhere to moral and ethical standards of investigations and comply with the government regulations applied to Medical diagnostic imaging.
7. Perform investigations and implement updated medical imaging technology in the acquisition of quality medical image efficiently and professionally.
8. Apply measures of radiological Bio-risk and quality management.
9. Use their knowledge, radiological technology training and research skills to explore and respond to medical science issues on various scales.
10. Engage in continuous education, self-study and lifelong learning.

9. Program Intended Learning Outcomes (PILOs):

A. Knowledge and Understanding:

Upon successful completion of the undergraduate Medical Imaging Technology Program, the graduates will be able to:

- A1.** Demonstrate an understanding of fundamental knowledge of Biomedical sciences (Biology, Biophysics, Anatomy, Physiology, Sectional anatomy and Medical imaging technique).
- A2.** Demonstrate understanding of the principles and procedures of Medical imaging acquisitions, Medical imaging technique and Radiological Technology Sciences as well as patient positioning in computed radiography and MRI technique.
- A3.** Exhibit professional characteristics required by the radiologic technology profession.

B. Cognitive/ Intellectual Skills:

Upon successful completion of the undergraduate Medical Imaging Technology Program, the graduates will be able to:

- B1.** Integrate the concepts and principles of the basic and applied Medical Sciences to formulate and test hypothesis.

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B2. Use critical thinking and problem solving skills to make evidence-based decisions.

B3. Analyze and evaluate evidence-based information needed in Medical imaging practice.

C. Practical and Professional Skills:

Upon successful completion of the undergraduate Medical Imaging Technology Program, the graduates will be able to:

C1. Execute quality management system and standard procedures in radiological technology practice.

C2. Apply technical skills in using medical imaging devices, tools, and materials in radiological technology practice.

C3. Prepare, process, interpret and present medical images using appropriate qualitative techniques.

C4. Utilize appropriate manual and automated techniques in radiological imaging investigations.

D. General and Transferable Skills:

Upon successful completion of the undergraduate Medical Imaging Technology Program, the graduates will be able to:

D1. Demonstrate written and oral communication skills with clinicians, patients, and support staff.

D2. Practice ethical and professional behaviors in the clinical setting.

D3. Recognize the need to obtain further education in the pursuit of life-long learning.

D4. Function effectively as an individual, as a member, or leader of a team engaged in appropriate activities to the radiologic technology disciplines to accomplish a common goal.

Program PILOs	Program Objectives						
	PObj1	PObj2	PObj3	PObj4	PObj5	PObj6	PObj7
A1	√						
A2		√	√				
A3	√			√		√	
B1	√				√		√
B2		√	√		√		
B3		√	√	√			
C1		√	√		√	√	
C2		√	√	√	√	√	√

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Program PILOs	Program Objectives						
	PObj1	PObj2	PObj3	PObj4	PObj5	PObj6	PObj7
C3		√	√	√		√	√
C4			√	√	√	√	
D1	√						√
D2						√	
D3							√
D4				√	√	√	√

Teaching and Learning Strategies:

- Active Lectures (supported with discussions),
- Case studies and Problem-based learning,
- Seminars, tutorials and Journal clubs,
- Laboratory training,
- Laboratory classes and Fieldwork
- Computer and web-based learning,
- Use of communication and information technology,
- Self-directed study and research.
- Field Visits.

Assessment Methods:

- Coursework Activities
- Written tests and exams (Midterm and final exams)
- Written assessments such as multiple-choice questions and Quizzes
- Report/Project/Practical Lab Sessions
- Case studies
- Home works and assignments.
- Presentations

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

PILOs	Teaching Strategy	Assessment Methods
Knowledge and Understanding	Lectures, Interactive class discussions,	Written exams, Assignment work, Quizzes,

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PILOs	Teaching Strategy	Assessment Methods
A1. Demonstrate an understanding of fundamental knowledge of Biomedical sciences (Biology, Biophysics, Anatomy, Physiology, Sectional anatomy and Medical imaging technique). A2. Demonstrate understanding of the principles and procedures of Medical imaging acquisitions, Medical imaging technique and Radiological Technology Sciences as well as patient positioning in computed radiography and MRI technique. A3. Exhibit professional characteristics required by the radiologic technology profession.	Tutorials.	Submission of reports.
Intellectual Skills B1. Integrate the concepts and principles of the basic and applied Medical Sciences to formulate and test hypothesis. B2. Use critical thinking and problem solving skills to make evidence-based decisions. B3. Analyze and evaluate evidence-based information needed in Medical imaging practice.	Lectures, Tutorial, Interactive class discussions, Group work, Presentation.	Written exams, Project, Case studies Assignment work.
Professional & practical skills C1. Execute quality management system and standard procedures in radiological technology practice. C2. Apply technical skills in using medical imaging devices, tools,	Short lectures, Case study, Laboratory experiments, Project, Group work, Field training, Drawing sessions.	Written exams, Quizzes, Practical exam assignment , Report submission.

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PILOs	Teaching Strategy	Assessment Methods
and materials in radiological technology practice. C3. Prepare, process, interpret and present medical images using appropriate qualitative techniques. C4. Utilize appropriate manual and automated techniques in radiological imaging investigations.		
General & Transferable Skills D1. Demonstrate written and oral communication skills with clinicians, patients, and support staff. D2. Practice ethical and professional behaviors in the clinical setting. D3. Recognize the need to obtain further education in the pursuit of life-long learning. D4. Function effectively as an individual, as a member, or leader of a team engaged in appropriate activities to the radiologic technology disciplines to accomplish a common goal.	Group work, Self-study, Interactive class discussions, Tutorials, Seminar/ project/presentation, Laboratory experiments, Project, Art Gallery	Project presentation, Laboratory exam, Report/Project

11. Project Assessment:

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

Item	Marks Distribution
Project supervisor.	50%
Internal examiner: a member of the department staff.	25%
External or faculty examiner: a qualified external examiner from other departments of the faculty or from another university.	25%
Total	100%

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12. Training Course Assessment:

One year internship training period in an approved and related engineering institution: governmental, commercial, or industrial. This internship provides real-life experience and exposure and provides the students with real opportunity to get connected and develop their professional network and connection.

The training course will be assessed through:

- Evaluation by the program chair during at least two field visits **(30%)**
- Evaluation by the external supervisor from the field **(30%)**
- Reports presented by students groups related to different training branches **(40%)**.

13. Intended Learning Outcomes Mapping:

See below Annex:

[Annex- 2, Survey of PILOs for Similar Accredited Programs at National and International Universities](#)

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14. Program Structure:

No	Requirements		No. of Courses	Credit Hours	Rational Weight %
1	University Requirements	Compulsory	7	14	
		Elective	--	--	
3	Faculty Requirements	Compulsory	19	44	
		Elective	--	--	
4	Department Requirements	Compulsory	36	89	
		Elective	--	--	
5	Program Requirements	Compulsory			
		Elective	--	--	
7	Research Project	Compulsory	3 credit hours included in faculty requirements		
		Elective			
	Total:		62	147	100%

14.1. University Requirements

Compulsory Courses

No.	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1.	Level 1/ semester 1	06.11.801	Arabic 101	لغة عربية 101	2	2			
2.	Level 2/ semester 1	06.11.802	Arabic 102	لغة عربية 102	2	2			
3.	Level 1/ semester 1	06.11.803	English 101	لغة انجليزية 101	2	2			
4.	Level 2/ semester 1	06.11.804	English 102	لغة انجليزية 102	2	2			
5.	Level 1/ semester 1	06.11.805	Islamic Culture	ثقافة اسلامية	2	2			
6.	Level 1/ semester 1	06.11.806	National Culture	ثقافة وطنية	2	2			
7.	Level 2/ semester 1	06.11.807	Arabic Israeli Conflict	الصراع العربي الاسرائيلي	2	2			
Total					14	14	0		

Elective Courses: None

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14.2. Faculty Requirements

Compulsory Courses

No.	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1	1/1	01 01 811	Anatomy and histology(1)	تشريح والانسجه 1	3	2	2		
2	1/1	04 01 813	Fundamental of Nursing(1)	اساسيات تمريض 1	3	2	2		
3	1/1	05 01 814	Medical ethics	اخلاقيات المهن الطبية	2	2			
4	1/1	04 01 815	Medical terminology	مصطلحات طبية	2	2			
5	1/1	03 01 812	Biochemistry	كيمياء حيوية	2	2			
6	1/2	01 01 818	Anatomy and histology2	تشريح وانسجة 2	3	2	2		
7	1/2	01 01 819	physiology	علم وظائف الأعضاء	2	2			
8	1/2	05 01 817	communications skills	مهارات اتصال	2	2			
9	1/2	07 01 816	Computer Skills	مهارات حاسوب	3	2	2		
10	1/2	04 01 820	Fundamental of Nursing 2	اساسيات تمريض 2	3	2	2		
11	2/1	04 01 821	Fundamental of Infection Control	أساسيات التحكم بالعدوى	2	2			
12	2/1	02 01 822	Basic Pharmacology	اساسيات علم الادوية	2	2			
13	2/1	03 01 823	Microbiology and Parasitology	أحياء دقيقة وطفيليات	3	2	2		
14	2/2	01 01 825	Pathology	علم الأمراض	2	2			
15	2/2	02 01 827	Applied Pharmacology	ادوية تطبيقية	2	2			
16	2/2	05 01 826	Psychology	علم النفس	2	2			
17	3/1	05 02 833	Biostatistics	الإحصاء الحيوي	2	2			
18	3/2	05 01 837	Scientific Research methodology	طرق البحث العلمي	2	2			
19	4/1	05 01 839	Health Administration and Quality Management	الإدارة الصحية وإدارة الجودة	2	2			
Total					44	38	12	12	

Elective Courses: None

14.3. Department Requirements

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Compulsory Courses: None

Elective Courses: None

Program Requirements

14.4. Major Requirements

Compulsory Courses

No.	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1	Level 1/ semester 1	08 03 810	Introduction to Radiology	مقدمة في تكنولوجيا الأشعة	2	2			
2	Level 1/ semester 2	08 03 811	Radiology Physics	فيزياء اشعاعية	2	2			
3	Level 1/ semester 2	08 03 812	Radiology Biology	الأحياء الإشعاعية	2	2			
4	Level 1/ semester 2	08 03 813	Radiology Mathematics	الرياضيات الاشعاعية	2	2			
5	Level 1/ semester 2	08 03 814	Foundation of Electronic	اساسيات الالكترونيات	2	2			
6	Level 2/ semester 1	08 03 815	Fundamental of Imaging Radiology	اساسيات التصوير الاشعاعي	2	2			
7	Level 2/ semester 2	08 03 816	Radiation Protection	الحماية من الإشعاع	2	2			
8	Level 2/ semester 2	08 03 817	Radiation Imaging Technology I	تقنيات التصوير الاشعاعي 1	2	2			
9	Level 2/ semester 2	08 03 818	Patient Care in Radiology Dept.	رعاية المرضى في قسم الأشعة	2	2			
10	Level 3/ semester 1	08 03 819	clinical practice 1	تدريب سريري 1	4			12	
11	Level 3/ semester 1	01 01 850	Cross sectional anatomy I	التشريح المقطعي 1	3	2	2		

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12	Level 3/ semester 1	08 03 820	Radiographic technique II	تقنيات التصوير الإشعاعي 2	3	2	2		
13	Level 3/ semester 1	08 03 821	Computer application in radiology	تطبيقات الحاسوب في الأشعة	2	2			
14	Level 3/ semester 1	08 03 822	Radiologic equipment's I	أجهزة إشعاعية 1	3	2	2		
15	Level 3/ semester 1	08 03 823	Radiographic pathology I	علم الأمراض الإشعاعي 1	2	2			
16	Level 3/ semester 1	08 03 824	clinical practice II	تدريب سريري 2	4			12	
17	Level 3/ semester 2	08 03 825	Radiographic pathology II	علم الأمراض الإشعاعي 2	2	2			
18	Level 3/ semester 2	08 03 826	Radiologic equipment's II	أجهزة إشعاعية 2	2	2			
19	Level 3/ semester 3	01 01 851	Cross sectional anatomy II	التشريح المقطعي 2	2	2			
20	Level 3/ semester 2	08 03 827	Nuclear medicine physics	فيزياء الطب النووي	2	2			
21	Level 3/ semester 2	08 03 828	Clinical practice III	تدريب سريري 3	4			12	
22	Level 4/ semester 1	08 03 829	Ultrasound physics	فيزياء الموجات فوق الصوتية	2	2			
23	Level 4/ semester 1	08 03 830	CT & MRI physics	فيزياء الأشعة المقطعية والرنين المغناطيسي	3	2	2		
24	Level 4/ semester 1	08 03 831	Nuclear medicine technique	تقنيات الطب النووي	2	2			
25	Level 4/ semester 1	08 03 832	Fundamental medical imaging procedures	الإجراءات الإشعاعية الأساسية	2	2			
26	Level 4/ semester 2	08 03 833	Case study's and seminars in radiology	دراسات الحالة والندوات في الأشعة	2	2			

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27	Level 4/ semester 1	08 03 834	Clinical practice III	تدريب سريري 4	4			12	
28	Level 4/ semester 2	08 03 835	Ultrasound technique	تقنية الموجات فوق الصوتية	2	2			
29	Level 4/ semester 2	08 03 836	CT & MRI technique	تقنيات الأشعة المقطعية والرنين المغناطيسي	2	2			
30	Level 4/ semester 2	08 03 837	Graduate Research Project	مشروع بحث التخرج	3			9	
31	Level 4/ semester 2	08 03 838	Clinical practice IIII	تدريب سريري 5	4			12	
32	Level 4/ semester 2	08 03 839	Radiographic film interpretation	تفسير وقراءة فيلم الأشعة وتقاريرها	3	2	2		
33	Level 4/ semester 2	08 03 840	Radiologic therapy ats reporting	العلاج الإشعاعي	3	2	2		
34	Level 4/ semester 2	08 03 841	Advance medical imaging procedures	الإجراءات الإشعاعية المتقدمة	2	2			
35	Level 4/ semester 1	08 03 842	Management in radiology department	إدارة أقسام الأشعة	2	2			
36	Level 4/ semester 1	08 03 843	Quality Assurance in radiology department	ضمان الجودة في قسم الأشعة	2	2			
Total					89	64	12	69	

Project Work Courses

No	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	p	Prerequisites, Co-requisites
Cr. Hrs.	L	T	p	مشروع التخرج	3			9	
Total					3	0	0	9	

Field Attachments and Training Courses (One year)

No	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	p	Prerequisites, Co-requisites
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45	5 th Year		Internship	تدريب ميداني	4			12	
Total					4			12	

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15. Study Plan:

Level 1

Term 1								
No.	Course Code	Course Name	اسم المقرر	Cr. Hrs	L	T	P	Prerequisites, Co-requisites
1	06 11 801	Arabic language 101	لغة عربية 101	2	2			
2	06 11 803	English Language 101	لغة انجليزية 101	2	2			
3	06 11 805	Islamic Culture	ثقافة إسلامية	2	2			
4	01 01 811	Anatomy and histology I	تشريح و انسجة 1	3	2	2		
5	03 01 812	Biochemistry	كيمياء حيوية	2	2			
6	04 01 813	Fundamental of Nursing I	اساسيات تمريض 1	3	2	2		
7	05 01 814	Medical ethics	اخلاقيات المهن الطبية	2	2			
8	04 01 815	Medical Terminology	مصطلحات طبية	2	2			
Total				18	16			

Term 2								
No.	Course Code	Course Name	اسم المقرر	Cr. Hrs	L	T	p	Prerequisites, Co-requisites
1	06 11 804	English language 102	لغة انجليزية 102	2	2			
2	06 11 802	Arabic Language 102	لغة عربية 102	2	2			
3	06 11 807	arabic israeli conflict	الصراع العربي الاسرائيلي	2	2			
4	07 01 816	Computer Skills	مهارات حاسوب	3	2	2		
5	05 01 817	Communication Skills	مهارات اتصال	2	2			
6	01 01 818	Physiology	علم وظائف الاعضاء	2	2			
7	06 11 806	national culture	ثقافته وطنيه	2	2			

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8	01 01 817	Anatomy and histology 2	تشريح وانسجه 2	3	2	2		
Total				18	16	4		

Level 2

Term 1								
No.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	p	Prerequisites, Co-requisites
1	08 01 821	Fundamental of Infection Control	أساسيات التحكم بالعدوى	2	2			
2	02 01 822	Basic Pharmacology	اساسيات علم الادوية	2	2			
3	03 01 823	Microbiology and Parasitology	أحياء دقيقة وطفيليات	3	2	2		
4	08 03 811	Radiology Physics	فيزياء اشعاعية	2	2			
5	08 03 812	Radiology Biology	الأحياء الإشعاعية	2	2			
6	08 03 813	Radiology Mathematics	الرياضيات الإشعاعية	2	2			
7	08 03 814	Foundation of Electronic	اساسيات الالكترونيات	2	2			
8	08 03 815	Fundamintal of Imaging Radiology	اساسيات التصوير الاشعاعي	2	2			
Total				16	16	2		

Term 2

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No.	Course Code	Course Name	اسم المقرر	Cr. Hrs	L	T	p	Prerequisites, Co-requisites
1	01 02 825	Radiographic Pathology	علم الأمراض	2	2			
2	02 01 827	Applied Pharmacology	ادوية تطبيقية	2	2			
3	06 11 826	Psychology	علم النفس	2	2			
4	08 03 816	Radiation Protection	الحماية من الإشعاع	2	2			
5	08 03 817	Radiation Imaging Technology	تقنيات التصوير الاشعاعي 1	3	2	2		
6	08 03 818	Patient Care in Radiology Dept.	رعاية المرضى في قسم الأشعة	2	2			
7	08 03 819	clinical practice 1	تدريب سريري 1	4			12	
Total				16	12	2	12	

Level 3

Term 1								
No.	Course Code	Course Name	اسم المقرر	Cr. Hrs	L	T	p	Prerequisites, Co-requisites
1	01 01 850	Cross sectional anatomy I	التشريح المقطعي 1	3	2	2		
2	08 03 820	Radiographic technique II	تقنيات التصوير الاشعاعي 2	3	2	2		
3	08 03 821	Computer application in radiology	تطبيقات الحاسوب في الأشعة	2	2			
4	08 03 822	Radiologic equipment's I	أجهزة اشعاعية 1	2	2			
5	08 03 823	Radiographic pathology I	علم الأمراض الاشعاعي 1	2	2			

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6	05 01 833	Biostatics	الإحصاء الحيوي	2	2			
7	08 03 824	clinical practice II	تدريب سريري 2	4			12	
Total				18	14	4	12	

Term 2								
No	Course Code	Course Name	اسم المقرر	Cr. Hrs	L	T	p	Prerequisites, Co-requisites
1	08 03 825	Radiographic pathology II	علم الأمراض الإشعاعي 2	2	2	2		
2	08 03 826	Radiologic equipment's II	أجهزة اشعاعية 2	2	2	2		
3	01 01 851	Cross sectional anatomy II	التشريح المقطعي 2	2	2	2		
4	08 03 827	Nuclear medicine physics	فيزياء الطب النووي	2	2			
5	01 01 836	Scientific Research methodology	طرق البحث العلمي	2	2			
6	08 03 828	Clinical practice III	تدريب سريري 3	4			12	
Total				14	10		12	

Level 4

Term 1								
No.	Course Code	Course Name	اسم المقرر	Cr. Hrs	L	T	p	Prerequisites, Co-requisites
1	08 03 829	Ultrasound physics	فيزياء الموجات فوق الصوتية	2	2			
2	08 03 830	CT & MRI physics	فيزياء الأشعة المقطعية والرنين المغناطيسي	3	2	2		
3	08 03 831	Nuclear medicine technique	تقنيات الطب النووي	2	2			
4	08 03 832	Fundamental medical imaging procedures	الإجراءات الإشعاعية الأساسية	2	2			
5	08 03 833	Case study's and seminars in radiology	دراسات الحالة والندوات في الأشعة		2			
6		Health Administration and Quality Mangment	الإدارة الصحية وإدارة الجودة	2	2			

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7	08 03 834	Clinical practice IIII	تدريب سريري 4	4	0		12	
Total				15	12	2	12	

Term 2								
No.	Course Code	Course Name	اسم المقرر	Cr. Hrs	L	T	p	Prerequisites, Co-requisites
1	08 03 835	Ultrasound technique	تقنية الموجات فوق الصوتية	2	2			
2	08 03 836	CT & MRI technique	تقنيات الأشعة المقطعية والرنين المغناطيسي	2	2			
3	08 03 837	Graduate Research Project	مشروع بحث التخرج	2	2			
4	08 03 838	Clinical practice IIIII	تدريب سريري 5	4			12	
5	08 03 839	Radiographic film interpretation	تفسير وقراءة فيلم الأشعة وتقاريرها	3	2	2		
6	08 03 840	Radiologic therapy ats reporting	العلاج الإشعاعي	3	2	2		
7	08 03 841	Advance medical imaging procedures	الإجراءات الإشعاعية المتقدمة	2	2			
	08 03 842	Management in radiology department	إدارة أقسام الأشعة	2	2			
	08 03 843	Quality Assurance in radiology department	ضمان الجودة في قسم الأشعة	2	2			
Total				22	16	4	12	

5th Year								
No.	Course Code	Course Name	اسم المقرر	L	T	P	Cr. Hr s.	Prerequisites, Co-requisites
1		Internship	التدريب الداخلي		12		4	
Total					12		4	

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16. Distribution of Total Credit Hours:

Courses		No of Courses, CH, %	First level		Second level		Third level		Fourth level		Total	%
			1 st	2 nd	1 st	2 nd	1 st	2 nd	1 st	2 nd		
University Requirements	Compulsory	No. of courses	4	3	0	0	0	0	0	0	7	11.11%
		Credit Hours	8	6	0	0	0	0	0	0	14	8.64%
		%	57.14%	42.86%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	9.33%
	Electives	No. of courses	0	0	0	0	0	0	0	0	0	0.00%
		Credit Hours	0	0	0	0	0	0	0	0	0	0.00%
		%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Faculty Requirements	Compulsory	No. of courses	4	1	0	3	0	2	0	0	10	15.87%
		Credit Hours	9	3	0	8	0	5	0	0	25	15.43%
		%	37.14%	11.43%	0.00%	31.43%	0.00%	20.00%	0.00%	0.00%	100.00%	15.56%
	Electives	No. of courses	0	0	0	0	0	0	0	0	0	0.00%
		Credit Hours	0	0	0	0	0	0	0	0	0	0.00%
		%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	Compulsory	No. of courses	0	0	0	0	0	0	0	0	0	0.00%

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Department Requirements		Credit Hours	0	0	0	0	0	0	0	0	0	0.00%
		%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	Electives	No. of courses	0	0	0	0	0	0	0	0	0	0.00%
		Credit Hours	0	0	0	0	0	0	0	0	0	0.00%
		%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Program Requirements	Compulsory	No. of courses	1	4	8	5	7	5	8	6	44	69.84%
		Credit Hours	3	11	20	12	20	15	20	16	117	72.22%
		%	2.48%	9.32%	17.39%	10.56%	16.77%	12.42%	17.39%	13.66%	100.00%	71.56%
	Electives	No. of courses	0	0	0	0	0	0	0	0	0	0.00%
		Credit Hours	0	0	0	0	0	0	0	0	0	0.00%
		%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Field training		No. of courses	0	0	0	0	0	0	0	1	1	1.59%
		Credit Hours	0	0	0	0	0	0	0	4	4	2.47%
		%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%	2.22%
Research Project		No. of courses	0	0	0	0	0	0	0	1	1	1.59%
		Credit Hours	0	0	0	0	0	0	0	2	2	1.23%
		%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%	1.33%
Total		No. of courses	9	8	8	8	7	7	8	8	63	100.00%
		Credit Hours	20	20	20	20	20	20	20	22	162	100.00%
		%	12.89%	12.44%	12.44%	12.44%	12.00%	12.00%	12.44%	13.33%	100.00%	100.00%
	Level	%	25.33%		24.89%		24.00%		25.78%		100.00%	

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17. Admission/Selection/Transfer 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 21 September university for medical and Applied Sciences 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 if any.
4. Any necessary requirement for specialization, decided by the faculty.

18. 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 are **162** credit hours.
4. Minimum score for any student to pass any credit hours course is 50% marks.

19. Grading System:

From 90% to 100% of total marks	Excellent
From 80% to less than 90%	Very Good
From 70% to less than 80%	Good
From 65% to less than 70%	Pass
Less than 65%	Poor/Fail

20. Facilities Required for Running the Program:

1. Sufficient Classrooms furnished with all necessary pieces and equipment.
2. Drawing halls.
3. Labs .. as per the courses specifications
4. Computer Labs.
5. Academic and administrative staff offices.

21. Program Assessment:

Type of the Sample who Assess the program		Instruments used	Sample
1	Final Year students	Written Exam & Questionnaire	20
2	Graduates from the program	Questionnaire	20
3	Employer	Questionnaire	15
4	Quality assurance Unite	Standards	20
5	External evaluators	Checklist	15



6	External examiner	Notes	10
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22. 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 hour, 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) : Assignments and projects are given as per course specification; 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.

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Annex- 1, Academic Standards Curriculum Criteria of Accreditation Board

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Council for Accreditation & Quality Assurance

National Academic Reference Standards (NARS) For Undergraduate Engineering Programs

First Edition

Council for Accreditation & Quality Assurance, Yemen

May 2018

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ACCREDITATION BOARD FOR ENGINEERING AND TECHNOLOGY (ABET)

CRITERIA FOR ACCREDITING ENGINEERING PROGRAMS 2019-2020

(Bioengineering, Biomedical Engineering)



ABET

415 N. Charles Street

Baltimore, MD 21201

Telephone: 410-347-7700

E-mail: accreditation@abet.orgWebsite: www.abet.org

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Annex- 1, Survey of Similar Accredited Programs at National and International Universities (Benchmarks)

Program No.	The Academic Program	The University	Website	The Faculty	The Department	The Country	Degree Award at Program Completion	Program Accrediting Body	Year of Accreditation	Study Duration
Current Program										
The 1st Program	Radiography and Medical Diagnostic imaging	Sana'a University	https://su.edu.ye/cams/en/bachelor/radiology-medical-diagnostic-imaging/	Faculty of Applied Medical Sciences	Radiography / Medical Diagnostic Imaging	Yemen	Bachelor of Science in Radiography and Medical Diagnostic imaging	NARS	2022	4 Years
The 2nd Program	Radiography And Medical Imaging Technology	University of Science and Technology	https://ust.edu.ye/en/radiography-and-medical-imaging/	College of Medicine and Health Sciences	Department of Health Sciences	Yemen	Bachelor Degree in Radiography And Medical Imaging Technology	NARS	2020	4 Years
The 3rd Program	Diagnostic Radiology	King Abdulaziz university	https://rad.kau.edu.sa/Default-142003-EN	Faculty of Applied Medical Sciences	Diagnostic Radiology Department	KSA	Bachelor Degree in Diagnostic Radiology	Institute of Biomedical Science, Britain (IBMS)	2023	4 Years



Program No.	The Academic Program	The University	Website	The Faculty	The Department	The Country	Degree Award at Program Completion	Program Accrediting Body	Year of Accreditation	Study Duration
The 4th Program	Radiologic Technology	Jordan University of Science and Technology	https://www.just.edu.jo/ar/FacultiesandDepartments/FacultyofAppliedMedScs/Depts/AlliedMedSciences/Pages/default.aspx	Faculty of Applied Medical Sciences	Department of Diagnostic Radiology and Nuclear Medicine	Jordan	BSc in Radiologic Technology	Accreditation Service for International Schools, Colleges and Universities (ASIC)	2014	4 Years
The 5th Program	Medical Imaging	MAHSA University	https://mahsa.edu.my/faculties/Health/bachelor-medical.php	Faculty of Health Sciences	Department of Medical Imaging	Malaysia	Bachelor of Medical Imaging (Hons)	Malaysian Qualification Agency (MQA)	2014	4 Years
The 6th Program	Diagnostic Radiography	Singapore Institute of Technology	https://www.singaporetech.edu.sg/undergraduate-programmes/diagnostic-radiography	School of Allied Health	Health and Social Sciences	Singapore	BSc Diagnostic Radiography	Accredited by Allied Health Professions Council		4 Years
The 7th Program	Radiology Technology	GD Goenka University	https://www.gdgoenkauniversity.com/course/school-of-medallied/bachelor-of-science-in-radiology-and-imaging-technology https://collegeindia.in/college/58547-gd-goenka-university-college-of-medical-allied-sciences/overview	School of Medical and Allied Sciences	Medical Radiology and Imaging Technology	India	Bachelor In Medical Radiology and Imaging Technology	1- University Grants Commission (UGC) 2- Medical Council of India (MCI)	2016	4 Years
The 8th Program	Radiologic Technology	University of Hartford	https://catalog.hartford.edu/preview_program.php?catoid=29&poid=6756&returnto=2947 https://uhart-pssba-001.hartford.edu/PROD/bwckctlg.p_disp_listcrse?term_in=202340&subj_in=RAD&crse_in=101&schd_in=	College of Education, Nursing and Health Professions	Department of Health Sciences	USA	BS in Radiologic Technology	Joint Review Committee on Education in Radiologic Technology (jrcert)	2009	4 Years

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Program No.	The Academic Program	The University	Website	The Faculty	The Department	The Country	Degree Award at Program Completion	Program Accrediting Body	Year of Accreditation	Study Duration
The 9th Program	Radiologic Technology	Marian University – Wisconsin	https://www.marianuniversity.edu/campus-programs/bs-radiologic-technology/	Marian College – Radiologic Technology	Radiologic Technology	USA	Bachelor of Science in Radiologic Technology	Joint Review Committee on Education in Radiologic Technology (jrcert)	2015	4 Years

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Program PILOs	Similar Accredited Programs										Accreditation Bodies	
	Current Program	Sana'a University	University of Science and Technology - Yemen	King Abdulaziz university	Jordan University of Science and Technology	MAHSA University	Singapore Institute of Technology	GD Goenka University	University of Hartford	Marian University_Wisconsin	NAR S	International: JRCERT 2014
A1	Demonstrate an understanding of fundamental knowledge of Biomedical sciences (Biology, Biophysics, Anatomy, Physiology, Sectional anatomy and Medical imaging technique).	A.1 Explain the required anatomical structures in different imaging modalities.	Demonstrate the basic knowledge of basic medical sciences related to radiologic technology and medical imaging.	Acquire knowledge needed to produce medical images for accurate diagnosis	Demonstrate knowledge of radiology and imaging techniques for efficient diagnosis of the diseased or un-diseased state.	Assess patients' situations and provide solutions according to changing needs and limitations	Interpret and evaluate information from a range of data and digital sources	Demonstrate knowledge of radiology and imaging techniques for efficient diagnosis of the diseased or un-diseased state.	Students will sufficiently adapt technical factors based on the clinical situation.	Students/graduates will select appropriate technical factors.	Demonstrate an understanding of fundamental knowledge of Biomedical sciences (Biology, Chemistry, Biophysics, Anatomy, Histology, Physiology, Human Genetics and Molecular biology).	Students will apply positioning skills in the clinical setting.

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A2	Demonstrate understanding of the principles and procedures of Medical imaging acquisitions, Medical imaging technique and Radiological Technology Sciences as well as patient positioning in computed radiography and MRI technique.	understanding of critical approach to the creation and compilation of a systematic and coherent body of knowledge and concepts gained from a range of sources	Explain the principles of radiologic technology and medical imaging in safe manner according to Radiation protection procedures.	Describe anatomy, physiology, pathology, positioning and radiographic techniques	Understand and appreciate the role of radio diagnostic in the development of healthy society	Adhere to and uphold stringent safety standards in the use of radiation equipment and procedures	Provide culturally competent health care in a range of intercultural settings	Understand and appreciate the role of radio diagnostic in the development of healthy society	Students will demonstrate the ability to respond to a critical situation	Students will access the patient and have the ability to adapt to non-routine situations/ability to adjust exam for patient condition.	Demonstrate understanding of the principles and procedures of Biochemical, Hematological, Immunological, Microbiological and Parasitological Sciences as well as Blood Banking in laboratory investigation.	Students will follow radiation protection principles.
	Exhibit professional characteristics required by the radiologic technology profession.	a comprehensive understanding of critical analysis, research systems and methods and evaluative problem-solving techniques	Identify the physics basis in radiologic technology and medical imaging.	Memorize exposure factors for optimal radiographic techniques.						Students/graduates will exhibit involvement in educational advancement as a radiographer.	Integrate knowledge of various key disciplines and current Laboratory	Students will provide appropriate patient care.

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											method s availabl e to further their underst anding of the study, investig ation, diagnos is and monitor ing of human health and disease in clinical and researc h environ ments.	
B1	Integrate the concepts and principles of the basic and applied Medical Sciences to formulate and test hypothesis.	Apply appropriate patient positioning to produce a diagnostic radiographic image.	Formulate solutions after critically evaluation for problems in diagnostic radiography and medical imaging.	Provide the opportunity to development problem-solving and critical thinking skills	Identify and solve complex problems arising during the procedure of radio diagnostic procedure of the patients.	Perform multifarious expert activities such as positioning patients correctly and effectively for ideal imaging results	Undertake critical inquiry, synthesise information presented in the context of medical imaging and apply knowledge to improve health care outcomes.	Identify and solve complex problems arising during the procedure of radio diagnostic procedure of the patients.	Students will demonstrate competence in routine radiographic procedures.	Students will apply appropriate radiation protection practices	Integrate the concepts and principles of the basic and applied Medical Sciences to formula	Students will critique images to determine diagnostic quality.

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											te and test hypothe sis.	
B2	Use critical thinking and problem solving skills to make evidence-based decisions.	Utilize radiographic exposure factors to optimize image quality and minimize patient dose.	Analysis the radiography relevant information from a variety of sources.	Evaluation of radiographs for appropriate positioning and image quality.	Utilize modern tools and modalities in the arena of medical imaging technology for better outcomes.	Utilizing radiographic exposure factors to optimize image quality and minimize patient dosage and exposure to radiation	Adapt technique, patient care and clinical decision making to optimise health care delivery	Utilize modern tools and modalities in the arena of medical imaging technology for better outcomes.	Students will practice radiation protection	Students will apply appropriate positioning skills.	Use critical thinking and problem solving skills to make evidence-based decisions.	Students will perform non-routine procedures.
B3	Analyze and evaluate evidence-based information needed in Medical imaging practice.	Apply the principles of radiation protection to patient, self and others.	Experiment the diagnostic radiographic images to assess the normal and abnormal in relevant to QA standards.	Determine optimal exposure factors for different radiographic techniques			Engage in interprofessional practice in a variety of settings, especially in acute care and complex clinical settings. Undertake shared care roles and multidisciplinary team decision making related to medical imaging.				Analyze and evaluate evidence-based information needed in Laboratory Medicine practice.	

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C1	Execute quality management system and standard procedures in radiological technology practice.	Assess the processes required to produce diagnostic images for medical evaluation.	Manipulate the different medical imaging modalities professionally.	Modify techniques according to patients' clinical condition	Undertake Public Health care projects and camps for counseling society about safe use of radio diagnostic and imaging procedures	Effectively using various methods of medical imaging to take images of parts of patients' anatomies to detect injuries and possible diseases	Apply knowledge of the anatomy, physiology, pathology of body systems to the role of medical imaging for registration as a diagnostic radiographer role	Undertake Public Health care projects and camps for counseling society about safe use of radio diagnostic and imaging procedures	Students will demonstrate professionalism during their clinical experience.	Students will evaluate a radiograph for diagnostic quality.	Execute quality management system and biosafety procedures in laboratory practice.	Students will understand professional growth.
C2	Apply technical skills in using medical imaging devices, tools, and materials in radiological technology practice.	Integrate didactic and clinical course work in order to practice as competent entry-level technologists.	Apply the radiation protection and safety procedures related to imaging requests and international standards..	Appraise and evaluate image quality.	Understand and analyse the impact of radio diagnostic practices in a global, economic, environmental, and societal context	Use nuclear medicine to assist patients in the eradication of cancerous cells in radiation treatments	Apply knowledge of personal, patient and departmental radiation safety and protection	Conduct standardized radiological and imaging diagnostic procedure within the realm of ethical guidelines	Students will integrate a commitment to lifelong learning into their professional practice of radiologic technology.	Students will demonstrate the ability to maintain poise/calmness during tense clinical situations.	Apply technical skills in using laboratory equipment, tools, and materials in laboratory practice.	Students will demonstrate professional behavior.
C3	Prepare, process, interpret and present medical images using appropriate qualitative techniques.	Employ effective oral and written communication skills as practicing healthcare professionals.	Employ the medical imaging techniques including the QA procedures	Perform radiological images with high quality	Conduct standardized radiological and imaging diagnostic procedure within the realm of ethical guidelines	Exercise maximum caution and care in the use of radiation to maximize patient	Demonstrate an application of contemporary modalities and instrumentation to the clinical scenarios	Understand and analyse the impact of radio diagnostic practices in a global, economic, environmental			Prepare, process, interpret and present data using appropriate	

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			in clinical practice .			and occupational safety		, and societal context			qualitative and quantitative techniques, statistical programs, and spreadsheets for presenting data.	
C4	Utilize appropriate manual and automated techniques in radiological imaging investigations.		Perform the appropriate preparation and positioning of the various examinations to meet the needs of individual patient.								Utilize appropriate manual and automated techniques in Laboratory investigations.	
D1	Demonstrate written and oral communication skills with clinicians, patients, and support staff.	Apply principles of ethical and/or professional health practice appropriate to the discipline..	Communicate effectively with others, specially health team members.	Demonstrate written communication skills with clinicians, patients, and support staff	Graduates will possess critical acumen for continuously updating their knowledge through self-study or higher education and research	Counsel and comfort patients to whom they are attending	Communicate in oral and written forms to a range of audiences to provide effective health care practice as a Diagnostic Radiographer	Graduates will adapt to a diverse working environment and participate actively and take leadership in interdisciplinary and multidisciplinary	Students will employ effective oral communication skills.	Students will be able to orally relate/interrelate with patients.	Communicate effectively using appropriate scientific language orally and in writing.	Students will demonstrate oral communication skills.

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								ary health care communities.				
D2	Practice ethical and professional behaviors in the clinical setting.	Prepare the graduate for scientific research and observe ethical standards.	Administrate the different facilities and resources in radiography department.	Demonstrate oral communication skills with physicians, patients, and support staff	Graduates will adapt to a diverse working environment and participate actively and take leadership in interdisciplinary and multidisciplinary health care communities	Contribute a host of essential services to medical institutions everywhere	Be a reflective and ethical practitioner through engaging in continued professional development and upholding professional standards	Communicate effectively by oral, written, computing and graphical means.	Students will employ effective written communication skills.	Students/graduates will demonstrate proper communication skills with health team members.	Demonstrate ethical conduct with patients, colleagues and health care workers.	Students will demonstrate written communication skills.
D3	Recognize the need to obtain further education in the pursuit of life-long learning.	Take responsibility for the setting and achievement of group or individual outcomes and for the management.	Utilize appropriately the learning resource (library, IT, internet, etc).		Communicate effectively by oral, written, computing and graphical means		Show responsibility, self-awareness and leadership in the practice of diagnostic radiography	Graduates will possess critical acumen for continuously updating their knowledge through self-study or higher education and research.		Students/graduates will be able to demonstrate professional values in the clinical setting.	Engage in continuous education and long life learning.	
D4	Function effectively as an individual, as a member, or leader of a team engaged in appropriate activities to the										Participate in teamwork harmoniously and exhibit	

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	radiologic technology disciplines to accomplish a common goal.										collaboration with colleagues and other health care professionals.
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Annex- 2, Survey of PILOs for Similar Accredited Programs at National and International Universities

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Annex- 3, Survey of Number of Courses and Credit Hours of Similar Programs

University		21 September University		Sana'a university		University of Science and Technology - Yemen		King Abdulaziz university		Jordan University of Science and Technology		MAHSA University		Singapore Institute of Technology		GD Goenka University		University of Hartford		Marian University - Wisconsin		Average	
Total Courses and Cr. Hrs.		Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses
University Requirements	Compulsory	14	7	14	8	25	10	26	7	16	6	0	6	15	5	5	2	21	7	39	6	18	7
	Electives	0	0	0	0	0	0	0	0	9	3	0	0	0	0	0	0	0	0	0	0	1	0
	Percentage	9%	11%	10%	15%	17%	18%	16%	14%	16%	13%	0%	0%	6%	15%	3%	3%	17%	18%	21%	15%	12%	13%
Faculty Requirements	Compulsory	25	10	38	14	7	3	15	5	24	13	0	8	0	0	9	3	9	3	0	0	10	7
	Electives	0	0	0	0	0	0	5	2	0	0	0	0	0	0	0	0	7	2	0	0	1	0
	Percentage	15%	16%	26%	25%	5%	5%	12%	14%	16%	19%	0%	0%	0%	0%	5%	5%	13%	13%	0%	0%	7%	11%
Department Requirements	Compulsory	0	0	0	0	12	4	91	33	0	0	0	0	0	0	0	0	27	6	26	7	17	6
	Electives	0	0	0	0	0	0	--	--	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Percentage	0%	0%	0%	0%	8%	7%	55%	67%	0%	0%	0%	0%	0%	0%	0%	0%	21%	15%	14%	17%	11%	12%
	Compulsory	117	44	59	28	97	35	0	0	74	37	0	31	189	24	116	47	50	18	65	22	79	32
	Percentage	72%	70%	40%	51%	0%	64%	0%	0%	49%	20%	0%	0%	79%	71%	69%	81%	40%	45%	34%	54%	38%	51%

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Prof. Mojahed Measar



Program Requirements	Electives	0	0	0	0	0	0	0	0	14	7	0	0	6	1	2	1	0	0	0	0	2	1
	Percentage	0%	0%	0%	0%	0%	0%	0%	0%	9%	10%	0%	0%	3%	3%	1%	2%	0%	0%	0%	0%	1%	2%
	Graduation Project	2	1	2	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Percentage	1%	2%	1%	2%	1%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
	Summer Training	4	1	21	4	4	1	24	1	15	4	0	0	0	0	36	5	12	4	60	6	17	3
	Percentage	2%	2%	14%	7%	3%	2%	15%	2%	10%	6%	0%	0%	0%	0%	21%	9%	10%	10%	32%	15%	10%	6%
	Industrial Training	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Percentage	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Practical Skills	0	0	0	0	0	0	0	0	0	0	0	0	30	4	0	0	0	0	0	0	3	0
	Percentage	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13%	12%	0%	0%	0%	0%	0%	0%	1%	1%
Other Courses		0	0	15	1	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total		Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses		
		162	63	147	55	147	55	164	49	152	70	0	45	240	34	168	58	126	40	190	41		

nnex- 4, Comparison of Program Courses and Similar Programs Courses

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#	Current Program					Sana'a university					University of Science and Technology - Yemen					King Abdulaziz university					Jordan University of Science and Technology					MAHSA University				
	Course	Course Hours				Course	Course Hours				Course	Course Hours				Course	Course Hours				Course	Course Hours				Course	Course Hours			
		CH	L	T	P		C H	L	T	P		C H	L	T	P		C H	L	T	P		C H	L	T	P		C H	L	T	P
1	English 101	2	2			Islamic culture	1				General & Organic Chemistry	3	2		2	Mathematics	3				Arabic language	3				Imaging Physics				
2	Arabic 101	2	2			Introduction to computer science	1				General Physics	3	2		2	Physics	3				General biology	3				Patient Care in Professional Practice				
3	Islamic Culture	2	2			Biology	3				Biology	3	2		2	English I	3				General biology practical	1				Anatomy, Physiology and Pathology I				
4	National Culture	2	2			General & Organic Chemistry	3				1 English	4			8	Computer	3				General chemistry	3				Anatomy, Physiology and Pathology II				
5	Biophysics	3	2		2	English 1	4				culture Islamic	4	4			Statistics	3				General chemistry lab	1				Instrumentation & Image Processing I				
6	Medical Terminology	1	1			General physics	3				of holy Quran Skills & Recitation Tajweed	1			2	Chemistry	3				Computer skills	3				Instrumentation & Image Processing II				
7	General biology	3	2		2	Arabic language	1				Communication Skills	1	1			English II	3				English language 1	3				English for Academic Purpose				

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8	General and organic chemistry	3	2		2	National culture 1	1				Anatomy	3	2		2	Biology	3				Culture and University behavior	1				TITAS/ Malaysian Studies (U1)				
9	Medical information technology	2	2			Anatomy 1	3				Physiology	3	2		2	Physiology	2				Biochemistry	3				General Pathology				
10	English 102	2	2			Physiology 1	3				to Introduction radiologic sciences	2	2		-	Anatomy	3				Biochemistry (Lab)	1				Medical Imaging Procedures I				
11	Arabic 102	2	2			Information technology	1				Language 2 English	4	-		8	X-Ray Physics & Equipment	3				English language 2	3				Basic Pharmacology				
12	Arabic Israeli Conflict	2	2			English Language 2	4				Skills Computer	3	-		6	Computers & Imaging Modalities	3				Calculus (for Bio.Sci.Students)	3				Hubungan Etnik/ Bahasa Melayu Komunikasi 2 (U1)				
13	Introduction to radiologic technology	2	2			Introduction to radiologic sciences	2				Thinking Critical	1	1		-	Radiobiology & Radiation Protection	3				Military sciences	3				English for Academic Writing				
14	Anatomy 1	3	2		2	Radiation Physics 1	3				Physics 1 Radiation	3	2		2	Medical Ethics & Patient Care	2				General physics	3				Health Psychology				
15	Physiology 1	3	2		2	Medical terminology	2				Language Arabic	4	2		4	Islamic studies 1	2				Introduction to radiologic technology	1				Medical Imaging Procedures II				
16	Radiation physics 1	3	2		2	National culture 2	1				Radiographic Anatomy 1	3	2		2	Radiographic Anatomy	3				Gross anatomy and histology	3				Image Evaluation & Interpretation				

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17	Computer principles	3	2		2	Anatomy 2	3				Pathology	3	2		2	Nuclear Medicine Physics & Equipment	3				Human physiology	3				Instrumentation & Image Processing III				
18	Anatomy 2	3	2		2	Physiology 2	3				Physics 2 Radiation	3	2		2	Image Recording Quality Assurance & PACS	3				Human physiology lab	1				Radiation Biology & Safety				
19	Physiology 2	3	2		2	Pathology 1	3				Medical English	2	2			Radiographic Technique I	3				Biostatistics	2				First Aid and Basic Life Support				
20	Radiation physics 2	3	2		2	Radiation physics	3				Biochemistry	3	2		2	Radiographic Technique II	3				Physics of radiology	3				Clinical Placement Medical Imaging Procedures I				
21	Radiobiology	2	2			Radiobiology	2				Radiographic mathematics	2	2			Islamic studies II	2				University elective	3				Clinical Placement Medical Imaging Procedures IIA				
22	Radiographic mathematics	2	2			Radiographic mathematics	2				Fundamental to Electronics	2	1		2	Sectional anatomy	3				Pathology	3				Clinical Placement Medical Imaging Procedures IIB				
23	Electronics fundamentals	2	2			Fundamental to Electronics	2				Radiographic imaging	4	3		2	Ultrasound Physics and Equipment	3				Introduction to radiation biology and radiation protection	3				Entrepreneurship (U2)				

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24	Radiographic imaging principles	2	2			Radiographic imaging	3					Radiobiology	2	2			Radiographic Technique III	3					Digital image processing and analysis	1					Sectional Imaging Anatomy				
25	Pathology 1	3	2		2	Pathology 2	3					Cross Sectional Anatomy	3	2		2	Radiography Clinical Practice I	3					Digital image processing and analysis lab	1					Medical Imaging Procedures III				
26	Pathology 2	3	2		2	Radiation Protection	2					Protection Radiation	2	2		-	Nuclear Medicine Technique (I)	3					Principles of diagnostic imaging 1	2					Computed Tomography				
27	Radiation protection	2	2			Radiographic Technique 1	3					ethics Medical	1	1		-	Islamic Studies III	2					Principles of diagnostic imaging 1 lab	1					Radiographic Pathology				
28	Radiographic technique I	3	2		2	Introduction to Pharmacology	2					Radiographic Technique 1	5	3		4	Arabic Language 1	3					Peripheral osseous system radiography	2					Biostatistics				
29	Pharmacology	2	2			Care of patient in radiology department	2					Introduction to Pharmacology	1	1		-	Radiographic Technique IV	3					Peripheral osseous system radiography lab	1					Mammography				
30	Patient care in Radiology department	2	2			Medical Ethics	2					patient in Care of radiology department	1	1		-	Radiography Clinical Practice II	3					University elective	3					Comparative Religion (U3)				

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31	Ethics and professionalism for Radiologic technology specialists	2	2			Biochemistry	3					Radiographic Anatomy 2	3	2	2	Nuclear Medicine Technique II	3				Scientific research methods	1					Ultrasonography					
32	Biochemistry	3	2		2	Cross sectional anatomy	3					Radiographic Equipment	4	3	2	Computed Tomography I	3				Principles of diagnostic imaging 2	2					Digital Subtraction Angiography					
33	Cross sectional anatomy I	3	2		2	Radiographic Technique 2	3					Radiographic Technique 2	5	3	4	Ultrasonography I	3				Principles of diagnostic imaging 2 lab	1					Healthcare Management					
34	Radiographic technique II	3	2		2	Quality assurance in Radiology	3					Skills Leadership Development	1	1	-	-	Islamic Studies IV	2				Central osseous system radiography	2					Radionuclide Imaging				
35	Quality Assurance in radiology department	2	2			Computer application in Radiology	2					Assurance Quality in Radiology	2	2	-	-	Arabic Language 11	3				Central osseous system radiography lab	1					Professionalism and Ethics				
36	Computer application in radiology	2	2			Radiographic Equipment	3					Radiographic pathology	3	2	2	Radiographic Pathology	4				Radiographic surface anatomy	2					Dental Radiography					
37	Radiologic equipment's I	3	2		2	Clinical Practice 1	5					Computer Applications in Radiology	2	2	-	-	Radiographic Technique V	3				Radiographic surface anatomy lab	1					Research Methodology				

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38	clinical practice 1	4			12	Radiographic Pathology	3				Practice 1 Clinical	4	-	12	-	Radiography Clinical Practice III	3				Patient care in radiology department	2				Community Work 2				
39	Radiographic pathology I	3	2		2	Nuclear medicine physics	2				Research Methodology	2	2	-	-	Computed Tomography (II)	3				Patient care in radiology department lab	1				Comparative Medical Imaging				
40	Radiographic pathology II	3	2		2	Ultrasound physics	3				medicine Nuclear physics	2	2	-	-	Magnetic Resonance Imaging (I)	3				Clinical training 1	3				Magnetic Resonance Imaging				
41	Radiologic equipment's II	3	2		2	Research Methodology	3				physics Ultrasound	3	2		2	Student Project	2				Ethics in applied medical careers	1				Research Project I				
42	Cross sectional anatomy II	3	2		2	Biostatistics	3				Biostatistics	4	2	1	1	Radiotherapy Physics and Equipment	3				Radiographic cross sectional anatomy	2				Clinical Placement Medical Imaging Procedures III				
43	Nuclear medicine physics	2	2			Clinical Practice 2	5				Clinical Practice 2	3	-	9	-	Radiographic Technique VI	3				Radiographic cross sectional anatomy	1				Research Project II				
44	clinical practice II	4			12	Special Radiographic procedures	3				Special Radiographic procedures	2	2	-	-	Radiography Clinical Practice IV	3				Radiologic pathology	3				Clinical Placement IV				

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45	Biostatics	3	2		2	Advance radiographic technique	3				Advance radiographic technique	1	1	-	-	Ultrasonography (II)	3				Mammography	1				Clinical Placement V				
46	Research methodology	2	2			CT and MRI physics	3				MRI & CT scan physics	2	2	-	-	Magnetic Resonance Imaging (II)	3				Fluoroscopic imaging	2								
47	Ultrasound physics	3	2		2	Directed study	2				study Direct	1	-	-	2	Radiology Administration	2				Fluoroscopic imaging lab	1								
48	CT & MRI physics	3	2		2	Management in radiology department	2				in Management radiology department	2	2	-	-						Dental radiography	1								
49	Nuclear medicine technique	2	2			Clinical Practice 3	5				Practice 3 Clinical	4	-	12	-						Dental radiography lab	1								
50	Special medical imaging procedures	3	2		2	CT and MRI technique	3				MRI & CT scan & equipment technique	3	2	-	2						Ultrasound	3								
51	Clinical practice III	4			12	Nuclear medicine e Technique	2				medicine Nuclear & equipment Technique	3	2	-	2						Clinical training 2	3								

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52	Case study's and seminars in radiology	2	2			Ultrasound technique	3				Ultrasound & equipment technique	3	2	-	2					Quality management in medical imaging	2							
53	Management in radiology department	2	2			Graduation Project	2				Project Graduation	1	-	3	-					Quality management in medical imaging lab	1							
54	Advance medical imaging procedures	1	1			Radiographic Film Interpretation	2				Practice 4 Clinical	4	-	12	-					Vascular imaging	2							
55	Ultrasound technique	3	2		2	Clinical Practice 4	5													Vascular imaging lab	1							
56	CT & MRI technique	3	2		2															Magnetic resonance imaging	2							
57	Graduate project	2	2		2															Magnetic resonance imaging lab	1							
58	Clinical practice IV	4			12															Computed tomography	2							
59	Radiographic film interpretation	2	2																	Computed tomography lab	1							

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Annex- 5, Coding System

Program		Level		Theme Code		No. of the course in the list	
AAA		1		0		1	

Themes	Theme Code	No.	Course Title	Course Code	Credit Hours				Prerequisites/ Co-requisites	Level/Term
					Cr. Hrs.	L	T	P		
University Requirements	0	1.								
		2.								
		3.								
		4.								
		5.								
		6.								
		7.								
Total										



Themes	Theme Code	No.	Course Title	Course Code	Credit Hours				Prerequisites/ Co-requisites	Level/Term
					Cr. Hrs.	L	T	P		
Faculty Requirements	1	1.								
		2.								
		3.								
		4.								
		5.								
		6.								
		7.								
		8.								
		9.								
		10.								
		11.								
Total										

Themes	No.	Course Title	Credit Hours	Level/Term
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	Theme Code			Course Code	Cr. Hrs	L	T	P	Prerequisites/ Co-requisites	
Department Requirements	2	1.								
		2.								
		3.								
		4.								
		5.								
		6.								
		7.								
		8.								
		9.								
		10.								
		11.								
Total										

Themes	Theme Code	No.	Course Title	Course Code	Credit Hours				Prerequisites/ Co-requisites	Level/Term
					Cr. Hrs	L	T	P		
General Courses (Program Courses)	3	1.								
		2.								
		3.								
		4.								
		5.								
		6.								
		7.								
		8.								
		9.								

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Themes	Theme Code	No.	Course Title	Course Code	Credit Hours				Prerequisites/ Co-requisites	Level/Term
					Cr. Hrs	L	T	P		
		10.								
		11.								
		12.								
		13.								
		14.								
		15.								
		16.								
		17.								
		18.								
		19.								
		20.								
		21.								
		22.								
		23.								
		24.								
		25.								
		26.								
		27.								
		28.								
		29.								
		30.								
		31.								
		32.								
Total										

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Annex- 6, Matrix of Mapping Program PILO's with Courses

#	Course Code	Course Title	Program Intended Learning Outcomes (PILOs)													
			A. Knowledge & Understanding			B. Intellectual Skills			C. Practical Skills				D. Transferable Skills			
			A1	A2	A3	B1	B2	B3	C1	C2	C3	C4	D1	D2	D3	D4
1		Arabic 101	✓	✓	✓		✓		✓				✓	✓	✓	
2		Arabic 102	✓	✓	✓		✓		✓				✓	✓	✓	
3		English 101	✓	✓	✓		✓		✓				✓	✓	✓	
4		English 102	✓	✓	✓		✓		✓				✓	✓	✓	
5		Islamic Culture			✓				✓					✓		
6		National Culture			✓				✓					✓		✓
7		Arabic Israeli Conflict												✓		
8		Medical Terminology	✓	✓	✓	✓							✓			
9		General biology	✓	✓		✓					✓				✓	



10		General and organic chemistry	✓	✓		✓					✓				✓	
11		Medical information technology		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
12		Computer principles		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
13		Pharmacology	✓	✓	✓	✓	✓			✓					✓	
14		Biochemistry	✓	✓		✓		✓			✓				✓	
15		Fundamentals of Nursing	✓	✓	✓	✓			✓					✓	✓	
16		Biostatistics	✓		✓	✓	✓	✓	✓						✓	
17		Research methodology	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
18		Biophysics	✓	✓		✓		✓		✓					✓	
19		Introduction to radiologic technology	✓	✓	✓	✓	✓		✓			✓		✓	✓	
20		Anatomy 1	✓	✓	✓	✓		✓			✓	✓			✓	
21		Physiology 1	✓	✓	✓	✓	✓	✓			✓	✓			✓	
22		Radiation physics 1	✓	✓	✓	✓	✓	✓		✓	✓	✓			✓	
23		Anatomy 2	✓	✓	✓	✓		✓			✓	✓			✓	
24		Physiology 2	✓	✓	✓	✓	✓	✓			✓	✓			✓	
25		Radiation physics 2	✓	✓	✓	✓	✓	✓		✓	✓	✓			✓	
26		Radiobiology	✓	✓	✓	✓	✓			✓		✓			✓	

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27		Radiographic mathematics		✓		✓	✓	✓	✓		✓				✓	✓
28		Electronics fundamentals		✓	✓	✓	✓	✓		✓	✓	✓			✓	✓
29		Radiographic imaging principles	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	
30		Pathology 1	✓	✓	✓	✓	✓	✓			✓	✓			✓	
31		Pathology 2	✓	✓	✓	✓	✓	✓			✓	✓			✓	
32		Radiation protection		✓	✓		✓		✓	✓		✓		✓	✓	
33		Radiographic technique I	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	
34		Patient care in Radiology department	✓	✓	✓	✓			✓					✓	✓	
35		Ethics and professionalism for Radiologic technology specialists			✓	✓			✓		✓	✓	✓	✓	✓	✓
36		Cross sectional anatomy I	✓	✓	✓	✓	✓	✓			✓	✓			✓	
37		Radiographic technique II	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	
38		Quality Assurance in radiology department		✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓

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39		Computer application in radiology		✓	✓	✓	✓	✓		✓	✓	✓			✓	✓
40		Radiologic equipment's I	✓	✓	✓	✓	✓	✓		✓		✓			✓	✓
41		clinical practice 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
42		Radiographic pathology I	✓	✓	✓	✓	✓	✓			✓	✓			✓	
43		Radiographic pathology II	✓	✓	✓	✓	✓	✓			✓	✓			✓	
44		Radiologic equipment's II	✓	✓	✓	✓	✓	✓		✓		✓			✓	✓
45		Cross sectional anatomy II	✓	✓	✓	✓	✓	✓			✓	✓			✓	
46		Nuclear medicine physics		✓		✓	✓	✓		✓		✓			✓	
47		clinical practice II	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
48		Ultrasound physics		✓		✓	✓	✓		✓		✓			✓	
49		CT & MRI physics		✓		✓	✓	✓		✓		✓			✓	
50		Nuclear medicine technique	✓	✓	✓	✓	✓	✓		✓	✓	✓			✓	
51		Special medical imaging procedures														
52		Clinical practice III	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
53		Case study's and seminars in radiology	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓

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54		Management in radiology department			✓	✓	✓	✓	✓				✓	✓	✓	✓
55		Advance medical imaging procedures	✓	✓	✓		✓	✓		✓	✓	✓			✓	
56		Ultrasound technique	✓	✓	✓		✓	✓		✓	✓	✓			✓	
57		CT & MRI technique	✓	✓	✓		✓	✓		✓	✓	✓			✓	
58		Clinical practice IV	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
59		Radiographic film interpretation	✓		✓	✓	✓	✓			✓		✓	✓	✓	✓
60		Radiologic therapy	✓		✓	✓	✓			✓		✓			✓	
61		Radiology reporting	✓	✓	✓		✓	✓		✓			✓	✓	✓	✓
62		Graduate project	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
63		Internship	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Head of Department

Quality Unit

Dean of the Faculty

Center of Development
& Quality Assurance

Rector

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Alkubati

Dr. Fadl Shujaa Al-deen

prof. Abdulsalam Dallaq

Dr.Mohmmmed Alshamahy

Prof. Mojahed Measar



Annex- 7, CVs for the Preparation Committee

Attached separately.

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Approved by

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