Ministry of Higher Education and Scientific Research

Oversight and Scientific Evaluation Authority

Quality Assurance and Academic Accreditation

Department Accreditation Section

Description Guide Academic Program and course

2024

Academic Program Description Template

- **University Name:** Uurk University
- **College/Institute:** College of Medical and Health Technologies
- **Scientific Department:** Department of Radiological Techniques
- **Academic or Professional Program Name:** Bachelor in Radiological Techniques
- **Final Degree Title:** Bachelor in Radiological Techniques
- **Study System:** Courses in the first, second, and third years
- **Date of Description Preparation 10/10/2024**
- **Date of File Completion:** 10/10/2024

Signature:
Deputy Dean Academic for Affairs:
Dr. Faiza Hazem Hassan
Date: 16/6/2025

Signature:
Head of Department. Prof. Dr. Samiya Sabea Khamees
Date: 16 - 6 - 2025

File Reviewed By:
Quality Assurance and University Performance Division
Director of the Quality Assurance and University Performance Division:
Dr. Hussein Arrak Majeed Alzubaidi
Date: 20-6-2025
Signature:

Approval of the Dean

Introduction:

The educational program is considered a coordinated and organized package of courses that include procedures and experiences organized according to study terms, primarily aimed at building and refining graduates' skills, making them capable of meeting the labor market's requirements. It is reviewed and evaluated annually through internal or external audit procedures and programs, such as the external examiner program. The academic program description provides a brief summary of the program's main features and its courses, indicating the skills that students are expected to acquire based on the program's objectives. The importance of this description lies in its being the foundation for obtaining program accreditation, which involves contributions from teaching staff under the supervision of scientific committees in the academic departments. This second version of the guide includes a description of the academic program after updating its components in light of the recent developments in the educational system in Iraq, which includes a description of the academic program in its traditional form (annual, semester) in addition to adopting a general description of the academic program according to the memorandum from the Department of Studies, T. M3/2906 on 3/5/2023 for programs that primarily follow the Bologna process. In this regard, we must emphasize the importance of writing descriptions for academic programs and courses to ensure the effective conduct of the educational process.

Concepts and Terms:

- **Academic Program Description:** Provides a concise summary of its vision, mission, and objectives, including a precise description of the targeted learning outcomes according to specified learning strategies.

- **Course Description:** Provides a concise summary of the main features of the course and the expected learning outcomes for the student, demonstrating whether they have maximized the benefits from the available learning opportunities. It is derived from the program description.
- **Program Vision:** An ambitious picture of the program's future to be developed, inspiring, and practical, and applicable.
- **Program Mission:** Clearly outlines the objectives and necessary activities to achieve them briefly, as well as defining the development pathways and directions of the program.
- **Program Objectives:** Statements that describe what the academic program intends to achieve over a specified period, which must be measurable and observable.
- **Curriculum Structure:** All the courses/subjects included in the academic program according to the adopted learning system (semester, annual, Bologna track), whether required (ministry, university, college, and scientific department) with the number of study units.
- **Learning Outcomes:** A set of coherent knowledge, skills, and values that the student acquires after successfully completing the academic program, which should be defined for each course in a way that achieves the program's objectives.
- **Teaching and Learning Strategies:** Strategies used by faculty members to enhance student learning and teaching. They are plans followed to achieve learning objectives, describing all classroom and extracurricular activities to achieve the program's learning outcomes.

1. Program Vision Leading in technical medical education and striving to develop research methods and academic skills while elevating students' aspirations to reach the peak through instilling a sense of teamwork and collaboration, enabling them to analyze and deduce various patient cases, and encouraging them to actively contribute to building, developing, and serving the community of science and knowledge.

2. Program Mission To provide distinguished healthcare and medical services to the local community through expertise and skills in the field of radiology and medical imaging, offering accurate scientific medical interpretations resulting from advanced medical technologies and establishing communication between all relevant parties and establishing continuous education. The Department of Radiological Techniques and Ultrasound at the College of Medical and Health Technologies undertakes the qualification and training of its students to be leading providers of radiological medical services in the future, serving the local community as well as engaging in research and scientific activity. We aspire to achieve excellence and leadership at the local level in education and general medical services by qualifying a skilled professional cadre in the primary medical professions in the sciences of radiology and medical imaging.

3. Program Objectives The Department of Radiological Techniques and Ultrasound at the College of Medical and Health Technologies aims to achieve

6. Program Structure .1				
* Notes	Percentage	Credit Units	Number of Courses	Program Structure
Essential		22	11	Institution Requirements
Essential		22	11	College Requirements
		118	35	Department Requirements
			1	Summer Training
				Others

It may include notes on whether the course is core or elective.*

- **Program Description**

7. Program Description .2				
Credit Hours		Credit Hours	Course Code	Year/Level
Practical	Theortical			
3	2	Anatomy of the Skeletal System	GAN21101	First year
3	2	General Physics	GPH21101	
3	2	General Physiology	PHY21101	
3	2	Biology	BIY21101	
3	2	General Chemistry	GEC21101	
2	1	Principles of	COM21101	

		Computer 1		
-	2	Human Rights and Democracy	HRT21101	
-	2	English Language	ENG21101	
3	2	Anatomy of Body Systems	ABS21102	
3	2	Atomic Physics	PHA21102	
3	2	Functional Physiology	SPH21102	
4	2	Radiobiology	BIB21102	
4	2	Nursing Fundamentals	NUR21102	
2	1	Principles of Computer 1 (duplicate)	COM21102	
-	2	Medical Terminology	MTE21102	
-	2	Arabic Language	GAR21102	
5	2	Techniques of Traditional Radiographic Devices 1	CRA21201	

				Second level
5	2	Radiographic Imaging Techniques for Upper Extremities	RTE21201	
5	2	Radiographic Imaging Techniques for Upper Extremities	SRA21201	
4	2	Special Radiographic Examinations for the Digestive System and Bones	RAN21201	
3	2	Radiographic Anatomy of the Head and Upper Extremities	FUR21201	
3	2	Fundamentals of Radiation Physics	FUP21201	
-	2	Crimes of the Ba'ath Regime in Iraq	CRB21201	
2	1	Computer Applications 1	COM21201	
5	2	Techniques of	COT21202	

		Computed Tomography Equipment		
5	2	Radiographic Imaging Techniques for Lower Extremities	RAT21202	
5	2	Special Radiographic Examinations for the Biliary and Reproductive Systems	SPR21202	
4	2	Radiographic Anatomy of the Lower Extremities	RAL21202	
3	2	Physics of Computed Tomography	PCT21202	
2	1	Computer Applications 2	COM21202	
-	2	Arabic Language (duplicate)	ARL21202	
4	2	Techniques of Magnetic Resonance Imaging	EQM21301	
4	2	Radiographic	RSC21301	**Third level**

		Imaging Techniques for the Head and Spine		
4	2	Special Radiographic Examinations for the Head, Breast, and Respiratory System	SPH21301	
2	2	Radiographic Anatomy of the Brain and Spine	RAD21301	
2	2	General Pathology	GRP21301	
3	1	Physics of Magnetic Resonance Imaging	PMR21301	
3	2	Biological Radiation Risks	BRH21301	
2	1	Computer Applications 1 (duplicate)	CAP21301	
4	2	Techniques of Sonar Devices	UET21302	
4	2	Radiographic Imaging Techniques for the Chest and Abdomen	rta21302	

4	2	Special Radiographic Examinations for the Cardiovascular and Nervous Systems	SRP21302	
2	2	Radiographic Anatomy of the Chest and Abdomen	RAT21302	
2	2	Functional Pathology	SYP21302	
3	1	Physics of Ultrasonic Waves	PHU21302	
2	1	Computer Applications 2 (duplicate)	COM21302	

8. Expected Learning Outcomes for the Program .3

Knowledge

1. Gaining knowledge and understanding of important techniques used in radiography.
2. Acquiring knowledge and intellectual understanding of human physiology.
3. Familiarizing with radiographic equipment and maintenance methods.

Skills

1. The student should be able to complete all procedures related to radiographic examinations.

2. The student should be able to use the laboratory devices related to radiographic examinations and maintain them.
3. The student should be able to solve problems related to radiographic examinations.

Values

1. The student should interact during the lecture.
2. The student should listen attentively to the explanation.
3. The student should engage and contribute to extracurricular activities.
4. The student should learn to act professionally.
5. The student should learn methods of human communication.

9.Teaching and Learning Strategy .4

Teaching students the fundamentals related to radiographic examinations and practical applications in radiology laboratories through:

1. Developing modern, globally recognized teaching curricula.
2. Utilizing scientific films.
3. Training students using methods that simulate real-life scenarios.

10. Assessment Methods

1. Daily tests.
2. Midterm exams.
3. Weekly reports for practical experiments.
4. Daily attendance and participation in class.

11. Faculty

Faculty Members

Faculty Preparation		Requirements/Special **(if any)** Skills	Specialization		Academic Rank
Lecturer	Staff		Specific	General	

	/				Microbiology	**Assist. Professor Dr. Samia Sabaa Khamees**
	/			Diagnostic Radiology		**Assistant Professor Dr. Abbas Khalid Abbas**
	/			Physiology and Pharmacology	Veterinary	**Doctor Laith Sadiq Ghali Saad**
	/			General Physics	Physics	**Assistant Professor Fatima Iyad Raghib**
	/			English Language Literature		**Assistant Professor Zahra Naji Abdul Amir**
	/			Diagnostic Radiology (repeated)	General Medicine	**Assistant Professor Ban Moussa Ansif**
	/			Microbiology	Veterinary Medicine	**Assistant Professor Mudar Najm Abdul**
	/			Radiologic Technology	Technician	**Technician Karim Mahmoud Hassan**

Professional Development
Orientation for New Faculty Members
1. Discipline at work and not procrastinating on assigned tasks. 2. Commitment to the schedules for lectures, examinations, and the educational process. 3. Encouragement to complete scientific research. 4. Managing the classroom with smoothness and calm .4
1. Professional Development for Faculty Members Preparing the Course Syllabus for Each Subject by the Instructor
2. Careful monitoring of the program .1 3. Preparing questions and discussions and evaluating students based on participation .2 4. Participation in scientific activities related to continuing education. .3

10. Admission Criteria .5
A student is accepted into the college through the central admission process, according to the requirements of the Ministry of Higher Education and Scientific Research.
11. Key Sources of Information about the Program .6
1. Faculty members in the college 2. Lectures by instructors 3. Complete curriculum 4. Scientific library at the college 5. Electronic library 6. Textbooks

7. Scientific research

12. Program Development Plan

To develop and establish specialized scientific laboratories so that students can access the latest modern technologies.

Program Skills Matrix

Required Learning Outcomes of the Program												•			
Values				Skills				Knowlege				Required or Elective	Course Code	Course Code	Year / Level
ج4	ج3	ج2	ج1	ب4	ب3	ب2	ب1	أ4	أ3	أ2	أ1				
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Anatomy of the Skeleton	GAN21101	
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	General Physics	GPH21101	
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	General Physiology	PHY21101	First
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Biology	BIY21101	

√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	General Chemistry	GEC21101	
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Computer Fundamentals 1	COM21101	
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Human Rights and Democracy	HRT21101	
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	English Language	ENG21101	
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Anatomy of Systems	ABS21102	
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Atomic Physics	PHA21102	

√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Functional Anatomy	SPH21102	
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Radiobiology	BIB21102	
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Nursing Foundations	NUR21102	
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Computer Fundamentals 2	COM21102	
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Medical Terminology	MTE21102	
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Arabic Language	GAR21102	

√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Techniques of Conventional Radiographic Devices	CRA21201	**Second**
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Radiographic Imaging Techniques for Upper Extremities	RTE21201	
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Special Radiological Examinations for the Digestive System and Bones	SRA21201	
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Radiological Anatomy of the Head and	RAN21201	

												Upper Extremities		
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Basics of Radiological Physics	FUR21201
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Fundaentals of Radiation Protection	FUP21201
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Crimes of the Ba'ath Regime in Iraq	CRB21201
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Computer Applications 1	COM21201
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Techniques of	COT21202

												Computed Tomography Imaging Devices		
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Radiographic Imaging Techniques for Lower Extremities	RAT21202
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Special Radiological Examinations for the Biliary and Reproductive Systems	SPR21202
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Radiological Anatomy of the Lower	RAL21202

													Extremities		
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Physics of Computed Tomography	PCT21202	
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Computer Applications 2	COM21202	
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Arabic Language	ARL21202	
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Techniques of Magnetic Resonance Imaging Devices	EQM21301	
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental		RSC21301	

												Radiographic Imaging Techniques for the Head and Spine		**Third**
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Special Radiological Examinations for the Head, Breast, and Respiratory System	SPH21301
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Radiological Anatomy of the Brain and Spine ١	RAD21301
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	General Pathology	GRP21301

√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Physics of Magnetic Resonance Imaging	PMR21301	
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Biological Risks of Radiation	BRH21301	
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Computer Applications 1	CAP21301	
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Techniques of Sonar Devices	UET21302	
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Radiographic Imaging Techniques for the Chest and Abdomen	rta21302	

√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Special Radiological Examinations for the Heart, Blood Vessels, and Nervous System	SRP21302	
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Radiological Anatomy of the Chest and Abdomen	RAT21302	
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Functional Pathology	SYP21302	
√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Physics of Ultrasound Waves	PHU21302	

	√	√	√	√	√	√	√	√	√	√	√	√	Fundemental	Computer Applications 2	COM21302	

to be provided

First and Second Semesters / First Year

First and Second Semesters / Second Year

First and Second Semesters / Third Year

First and Second Semesters / Fourth Year

Date of Course Description Preparation: .5

Please place a checkmark in the boxes corresponding to the individual learning outcomes from the program subject to evaluation
14/4/2025

Course Description Template

1. Course Title .1
Radiologic Technology
2. Course Code .2
3. Semester / Academic Year . .3
First and Second Semesters / First Year First and Second Semesters / Second Year First and Second Semesters / Third Year First and Second Semesters / Fourth Year
4. Date of Course Description Preparation .4
2025/4/14
5. Available Attendance Formats: .1
Theoretical and Practical
6.Total Study Hours / Total Units:6.6 .2
First Year: 66 total study hours / 44 total units Second Year: 79 total study hours / 49 total units • Third Year: 71 total study hours / 47 total units • Fourth Year: 66 total study hours / 40 total units •
8.Course Coordinator(s) (if there is more than name used, mention it)
Email : Name;
4.Course Objectives:

To establish the theoretical knowledge and practical skills necessary for building a successful professional career. To graduate qualified specialists equipped with knowledge and skills. To efficiently operate radiology and medical imaging equipment. To perform various types of radiological examinations	Course Objectives
5.Teaching and Learning Strategies	
Using lectures delivered through direct communication with students, supported by PowerPoint slides, whiteboard explanations, specialized educational	Strategy

laboratories, and short scientific video clips.	

6.Course Structure

Assessment Method	Education Method	Unit/Topic Title	Intended Learning Outcomes	Hours	Week
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Skeletal Anatomy	1. Identify surface anatomy, anatomical positions, body planes, and the general skeletal anatomy of the upper limbs. 2. Understand the general skeletal anatomy of the thoracic region. 3. Understand the general anatomy of the vertebral column.	5	15
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	General Physics	1. Learn standard units of measurement. 2. Define electricity and magnetism. 3. Understand gravity and kinetic energy. 4. Determine the relationship between work and energy.	5	15
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	General Physiology	1. Understanding the main physiological concepts of cells and their components. 2. Understanding the factors regulating balance in the human body. 3. Understanding the physiological mechanisms of blood flow, gas exchange, and gastric secretions. .4	5	15
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Biology	1.Understanding the levels of organization among living organisms. 2.Being able to recognize and describe the	5	15

			morphology of cells and their components. 3.Understanding the structure of DNA and its role .1		
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	General Chemistry	1. Introducing the student to the science of chemistry. 2. How to handle chemical materials. 3. For detecting, separating, and preparing standard materials. 4. Skills for developing algorithmic problem-solving (mathematics). 5. Analyzing concepts and structures. 6. Writing reports and objective statements. 7. Using laboratory safety equipment.	5	15
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Computer Principles 1	Equipping the student with skills to handle basic office applications, create files, and office documents. Utilizing the operating system, as well as the fundamentals of working in a digital environment. Providing the student with knowledge in managing and using various computer .applications.	3	15
Theoertical tests for the Reports	Theoretical	Human Rights and Democracy	1.Chapter One: The Conceptual Framework of Human Rights 2. Chapter One:	2	15

		ة	Causes of Human Rights Violations 3. Chapter Two: Human Rights in the Civilization of Mesopotamia 4. Chapter Three: Rights in International and National Charters 5. Chapter Three: Human Rights in National Charters		
Theoertical tests for the Reports	Theoretical	English Language	The Basic Principles of the English Language	2	15
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Anatomy of Body Systems	1.The general anatomy of the central nervous system. 2. The general anatomy of the respiratory system. 3.The general anatomy of the cardiovascular system. 4,The general anatomy of the digestive system. 5.The general anatomy of the liver, biliary system, pancreas, and spleen. 6.The general anatomy of the urinary system. .1	5	15
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Atomic Physics	1.Atomic and Nuclear Structure. 2. Types of Radiation. 3. Classification of Radiation. 4.Electromagnetic Energy. 5.Photon Attenuation Coefficients. 6.Electron Interactions with Matter.	5	15
Practical tests Theoertical tests for	Theoretical&	Functional	1.Physiology of the	5	15

the Reports	Practical	Physiology	Cardiovascular System. 2.Physiology of the Respiratory System. 3.Physiology of the Digestive System. 4.Physiology of the Pancreas and the Small and Large Intestines. 5.Physiology of the Liver and Gallbladder. .1		
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Radiobiology	1.Introduction to Radiobiology, Radiation Chemistry. 2.Radiation-Induced Damage and DNA Damage Response. 3.Cell Death Following Radiation. 4. Molecular Repair of DNA Damage. 5.Cell Survival Curves. 6.Types of Cellular Damage Induced by Radiation. .1	6	15
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Nursing Foundations	1.Nursing: Its Importance and Evolution in Societies, Qualifications of Nurses. 2.Methods for Measuring Temperature, Characteristics of Heartbeat, and Measurement Sites. 3.Types of Urinary Catheters and Enemas. 4.Gastric Lavage and Artificial Nutrition. .1	6	15
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Computer Principles 2	1.Microsoft Word 2010: Running the Program. 2.Interface of Microsoft Word 2010. 3.File Tab, Home Tab. 4Page Layout Tab,	3	15

			View Tab. 5.Group of Illustrations. .1		
Theoertical tests for the Reports	Theoretical	Medical Terminology	1.Basic Elements of Medical Terms. 2.Suffixes. 3.Prefixes. 4.Roots, Word Endings, Cases. 5.Terms Related to Body Structure. 6.Terms Related to the Integumentary System. 7.Terms Related to the Digestive System. 8.Terms Related to the Respiratory System. 7.Terms Related to the Skin and Appendages. 8.Terms Related to the Cardiovascular System. 9.Terms Related to Blood, Lymph, and the Immune System. 10.Terms Related to the Musculoskeletal System. 11.Terms Related to the Endocrine System. 12.Terms Related to Special Senses. 13.Terms Related to Oncology. .1	2	15
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Techniques of Conventional Radiographic Devices	1.Identifying the Components of the Control Unit for the X-ray Imaging System. 2.Explaining the Operation of the High Voltage Generator. 3.Identifying the Basic Components of the X-ray Tube. 4.Explaining Important Techniques Used in	7	15

			Radiography. 5.Identifying Methods for Controlling Scatter in the X-ray Imaging System.		
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Radiographic Imaging Techniques for Upper Limbs	Teaching students how to properly position the patient for imaging to best visualize diseases in the upper extremities.	7	15
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Special Radiographic Examinations for the Digestive System and Bones	Teaching students how to use contrast media and perform radiographic examinations of the digestive system and bones.	7	15
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Radiographic Anatomy of the Head and Upper Limbs	Objectives: By the end of the course, the student will be able to understand: 1. The general anatomy and radiographic features of the skull bones. 2. The general anatomy and radiographic features of the facial bones. 3. The general anatomy and radiographic features of the nasal cavity and paranasal sinuses.	6	15
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Fundamentals of Radiological Physics	1. Explaining the Method of Producing Tube Voltage. 2. Identifying the Effects of Heating and Cooling on the X-ray Tube. 3. Explaining Methods for Producing X-rays. 4. Mentioning the Interactions of X-	5	15

			rays. .5		
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Fundamentals of Radiological Physics	1. Explains the basic concepts of ionizing radiation. 2. Identifying international measurement units. 3. Listing principles of SI radiation protection and units. 4. Explaining the meaning of dose limits and naming the ALARA concept, as well as the recommended dose limits for radiation workers and the general public. .5	5	15
Theoertical tests for the Reports	Theoretical& Practical	Fundamentals of Radiological Physics	1. Introducing students to the crimes of the Ba'ath regime. 2. Distinguishing between the concept and types of crimes. 3. Clarifying the terminology and language. 4. Identifying the categories of crimes. 5. Recognizing types of international crimes. 6. Familiarizing with the decisions issued by the criminal court. 7. Identifying psychological and social crimes and the prominent violations of the Ba'ath Party. 8. Understanding	2	15

			psychological crimes. 9. Identifying the mechanisms of psychological crimes. .10		
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Fundamentals of Radiological Physics	1. Introduction to Excel, its benefits, specifications, concept, and operation method. 2. Familiarization with the main screen, its components, tools, and operation method. 3. Understanding the cell, basic data types, and how to input them. 4. How to save a workbook file, close the file, and exit the program. 5. Opening a saved file, entering data, performing basic calculations, and cell formatting methods. 6. Understanding methods for data collection or groups of cells in different forms and data sorting.	5	15
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Fundamentals of Radiological Physics	1. Listing and describing the different generations of computed tomography (CT)	7	15

			systems, linking the components of the CT system to their functions. 2. Discussing image reconstruction through interpolation, back projection, and iteration. 3. Explaining spiral CT and multi-detector computed tomography (MDCT). 4. Describing the characteristics of the image matrix in computed tomography. .5		
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Fundamentals of Radiological Physics	Teaching students ل how to position the patient in a specific manner for imaging to best visualize diseases of the lower extremities.	7	15
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Fundamentals of Radiological Physics	To teach students how to perform radiographic examinations of the biliary and reproductive systems	7	15
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Fundamentals of Radiological Physics	By the end of the course, the student will be able to understand: 1. General anatomy and radiographic features of the lower extremities. 2. General anatomy and radiographic features of the joints of the lower	6	15

			extremities. 3. General anatomy and radiographic features of the arterial blood supply of the lower extremities as well as venous drainage. .4		
P Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Fundamentals of Radiological Physics	1. Describing and explaining the basic physics of beam projection. 2. Describing the method of obtaining the scan slice, the step, and the general characteristics of the datasets produced. 3. Describing the method of acquiring spiral/helix volume and the general characteristics of the dataset produced. 4. Describing and explaining the general concept of the back projection method for image reconstruction .5	5	15
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Fundamentals of Radiological Physics	1. The statistical program SPSS: its concept, operation, and steps for data analysis. 2. Components of the main screen, data entry, types of data (direct and computed), saving and retrieving files.	5	15

			3. Sorting and rearranging data, determining statistical procedures, inserting a variable or case, merging files. 4. Descriptive analysis: statistical summary of data, exploring data, reports by row or column. 5. Comparing means, comparison between variables, linear regression. 6. Conducting tests for hypotheses such as the Chi-squared test. 7. Applications of quality control. .8		
Theoertical tests for the Reports	Theoretical	Fundamentals of Radiological Physics	1. The statistical program SPSS: its concept, operation, and steps for data analysis. 2. Components of the main screen, data entry, types of data (direct and computed), saving and retrieving files. 3. Sorting and rearranging data, determining statistical procedures, inserting a variable or case, merging files. 4. Descriptive analysis: statistical	2	15

			summary of data, exploring data, reports by row or column. 5. Comparing means, comparison between variables, linear regression. 6. Conducting tests for hypotheses such as the Chi-squared test. 7. Applications of quality control. .8		
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Fundamentals of Radiological Physics	1.Explaining the concepts of spatial characterization. 2.Identifying the main control elements in the MRI operating control unit. 3.Describing quality and artifacts. 4.Listing and explaining important MR imaging techniques and pulse sequences.	6	15
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Fundamentals of Radiological Physics	To teach students how to position the patient in a specific manner for imaging to best visualize diseases of the head and chest	6	15
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Fundamentals of Radiological Physics	Familiarizing students with the basic concepts of how to perform radiographic examinations of the head, breast, and respiratory system.	6	15
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Fundamentals of Radiological Physics	student will be able to lerstand the general tomy and radiographic	4	15

ير			tures of the brain, ebellum, brainstem, al ganglia, ventricular tem, and spinal cord		
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Fundamentals of Radiological Physics	1. Understanding the concepts of programmed cell death and necrosis. 2. Understanding the cellular response to injury. 3. Understanding the concepts of genetic diseases, homogeneous dynamic disorders, red blood cell disorders, and bone diseases. .4	4	15
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Fundamentals of Radiological Physics	1. Understanding the basic MRI scanner. 2. Explaining the principles of magnetic resonance imaging (MRI). 3. Understanding the features of magnetic resonance imaging (MRI). .4	4	15
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Fundamentals of Radiological Physics	1. Understanding the biological effects of ionizing radiation. 2. Estimating and explaining the basis of potential risks of injury, illness, or death resulting from occupational radiation exposure. 3. Describing the physical and chemical factors that affect the	5	15

			response to radiation. 4. Estimating radiation risks and comparing them with other types of risks. .5		
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Fundamentals of Radiological Physics	1. Introduction to Excel: its benefits, specifications, concept, and operation method. 2. Familiarization with the main screen: its components, tools, and operation method. 3. Understanding the cell, basic data types, and how to input them. 4. How to save a workbook file, close the file, and exit the program. 5. Opening a saved file, entering data, performing basic calculations, and cell formatting methods. 6. Understanding methods for data collection or groups of cells in different forms and sorting data.	3	15
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Fundamentals of Radiological Physics	1. Familiarity with the concepts of magnetic resonance imaging (MRI). 2. Understanding the	6	15

			techniques of ultrasound equipment. 3. Understanding the features of power converters.		
١ Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Fundamentals of Radiological Physics	Teaching students how to position the patient in a specific manner for imaging to best visualize diseases of the spinal cord and abdomen.	6	15
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Fundamentals of Radiological Physics	The student will be able to understand: 1. The general anatomy and radiographic features of the thoracic cage, trachea, bronchi, lungs, heart, and breast. 2. The arterial blood supply from the trachea and bronchi to the lungs. 3. The general anatomy and radiographic features of the abdominal organs.	6	15
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Fundamentals of Radiological Physics	The student will be able to understand: 4. The general anatomy and radiographic features of the thoracic cage, trachea, bronchi, lungs, heart, and breast. 5. The arterial blood supply from the trachea and bronchi to the lungs. 6. The general	4	15

			anatomy and radiographic features of the abdominal organs.		
Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Fundamentals of Radiation Protection	1. Name and describe the basic physical properties of ultrasonic waves that affect imaging characteristics. 2. Describe the primary function of the transducer and how it generates an ultrasonic pulse. 3. Describe the general relationship between wavelength and image quality. .4	4	15
١ Practical tests & Theoertical tests for the Reports	Theoretical& Practical	Computer Applications 1	1. The Statistical Program SPSS: Its Concept, Operation, and Steps for Data Analysis. 2. Components of the Main Screen, Data Entry, Types of Data (Direct and Calculated), Saving and Retrieving Files. 3. Sorting and Switching Data, Determining the Statistical Procedure, Inserting a Variable or Case, Merging Files. 4. Descriptive Analysis: Statistical Data Summary, Data Exploration Reports by Row or Column. 5. Comparing Means: Comparison Between Variables and Linear Regression.	3	15

			6. Conducting Tests for Significant Factors such as Chi-Square. 7. Applications of Quality Control. .8		
Practical tests & Theoertical tests for the Reports	Theoretical +Practical	Techniques of Computed Tomography Imaging Device	1. Describing the basic principles and concepts of computed tomography. 2. Integrating the scanning techniques learned to better demonstrate anatomy and pathology. 3. Explaining the protocols for computed tomography imaging and preparing the patient for various head and spine examinations. .4	7	15
Practical tests & Theoertical tests for the Reports	Theoretical +Practical	Radiographic Imaging Techniques for Lower Limbs	1. Applying knowledge of anatomy and physiology to accurately identify locations and MRI sequence parameters to depict anatomical structures. 2. Determining imaging parameters to achieve optimal imaging. 3. Evaluating images to identify appropriate locations and to select files and image quality.	7	15

Practical tests & Theoertical tests for the Reports	Theoretical +Practical	Special Radiographic Examinations for the Biliary and Reproductive Systems	The student will be able to understand: 1. The principle of the ultrasound machine, conditions, types of ultrasound investigations, and their uses. 2. Patient preparation. 3. Indications for ultrasound for each scan.	7	15
Practical tests & Theoertical tests for the Reports	Theoretical +Practical	Internal Medicine	Understanding and teaching students the basic concepts of internal diseases of the human body.	5	15
Practical tests & Theoertical tests for the Reports	Theoretical +Practical	Biostatistics and Computer Applications	1. Understanding the statistical methods used to present and organize data. 2. Applying and analyzing data using various statistical methods. 3. Understanding how to interpret the results.	6	15
Practical tests & Theoertical tests for the Reports	Theoretical +Practical	Computed Tomography (CT) of the Chest, Abdomen, and Pelvis	1.Describing the principles and basic concepts of computed tomography. 2.Integrating the scanning techniques learned to better demonstrate anatomy and pathology. 3.Explaining the protocols for computed tomography and preparing the patient for various chest, abdominal, and pelvic	7	15

			tests.		
Practical tests & Theoertical tests for the Reports	Theoretical +Practical	Magnetic Resonance Imaging (MRI) of the Musculoskeletal System, Abdomen, and Pelvis	1. Applying knowledge of anatomy and physiology and identifying MRI sequence parameters to accurately display anatomical structures. 2. Determining imaging parameters to achieve optimal imaging. 3. Evaluating images to identify appropriate locations and select file and image quality. .4	7	15
Practical tests & Theoertical tests for the Reports	Theoretical +Practical	Ultrasound Imaging for Gynecological and Obstetric Disorders	1. Ultrasound indications in gynecology and obstetrics. 2. Patient preparation. 3. Ultrasound appearance of the normal and abnormal uterus, ovaries, and ovarian follicles. 4. Differential diagnosis of uterine lesions. 5. Differential diagnosis of ovarian cysts. .6	7	15

Practical tests & Theoertical tests for the Reports	Theoretical +Practical	Surgical Medicine	Educating and informing students about the basic concepts of surgical diseases of the human body	5	15
Theoertical tests for the Reports	Theoretical	Medical Ethics	Introducing the student to professional ethics and equipping them with the ethical principles that enhance their commitment to these ethics in their field of work	2	15

1. Course Evaluation

various student-assigned tasks such as daily preparation, quizzes, oral exams, monthly exams, written tests, reports, etc.

2. Teaching and Learning Resources

	• Required Textbooks (Prescribed curriculum, if available)
Stewart Carlyle Bushong, "Radiologic Science for Technologists Physics, Biology, and Protection" Elsevier, Inc. , 7th edition, 2017. Euclid Seeram, " Computed tomography : physical principles, clinical applications, and quality control" 4th edition, Elsevier Inc. 2016. Whitley, A. S., Jefferson, G., Holmes, K., Sloane, C., Anderson, C., & Hoadley, G. (2015). Clark's Positioning in Radiography 13E. crc Press. Watson, N. & Jones, H. chapman& Nakielnys ''Guide to Radiological procedures'' , 7th edition, Elsevier Health Sciences, 2017. Kelley, L. L., & Petersen, C. (2018). Sectional Anatomy for Imaging Professionals. Third & fourth edition.	• Main References (Primary sources)
Research or case studies for study from hospitals	Recommended supporting books and references (scientific journals, reports, etc.
Seminars; graduation projects rely on the internet as sources for research	Electronic references, internet sites
