

**Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department**



Academic Program and Course Description Guide

2025–2026

Introduction:

The educational program is an organized and coordinated package of courses that includes educational procedures and experiences designed in the form of study units, with the aim of building and developing the skills of graduates to enable them to meet the requirements of the labor market efficiently. This program is reviewed and evaluated annually through internal or external audit mechanisms, such as the External Examiner Program, to ensure its quality and effectiveness.

The description of the academic program provides a brief summary of the main features of the program and its courses, indicating the skills to be taught to students, in line with the objectives of the academic program. This step is very important, as academic description is the cornerstone of the process of obtaining program accreditation. This description is prepared with the participation of teaching staff and under the supervision of scientific committees in academic departments.

In its second edition, this manual includes an updated description of the academic program, where the vocabulary and paragraphs of the previous manual were reviewed and developed to keep pace with developments and developments in the educational system in Iraq. This includes the description of academic programs in the traditional form (annual or quarterly system), in addition to the adoption of the description of the academic program circulated in accordance with the directives of the Department of Studies, Planning and Follow-up in book No. M3/2906 dated 3/5/2023, which deals with programs that adopt the Bologna system as a basis for their work.

In this context, we emphasize the utmost importance of writing the description of academic programs and courses accurately and clearly, in order to ensure that the educational process runs smoothly and effectively, and that the desired objectives are achieved.

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of the program's vision, mission, and goals, with an accurate description of the targeted learning outcomes, based on specific instructional strategies.

Course Description: The course description provides a clear summary of the most important characteristics of the course and the expected learning outcomes that the student must achieve, with an assessment of the extent to which the student will make the most of the available educational opportunities. The course description is derived from the description of the general academic program

Program Vision: The vision represents an ambitious picture of the future of the academic program, as it seeks to be an advanced, inspiring, motivating, realistic, and applicable program

Program Mission: Briefly outlines _____

Program Objectives: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum Structure: The curriculum structure includes all courses or subjects included in the academic program, according to the approved learning system (quarterly, annual, or Bologna path). This structure includes the mandatory requirements (ministry, university, college, scientific department) with specifying the number of study units for each course.

Learning Outcomes: It is an integrated set of knowledge, skills, and values that the student acquires after successfully completing the academic program. The learning outcomes of each course must be determined in line with the objectives of the general program.

Teaching and Learning Strategies: Refers to the methods and plans that faculty members follow to enhance student learning and achieve learning goals. These

strategies include all classroom and extra-curricular activities designed to achieve the desired learning outcomes of the program.

Academic Program Description Form

University name: Al-Kafeel University.....
College/Institute: College of Health and Medical Technologies.....
Scientific Department: Department ofRadiology Techniques.....
Name of the academic or professional program: Bachelor's degree.....
Name of final degree: Bachelor of Radiology Technology...
Academic system: semester
Description preparation date: 2/9/2025
File filling date: 22/9/2025

Signature: 

Head of Department Name:

Prof. Dr. Aref Saleh Baron

Date: 22/9/2025

Signature: 

Scientific Associate Name:

Ass. Prof. Dr. Sddiq Ghani Al-Muhanna

Date: 22/9/2025

The file is checked 

by: Ass. Lec. Ali Nageh Abbas

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date: 22/9/2025

Signature:


Approval of the Dean

22/9/2025
Fadhil I. Sharrad

1. Program Vision

The Department of Radiology Technologies strives to be one of the best academic departments, known for its integrity and commitment to international standards in the field of education and scientific research, with a focus on community service and development based on our authentic Islamic values

2. Program Mission

The program of the Department of Radiology Technologies focuses on promoting community development by creating a distinguished scientific environment that contributes to the development of the knowledge and capabilities of the new generation in various fields, which supports scientific excellence and cognitive creativity. The department seeks to offer a variety of scientific and practical courses that promote a culture of creativity and develop the professional and cognitive skills of students.

By establishing ethical and professional values, the program aims to enable students to acquire specialized knowledge and practical skills in the field of advanced radiology and technology technologies, enhance their self-confidence, and develop a spirit of cooperation and teamwork. The program is also keen to promote awareness of humanitarian and ethical responsibilities in the medical field, to prepare cadres capable of providing high-quality diagnostic and therapeutic services that contribute to the development of society and improve health care.

3. Program Objectives:

- 1- Providing advanced educational programs in the field of radiology technologies, in line with international standards of quality and responding to the requirements of the changing labor market.
- 2- Qualifying students to apply scientific foundations and ethical principles in the field of radiology technologies, enabling them to integrate effectively into the public and private sectors.

- 3- Train students to provide health care efficiently and professionally, with a focus on humane treatment of all categories of patients in specialized health institutions.
- 4- Enhancing knowledge and developing skills through continuous training programs and development plans for students in the field of radiology technologies.
- 5- Establishing strategic partnerships with companies, research centers and medical and scientific institutions to improve the quality of education and scientific research in the field of radiology technologies

4. Program Accreditation

None

5. 5. Other external influences Chief of collage

Is there a fee for the program?

Ministry of Higher Education – Department of Special Education

Higher Education Authority – Abbasid Threshold

6. Program Organization

The structure of the Education Programme is as follows:	Number of curricula	study unit	Percentage	Remarks*
متطلبات المؤسسة UNTRANSLATED_CONTENT_START UNTRANSLATED_CONTENT_END	1	1	6%	Optional Guidance
College Requirements	1	5	7%	
Department Requirements	--	--	--	--
summer training	--	--	--	--
Others				

* Notes can include whether the course is basic or optional.

8. Program Description

Year/Level	Course Code	Course Name	Credit Hours		Year/Level	Course Code
			Theoretical	Practical	Current Semester	Phase
1		- The skeleton.	2 Hours	2 Hours	1	Vertical
1		General Physics	2 Hours	2 Hours	1	Vertical
1		General Physiology	2 Hours	2 Hours	1	Vertical
1		Biology	2 Hours	2 Hours	1	Vertical
1		General Chemistry	2 Hours	2 Hours	1	Vertical
1		Computer Principles 1	1 hour	2 Hours	1	Vertical
1		Human rights and democracy	2 Hours	–	1	Vertical
1		English	2 Hours	–	1	Vertical
1		Anatomy of body systems	2 Hours	2 Hours	2	Vertical
1		Physics of the atom	2 Hours	2 Hours	2	Vertical
1		Functional Physiology	2 Hours	2 Hours	2	Vertical
1		Radiobiological	2 Hours	2 Hours	2	Vertical
1		Fundamentals of Nursing	2 Hours	2 Hours	2	Vertical
1		Computer Principles	1 hour	2 Hours	2	Vertical
1		Medical Terminology	2 Hours		2	Vertical
1		Arabic Language	2 Hours		2	Vertical
2		Traditional Radiological	2 Hours	2 Hours	1	compatible

		Device Techniques				
2		Upper extremity radiography techniques	2 Hours	2 Hours	1	compatible
2		Special radiographic examinations of the bone gastrointestinal tract	2 Hours	2 Hours	1	compatible
2		Radiographic Anatomy of the Head and Upper Extremities	2 Hours	2 Hours	1	compatible
2		Fundamentals of Radiophysics	2 Hours	2 Hours	1	compatible
2		Fundamentals of Radiation Protection	2 Hours	2 Hours	1	compatible
2		Crimes of the Baath regime in Iraq	2 Hours	2hours	1	compatible
2		Computed Tomography Techniques	2 Hours	2hours	2	compatible
2		Lower extremity radiography techniques	2 Hours	2hours	2	compatible
2		Special radiological examinations of the genital biliary system	2 Hours	2hours	2	compatible
2		Radiographic Anatomy of the Lower Limbs	2 Hours	2hours	2	compatible
2		CT Imaging:	2 Hours	2hours	2	compatible
3		Number of MRI Devices	2 Hours	4hours	1	Third
2		Head and spine radiography techniques	2 Hours	4hours	1	Third
2		Special radiological examinations of the head, breast and respiratory tract	2 Hours	4hours	1	Third
2		Radiographic Anatomy of the Brain and Spine	2 Hours	2hours	1	Third
2		General Pathology	2 Hours	2hours	1	Third
2		MRI.	1 hour	3hours	1	Third
2		RADIATION RISKS	2 Hours	3hours	2	Third
2		Sonar Technologies	2 Hours	4hours	2	Third
2		Special radiographic examinations of the cardiovascular system and nervous system	2 Hours	4hours	2	Third
2		Radiological anatomy	2 Hours	2hours	2	Third
		Pathology	2 Hours	2hours	2	Third
		Ultrasonic Physics	1 hour	3hours	2	Third

7. Program Learning Outcomes

material

Anatomy /Biology /Physiology

The aim of this course is to deepen students' understanding of the structure and function of the human body at the level of cells, tissues, organs, and systems. Through her studies, students gain a thorough knowledge of the microstructure of the human body and how cells, tissues, and organs interact with each other. Materials are approached in a detailed manner that includes cellular structure, various tissues, and physiology, as well as the interactions of various systems in the human body.

Skills

Chemistry /Physics

It aims to enable students to understand the chemical processes that occur inside and outside the human body, including biological reactions, digestive processes, and metabolism. The subject also includes the study of the physics of the human body by understanding the natural structure and functions of the body, the systems of major organs, and the physical laws that govern and affect those vital and bodily processes.

Traditional Radiology
Techniques/Special
Gastrointestinal and Orthopedic
Radiology Examinations

Students are expected to acquire comprehensive technical skills and knowledge in the use and application of traditional radiologic techniques in health care, including understanding the principles and uses of radiology, analyzing radiographs, delivering high-quality and safe health care, and interacting with medical teams to achieve the best patient outcomes.

Values

Radiation Protection:

Students are expected to gain a thorough understanding of the concepts of radiation and its effects on humans and the environment. Students will learn the principles of radiation protection and safety, including the use of appropriate safeguards to reduce radiation exposure and potential hazards. They will also acquire the skills to assess radiation-related risks, apply appropriate protective measures, and understand radiation safety regulations and legislation.

Medical Terminology and Professional Behavior	Excellence in memorizing medical terms to accurately document and discuss patients' cases.
Human rights	Ethics, emphasis on patient confidentiality, informed consent, and professional integrity To develop basic clinical skills with the overall goal

8. TEACHING AND LEARNING STRATEGIES

- Objective: To provide an outstanding and stimulating learning experience for students.
- Strategies: Adopt diverse learning styles and an evolving learning environment.
- Techniques used: Using modern educational tools such as interactive smart whiteboard and other advanced technologies.
- Training opportunities: Providing practical training opportunities in government hospitals and medical centers.
- Objective of the training: To enable students to turn theoretical concepts into practical healthcare skills.
- Instructing students: Providing continuous guidance and guidance to students during the training period to ensure their effective application of theoretical knowledge.
- Integrating technology and hands-on experience: Providing a holistic learning experience that combines the use of modern technology with practice in healthcare.
- The final goal: Preparing students to acquire the necessary skills and prepare to pursue a career in health care with confidence and high efficiency.

9. Evaluation methods

- **Daily tests:** Continuous evaluation of students' performance through short exercises or quick questions asked during daily lessons.
- **Oral tests:** A direct evaluation that takes place through an interactive dialogue between the teacher and students, where questions and inquiries are asked immediately.
- **Seminars:** A platform that allows students to present specific topics or detailed research and discuss them with their colleagues and lecturers. It aims to develop students' research, presentation, and discussion skills, and enhance their ability to think critically.
- **Midterm Exam:** A comprehensive midterm exam, covering the subjects studied up to that time. It aims to assess the extent to which students understand the curriculum and their general understanding of the concepts presented.
- **End of Term Exam :** A final exam at the end of the semester, covering all subjects comprehensively.

10. Teaching staff

Faculty Members

Academic rank	Major		Special Requirements/Skills (if applicable)		TEACHING PERSONNEL	
	General	Private			Malak	Lectrurer
Prof. Dr. Aref Saleh Baroun	Physics	Nanotechnology			✓	
Prof. Dr. Abdul Amir Aboudi Mohammed	have	Board of Radiology and Sonar				✓

Prof. Morteza Shaker Aswad	Physics	Radial Physics				✓
Prof. Dr. Amer Abdul Amir Mohammed	Physics	Nuclear.			✓	
Prof. Dr. Haider Saheb Mahdi	have	Board of Head Surgery				✓
Prof. Dr. Wassan Kazem Abbas Ahmed	have	Board of Radiology and Sonar				✓
Dr. Mohamed Malek Abboud	Physics	Solid Physics			✓	
Asst.L. Ali Hani Karim Hassan	Radiology Techniques	Radiology Techniques				✓
Asst.L. Hussein Ayed Jassim	Radiology Techniques	Radiology Techniques				✓
Asst.L. Ali Reda Abdul Amir	Biotechnologies	Biotechnologies			✓	
Asst.L. Hussein Fadel Abdel Abbas	Computer	Artificial intelligence			✓	
Prof. Ghosoun Jalil Ibrahim	Physics	It feels... solid.				✓
Prof. Dr. Ali Kazem Hadi	Chemistry	Chemistry			✓	
Eng. Nabil Bassem Nasser	Nursing	Nursing			✓	
Asst.L. Ghadeer Mohammed Hussein	Life Sciences	Physiognomy			✓	
Asst.L. Shahrbania Mahdi Yassin	Life Sciences	Physiognomy			✓	

Professional Development

(New faculty members)

The new faculty program is one of the most important programs organized by the university to develop the skills of new faculty members.

Content of the program

- It includes topics such as development projects at the university, university knowledge and educational resources, activities carried out by the university, training and professional development for faculty members, scientific research at the university, the rights and duties of the faculty member, and e-learning and distance learning.
- Includes course building, effective university teaching skills, student assessment skills, and mini-teaching
- This program aims to enable new faculty members to integrate into the academic environment and develop their skills to achieve the objectives of the department and the college

Professional development of teaching staff:

Briefly describe the academic and professional development plan and arrangements for faculty members such as teaching and learning strategies, assessment of learning outcomes, professional development etc.

Subjecting new teachers to courses on teaching methods and taking the Teaching Aptitude Test, and only by passing it are they allowed to teach, while following their own teaching methods and giving them their feedback.

Follow up the teaching methods of all teachers by the Office of the Assistant Dean, prepare seminars and workshops to develop teaching and speaking skills, and ensure the preparation and delivery of lectures in the CME curriculum.

11. Acceptance Criteria

(Setting regulations related to enrollment in the college or institute, whether central

admission or not)

Academic average of the student's graduation from preparatory school and physical and mental health according to the standards set and approved by the Ministry of Higher Education and Scientific Research

12. The most important sources of information about the program

Remember briefly.

1. Approved and certified documents for the general curriculum of the college, courses, vision, mission and objectives of the university and the college in Arabic and English.
2. Website of the Ministry of Higher Education and Scientific Research.
3. The official website of Al-Kafeel University and its Faculty of Medicine.

13. h. Program Development Plan

- 1) Systematic and repetitive self-assessment studies of the program based on evaluating students' learning and teaching outcomes and obtaining feedback from students on program components.
- 2) Regular meetings with faculty members at local and foreign medical and health technology colleges to learn about new curricula and teaching methods.
- 3) Holding workshops on the development of curricula and teaching methods in the college or attending those held in neighboring universities.

Program Skills Diagram															
				Program Skills Outline											
Year/Level	Course Code	Year/Level	Course Code	Year/Level				Course Code				Year/Level			
				A1	A2	A3	A4	B1	B2	B3	B4.	A1	A2	A3	A4
Year 1		- The skeleton.	Basic	/	/	/		/	/	/		/	/	/	
		General Physics	Basic												
		General Philosophy	Basic												
		General Chemistry	Basic												
		Biological	Basic												
		Human rights	Select												
		English	Optional												
		Principles of Computing	Optional												

- Please tick the boxes corresponding to the individual program learning outcomes under evaluation.

				Program Skills Outline											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4.	A1	A2	A3	A4
2nd Year		- The skeleton.	Basic	/	/	/		/	/	/		/	/	/	
		Physics Atom	Basic	/	/	/		/	/	/		/	/	/	
		Functional Physiology	Basic	/	/	/		/	/	/		/	/	/	
		Radiobiological	Basic	/	/	/		/	/	/		/	/	/	
		Nursing	Basic	/	/	/		/	/	/		/	/	/	
		Medical Terminology	Basic			/				/					/
		Arabic	Optional			/				/					/

course Description Form

1. Course Name	
COMPUTER APPLICATIONS.	
2. Course Code	
Computer principles	
3. Term / Year	
2025-2026	
4. Description Preparation Date:	
10/24	
4. Available Attendance Forms My Attendance	
My presence is mandatory	
1. Available Attendance Forms:	
15 hours and above	
5. Course administrator's name (mention all, if more than one name)	
Name: Ass. L. Hussein Fadel Abdul Hussein Email :	
6. Course Objectives	
Course Objectives	1. Teach students how to handle basic office applications and create files and documents. 2. Introducing students to the operating system and teaching them the basics of working within the digital environment. 3. Train students to manage and use a variety of computer applications. 4. Encourage students to be creative and think about specialized projects and follow developments in this field. 5. Providing students with scientific, practical and subjective skills that enable them to solve practical problems in a scientific manner.
7. TEACHING AND LEARNING STRATEGIES	

Strategy	
8. Course Structure	

Week	hours	Intend ed Learning Outcomes	Module / Course Name or	teaching method	Evaluation method
1			Computer Fundamentals The concept of the computer , the stages of the computer life cycle The evolution of computer generations		Attend Daily exams +homework
2			Advantages of the computer and its areas of use Classification of the computer in terms of purpose, size and type of data		
3			Computer Components Computer Components Computer Physical Parts Computer Software Entities		
4			Your personal computer The concept of computer security and lax programming		
5			Computer Safety & Software Licences		
6			The ethics of the electronic world, the forms of transgressions , computer security, and computer privacy.		
7			Computer software licenses and types, intellectual property, electronic hacking, malicious software, the most important steps to protect against hacking, computer damage to health.	Lectures PDF Power point Video.	
8			Definition of OperatingSystems Operating system, functions , objectives , classification Examples of some operating systems		
9			Operating System Windows 7		
10			Desktop Start Menu,Taskbar		
11			Folders and Files Icons		
12			Perform operations on windows and desktop wallpapers		
13			Control Panel Windows Control Category Groups Panel		
14			From the Defragment Control Panel Organize files inside the computer , install and delete programs		

15			Some common situations and settings in the computer, printer management, time and date setting, and maintenance of the first disks.		
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9. Course Evaluation

Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports.... etc.

10. Learning and Teaching Resources

Required textbooks (methodology if any)	Computer Basics and Off Applications/ Part One – Prof. Dr. Ghassan Hamid Abdul Maje and .Dr. Ziad Mohamed Abboud et al.
Key References (Sources)	Lectures provided by the subject teacher Books available in the college library
Recommended books and references (scientific journals, reports...)	All discreet scientific journals related science Computer and solid scientific research published on Network Building:
E-References , Websites	Internet

Course Structure					
Week	hours	Intended Learning Outcomes	Module / Course Name or	teaching method	evaluation method
1	1 Theoretical + 2 Practical	Bachelor	Computer Fundamentals The concept of the computer , the stages of the computer life cycle The evolution of computer generations	Lectures PDF Power point Video. Theory / Practicals	Attend Daily exams +homework
2			Advantages of the computer and its areas of use Classification of the computer in terms of purpose, size and type of data		
3			Computer Components Computer Components Computer Physical Parts Computer Software Entities		
4			Your personal computer The concept of computer security and software licenses		
5			Computer Safety & Software Licences		
6			The ethics of the electronic world, forms of abuse, computer security, and computer privacy.		
7			Computer software licenses and types, intellectual property, electronic hacking, malicious software, the most important steps to protect against hacking, computer damage to health.		
8			Definition of Operating Systems Operating system, functions , objectives , classification Examples of some operating systems		
9			Operating System Windows 7		
10			Desktop Start Menu,Taskbar		
11			Folders & Files Icons		
12			Perform operations on windows and desktop wallpapers		
13			Control Panel Windows Control Panel Control CategoryGroups		
14			From the Defragment Control Panel Organize files within the computer , install and delete programs		
15			Some common conditions and settings in the computer, printer management, time and date setting, and maintenance of raw disks.		
16			Microsoft 2010 Running Microsoft Word 2010		
17			Microsoft Word		
18			File tab, Home tab		
19			Page Layout Tab, View Tab		
20			Insert objects into Microsoft Word (Theoretical + Practical)		
21			Insert tab,set of pages		
22			Tableset		
23			Tableset		

24			graphics group		
25			Header and Footer Link Group		
26			Text group, Symbols group		
27			Microsoft Word 2010 Additional Tasks		
28			Microsoft PowerPoint 2010, Open a new file and a save on the desktop, Add and edit slides(title slide,title with content, subtitle, content,comparison ,title only, blank slide,content with comment,image with comment)		
29			Add Themes Parent Slider group Add kinetics and set time and frequency for the entire slides and differently for each slide		
30			Add Transactions to Slides		

Course Description

Biology is defined in this core course along with its association with other disciplines. In addition to considering the broad theories of life derived from biological research, we also examine the basic ideas and principles of the study of living organisms and how they interact with their surroundings. We will look at how life is arranged in hierarchical layers, how energy is used and produced by living organisms, how life evolves, expands and reproduces, how life interacts with its surroundings to keep them stable, and how life evolves and adapts to its surroundings. surrounding areas

2. Course Name:	Al-Kafeel University
Computer Fundamentals(1)	Radiology Techniques
3. Course Code:	Biology
Computer Fundamentals(1)	Bachelor of Radiology Techniques

4. Semester / Year:	Courses
The first stage/first semester	
5. Description Preparation Date:	Provide community, family, culture, traditions, friends, technology and media
Date the description was prepared	20/1/2024
Academic Program Objectives	
1. Understand the level of regulation among organisms.	
2. The ability to recognize and describe the shape of the cell and its components.	
3. Understanding the structure and role of DNA.	

Required Program Outputs and Teaching, Learning and Evaluation Modalities	
Knowledge Objectives	
1. Understand the principles of biology. 2. Provides a comprehensive overview of biology and the enumeration of life traits and their use to determine whether something is biotic (living) or abiotic (non-living). 3. Identify the stages of biological structure, highlighting the links between them.. 4. Classify organisms into domains (bacteria, archaea, eukaryotes) and identify major eukaryotic groups (protists, plants, fungi, animals) based on cellular and other traits.	
B – Skill Objectives of the Program Students will learn or be able to demonstrate their understanding of the basic principles of biology by systematically exploring the following characteristics of life: 1- Life is organized at hierarchical levels. 2- Life maintains internal stability through a process called equilibrium. 3- Life requires energy. 4- Life grows, develops and reproduces. 5- Life is evolving. 6- Life is interconnected.	
Teaching and learning methods	
1- Theoretical lectures.	

2-Using teaching aids (presentations and scientific films)

Evaluation methods

Quarterly and Final Theoretical and Practical Tests

C1- Provides students with a basic understanding of the biology experience at the introductory level.

A2-Covering most key aspects of the high school biology experience, it can be useful for students (at any level) seeking additional help or preparation in biology topics.

C3- Learn about the basic characteristics and needs of living organisms and ecosystems. Explain the processes of growth and development in individuals and populations. Design and critically evaluate the scientific investigations they carry out. Demonstrate skills

Course Structure					
Week	Hours	Intended Learning Outcomes	Module / Course Name or	teaching method	Required learning outcomes
The second is Nmap, And the third	2n	Student understanding of the lesson	Introduction to Biology Introduction to the Chemistry of Life Biologically Important Molecules	theoretical	Daily and Monthly Tests
Fourth/Fifth Scheduled and the sixth	2n	Student understanding of the lesson	Introduction to Cell Structure and Function Introduction to Cell Structure and Function - Cytoskeleton -Microfilaments, Intermediate Filaments, Microtubules, Flagella and Cilia Eukaryotic cell organelles: - Mitochondria (morphology, structure), -lysosomes (types, function).	theoretical	Daily and Monthly Tests
7th and 8th	2n	Student understanding of the lesson	Eukaryotic cell organelles: - Golgi complex (morphology, function) Eukaryotic cell organelles: -Endoplasmic reticulum (smooth & rough) and their function. -Vesicles and Vacuoles -Ribosome (protein synthesis).	theoretical	Daily and Monthly Tests
Ninth and Tenth	2n	Student understanding of the lesson	Eukaryotic cell organelles Eukaryotic cell organelles:	theoretical	Daily and Monthly Tests

			- Chromosome structure changes (duplication, translocation, inversion)		
Eleventh Twelfth	2n	Student understanding of the lesson	DNA Replication and Protein Synthesis -The structure of the DNA DNA Replication and Protein Synthesis TRANSCRIPTION	theoretical	Daily and Monthly Tests
Thirteenth	2n	Student understanding of the lesson	DNA Replication and Protein Synthesis الترجمة	theoretical	Daily and Monthly Tests
Fourteenth and the fifteenth	2n	Student understanding of the lesson	Introduction to Reproduction at the Cellular Levels Introduction to Reproduction at the Cellular Levels -Meiosis -Prokaryotic Cell Division	theoretical	Daily and Monthly Tests

. Infrastructure	
Required textbooks	Elizabeth o Grady, Jason Cashmore, Marsha, Carol Wismer (2018) <i>Principles of Biology- An introduction to Biological Concepts</i> , second edition.
Key References (Sources)	Peter Raven (2016) <i>Biology</i> . Elven Edition. non-vj Bekish, Yu.T. Nikulin (2006) <i>Practical Book on Medical Biology</i> .
Recommended books and references (scientific journals, reports...)	Elizabeth o Grady, Jason Cashmore, Marsha, Carol Wismer (2018) <i>Principles of Biology- An introduction to Biological Concepts</i> , second edition Peter Raven (2016) <i>Biology</i> . Elven Edition. non-vj Bekish, Yu.T. Nikulin (2006) <i>Practical Book on Medical Biology</i> .

Electronic references, websites ,.....	.
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Course Development Plan
1- Identifying and improving the educational objectives of the course and related units. 2. Develop an assessment strategy aligned with the learning objectives 3. Detail a plan for educational resources aligned with assessments 4- Create a communication plan for influential participation

1. Course Name					
General Physiology					
1. Course Code					
Computer principles					
2. Term / Year					
2025-2026					
5. Description Preparation Date:					
10/24					
3. Available Attendance Forms My Attendance					
My presence is mandatory					
6. Available Attendance Forms:					
15 hours and above					
4. Course administrator's name (mention all, if more than one name)					
Name: Ali Reda Abdul Amir Email :					
2. Strategy of learn					
The Goal			1) Listening 2) Answering questions asked 3) Participation and interaction during the lecture		
3. TEACHING AND LEARNING STRATEGIES					
Strategy		Advise and guide students on the need to understand lectures and the importance of focusing on the content of lessons Make the most of the information provided and give the aspect of scientific and academic culture "Theory" has a great importance equal to the practical aspect			
4. Course Structure					
Week	hours	Intended Learning Outcomes	Module / Course Name or	teaching method	Evaluation method

5. Course Evaluation					
Distribution of the score out of 100 according to traditional examinations and surprising questions					
6. Learning and Teaching Resources					
Required textbooks (methodology if any)					
Key References (Sources)			Seeleys anatomy and physiology		
E-References , Websites					

1. Course Name	
English	
1. Course Code	
Computer principles	
2. Term / Year	
2025-2026	
6. Description Preparation Date:	
10/24	
3. Available Attendance Forms My Attendance	
My presence is mandatory	
7. Available Attendance Forms:	
15 hours and above	
4. Course administrator's name (mention all, if more than one name)	
Name :	Prof. Dr. Amer Abdul Amir
Email :	
2. Course Objectives	
Course Objectives	C1- Participation in scientific activities C2- Participation in scientific discussions •
3. TEACHING AND LEARNING STRATEGIES	

Strategy		Lectures using the smart whiteboard Scientific discussions and presentation			
4. Course Structure					
Week	Hours	Intended Learning Outcomes	Unit or Topic Name	Learning method	Evaluation method hours
5. Course Evaluation					
Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports etc.					
6. Learning and Teaching Resources					
Required textbooks (methodology if any)					
Key References (Sources)			Fifth edition. English Grammar in Use An Introductory English Grammar Medical Terminology		
Recommended books and references (scientific journals, reports...)					
E-References , Websites					

Course Description

This course outline provides a concise summary of the main features of the course and the expected learning outcomes for students, demonstrating whether they have achieved maximum benefit from the available learning opportunities. It must be linked to the description of the program.‘

1. Educational Institution	Al-Kafeel University
2. Scientific Department/ Center	Department of Radiology Techniques
3. Course Name / Code	Arabic Language
4. Available attendance forms	
5. Semester/year	Semester/Second Semester/First Phase
6. Number of study hours (total)	
7. Date this description was prepared	15/1/2024
8. Course Objectives	

12. Course Outcomes and Teaching, Learning and Evaluation Methods
A- Cognitive Objectives The student should be familiar with the most important basics of the Arabic language and its rules
(b) Course Skills Objectives. B 1 – Examples abound B2- Applying the rules to Quranic and literary texts
Teaching and learning methods
Presentation Applied Videos

Smart Board
Evaluation methods
Daily pop quizzes Semi-final and final exams
Promoting Cultural Identity: Learning Arabic helps students understand and appreciate their culture and heritage, fostering a sense of belonging and national identity. Developing Religious Awareness: Since Arabic is the language of the Holy Quran, learning it deepens religious understanding and brings students closer to their original religious texts. Appreciation of Arabic literature: Learning about Arabic literature opens doors for students to explore the richness of Arabic literature and poetry, which enhances literary and artistic taste. Enhancing critical thinking skills: The in-depth study of the Arabic language encourages analysis, criticism and interpretation, which develops students' critical thinking skills. Strengthening Social Relationships: Communication in Arabic helps strengthen social bonds between individuals in Arabic-speaking communities. Tolerance and Mutual Understanding: The study of languages and cultures can promote tolerance and understanding between individuals from different backgrounds, and learning Arabic supports these values. Improve general language skills: Learning Arabic stimulates students' language abilities, which is useful in learning other languages. Leveraging technology: Learning Arabic opens doors to access rich educational and information resources available in Arabic online. Promoting moral values: Literary and religious texts in Arabic are rich in lessons and lessons that contribute to the consolidation of moral values among students. Contribution to professional development: Fluency in Arabic can open up new job opportunities in many fields such as education, translation, media, and diplomacy.

Teaching and learning methods
Presentation Applied Videos Smart Blackboard
Evaluation methods
Daily pop quizzes Semi-final and final exams
(d) Transferred general and qualifying skills (other skills related to employability and personal development). D1- Skills of using books and resources related to teaching Arabic to non-specialists D2- Rules are applied to selected texts that promote the establishment of the rule in the student's mind

13.Course Structure					
Week	hours	Intended Learning Outcomes	Module / Course Name or	teaching method	Evaluation method
1st - 2nd	2		Introduction to linguistic errors (T and E)	Theoretic al	EXAMINA TIONS
The Third	2		The rules of writing the elongated thousand and the compartment - the solar and lunar letters		
Fourth	2		Luminosity and Luminosity		
Fifth	2		Hamza Writing		
Sixth	2		punctuation marks		
Seventh	2		Name and verb and distinguish between them		
Eighth	2		Reactors		
Ninth	2		Number		
Tenth Floor	2		Common Errors Apps		
Eleventh	2		Nun and Tanween - the meanings of prepositions		
Twelfth	2		Formal Aspects of Administrative Letter		
Thirteenth	2		Language of Administrative Discourse		
XIV-XV	2		Samples of Administrative		

			Correspondence		
14.Infrastructure					
Required textbooks					
Key References (Sources)					
Recommended books and references (scientific journals,reports ,.....))					
Electronic references, websites ,.....					

15.Course Development Plan

Course Description

This course outline provides a concise summary of the main features of the course and the expected learning outcomes for students, demonstrating whether they have achieved maximum benefit from the available learning opportunities. It must be linked to the description of the program.‘

9. Educational Institution	Al-Kafeel University
10. Scientific Department/ Center	Department of Radiology Techniques
11. Course Name / Code	The cream of baath
12. Available attendance forms	
13. Semester/year	Semester/First Semester/Second Phase
14. Number of study hours (total)	

15. Date this description was prepared	15/1/2024
16. Course Objectives	

16. Course Outcomes and Teaching, Learning and Evaluation Methods
A- Cognitive Objectives Raising the student's awareness of the heinous crimes practiced by the defunct Baath Party
(b) Course Skills Objectives. B 1 – Exchange ideas with students to listen to them and correct their intellectual path B2 – Mention real-life examples of myriad Ba 'ath Party crimes
Teaching and learning methods
Presentation Lecture method method (discussion-)
Evaluation methods
Daily pop quizzes Semi-final and final exams
Understanding history and political influences: Teaching students about Baathist crimes provides a deeper understanding of the recent history of Iraq and the long-term effects of repressive policies. Promoting human rights awareness: Learning about these crimes helps students appreciate the importance of human rights and fundamental freedoms, and promotes awareness of civic rights and responsibilities. Developing moral values: The in-depth study of the crimes of the Baath establishes the values of justice and fairness and respects human dignity, which contributes to the development of solid moral values among students. Promoting tolerance and mutual understanding: Learning the history of injustice and authoritarianism can contribute to fostering values of tolerance and understanding among individuals from different backgrounds. Stimulating Constructive Debate and Critical Thinking: Discussing and analyzing historical events motivates students to think critically and encourages them to constructively debate complex issues. Sense of social responsibility: The study of these crimes encourages students to

take social responsibility and actively participate in society to prevent the recurrence of these events.

Recognition of suffering and restorative justice: Promoting an understanding of the suffering experienced by victims and the importance of restorative justice in healing wounds and rebuilding society.

Developing research and analytical skills: Deepening the study of these topics enhances the research and analytical skills of students, which contributes to improving their academic abilities.

Enhanced capacity for civic and political participation: Understanding historical events and their impacts strengthens capacity for effective participation in future political and civic affairs.

Past re-evaluation: Provides an opportunity for students to rethink and evaluate historical events and draw lessons learned to avoid past mistakes in the future.

Teaching and learning methods

Presentation
Lecture method
method (discussion-)

Evaluation methods

Daily pop quizzes
Semi-final and final exams

(d) Transferred general and qualifying skills (other skills related to employability and personal development).

D1- Using books, sources and memos documenting the crimes of the defunct Baath Party

D2- Comparing the previous system with the current system to come up with a convincing objective result

17.Course Structure					
Week	hours	Intended Learning Outcomes	Module / Course Name or	teaching method	Evaluation method
The First	2		Modern history of Iraq	Theoretical	EXAMINATIONS
Second	2		A Brief History of the Ba 'ath Party		
The Third	2		Violation of rights and freedoms		
Fourth	2		The Impact of the Behaviors of the Baathist Regime on Society		
Fifth	2		Psychological Mechanisms in Controlling Governance		
Sixth	2		Transition and fighting tyranny		
Seventh	2		Social Mechanisms in Controlling Governance		
Eighth	2		The position of the Baath Party on religion		
Ninth and Tenth	2		Culture, media and militarization of society		
Eleventh	2		Use of internationally prohibited weapons		
Twelfth	2		Scorched earth		
Thirteenth	2		Marsh drainage		

			and forced displacement		
Fourteenth	2		Destruction of the agricultural and animal environment 2		
Fifteenth	2		Mass graves and bombing of places of worship		

18. Infrastructure

Required textbooks	The Platform of Crimes of the Defunct Ba 'ath Party (Ministerial Letter)
Key References (Sources)	Republic of Fear: Samir Khalil
Recommended books and references (scientific journals, reports ,.....))	Encyclopedia on the Killing and Persecution of the References to Religion and Scholars of the Shia of the Country of Mass Graves (Iraq)
Electronic references, websites ,.....	The Political Prisoners Foundation

19. Course Development Plan

Course Description

This course outline provides a concise summary of the main features of the course and the expected learning outcomes for students, demonstrating whether they have achieved maximum benefit from the available learning

opportunities. It must be linked to the description of the program.‘

17. Educational Institution	Al-Kafeel University
18. Scientific Department/ Center	Department of Radiology Techniques
19. Course Name / Code	Human Rights
20. Available attendance forms	
21. Semester/year	Semester/First Semester/First Phase
22. Number of study hours (total)	
23. Date this description was prepared	
24. Course Objectives	
	1- The student should be able to understand the principles of human rights
	2- Distinguish between what the media publishes of games that are contrary to human rights and what is appropriate for them
	3- Forming a conscious human being who knows what he has and what he has

20. Course Outcomes and Teaching, Learning and Evaluation Methods

A- Cognitive Objectives

Promote ethical awareness: Develop awareness of core values such as justice, dignity, and equality, and promote understanding that human rights are natural and inalienable rights.

Developing Mutual Respect: Encouraging students to respect the rights of others and to recognize the importance of individual and cultural differences in enriching societies.

Promote empathy and understanding: Develop the ability to empathize with others and understand the difficulties they face, especially people experiencing violations or discrimination.

Sense of social responsibility: Motivate students to think about how they can contribute positively to society by defending human rights and supporting democracy.

Develop critical thinking: Encourage constructive criticism and the ability to analyse news and information related to human rights objectively and independently.

Build self-confidence and advocacy capacity: Enable students to advocate effectively and informedly for their own rights and the rights of others.

Promoting international peace and security: Teaching students how human rights promote international peace and security through conflict prevention and enhanced cooperation between States.

Encourage civic engagement: Motivate students to actively engage on civic and political issues to influence policies that impact human rights.

Promoting tolerance and intercultural dialogue: Providing a basis for understanding and appreciating different cultures and fostering constructive dialogue between them.

Emphasize universal rights: Promote an understanding that human rights are not limited to a particular culture or country, but are universal and must be respected everywhere.

(b) Course Skills Objectives.

B1 - Examples abound

B2- Discussion of the students with the ideas presented

Teaching and learning methods

1. Lectures and Using the Smart Board

2. In-class discussions and student engagement

3. Homework

Evaluation methods

Quarterly and Final Exams

Tests and quizzes.

Oral exams

11. Develop awareness of core values such as justice, dignity, and equality, and promote an understanding that human rights are natural and inalienable rights.

Developing Mutual Respect: Encouraging students to respect the rights of others and to recognize the importance of individual and cultural differences in enriching societies.

Promote empathy and understanding: Develop the ability to empathize with others and understand the difficulties they face, especially people experiencing violations or

discrimination.

Sense of social responsibility: Motivate students to think about how they can contribute positively to society by defending human rights and supporting democracy.

Develop critical thinking: Encourage constructive criticism and the ability to analyse news and information related to human rights objectively and independently.

Build self-confidence and advocacy capacity: Enable students to advocate effectively and informedly for their own rights and the rights of others.

Promoting international peace and security: Teaching students how human rights promote international peace and security through conflict prevention and enhanced cooperation between States.

Encourage civic engagement: Motivate students to actively engage on civic and political issues to influence policies that impact human rights.

Promoting tolerance and intercultural dialogue: Providing a basis for understanding and appreciating different cultures and fostering constructive dialogue between them.

Emphasize universal rights: Promote understanding that human rights are not limited to a particular culture or country, but are universal and must be respected everywhere

Teaching and learning methods

Lectures using the smart whiteboard
Scientific discussions and presentation

Evaluation methods

Daily, monthly tests.
Oral Tests
Non-United Nations organizations and forums
Midterm Examination
End of second semester exam

(d) Transferred general and qualifying skills (other skills related to employability and personal development).

D1- Skills of using books and social, political and religious resources related to human rights

D2- Discussing the problems of the times related to human rights in the present era in Iraq

21.Course Structure					
Week	hours	Intended Learning Outcomes	Module / Course Name or	teaching method	Evaluation method
First	1		The Notion of Human Rights and their Universality	Theoretical	EXAMINATIONS
Second	1		The most basic qualities of human rights		
The Third	1		Types of human rights		
Fourth	1		Human Rights Categories		
Fifth	1		In Ancient Civilization.		
Sixth	1		- Fantastic ! - Try that one in a court of law.		
Seventh	1		Human Rights in Islam and Divine Religions		
Eighth	1		Human Rights in Renaissance Societies		
Ninth	1		Human rights in modern times		
Tenth Floor	1		Human Rights in Modern Times 2		
Eleventh	1		NGOs and Human Rights		
Twelfth	1		Safeguards for the respect and protection of human rights at the national and international level		

Thirteenth	1		Water and Environmental Awareness in Iraq		
Fourteenth	1		Water and Environmental Awareness in Iraq 2		
Fifteenth	1		The concept of equality		

22.Infrastructure

Required textbooks	Human Rights Council New Vision: Moncef Marzouki
Key References (Sources)	Introduction to Understanding the Human Rights System: Mohamed El Sayed Said
Recommended books and references (scientific journals,reports ,.....))	State and Democracy: Jamil Hilal
Electronic references, websites ,.....	Office of the High Commissioner on Human Rights:

Al Marzouki

Course Description

This course outline provides a concise summary of the main features of the course and the expected learning outcomes for students, demonstrating whether they have achieved maximum benefit from the available learning opportunities. It must be linked to the description of the program.‘

25. Educational Institution	Al-Kafeel University
26. Scientific Department/ Center	Department of Radiology Techniques

27. Course Name / Code	Nursing
28. Available attendance forms	
29. Semester/year	Semester/First Semester/First Phase
30. Number of study hours (total)	
31. Date this description was prepared	14-10-2024

Program Learning Outcomes
material
1. Study and understanding of medical terminology 2- Studying the diagnostic status of the patient through its scientific knowledge 3- Studying the functional structure of human devices 4-Increasing the student's ability to clinically examine the medical condition 5-Increasing the student's cognitive ability to distinguish between similar medical conditions 6- Encouraging the student to describe the medical conditions that he may be exposed to during his academic career
Skills
1- Studying the lecture vocabulary correctly 2- Active participation during the lecture 3- Encouraging the student to have a practical clinical examination in educational laboratories
Values

2. TEACHING AND LEARNING STRATEGIES
Encouraging students to pay attention, listen and stay away from external influences such as side talk and preoccupation with smart devices, as well as urging them to actively participate in the lecture in various scientific ways and ask

questions aimed at increasing students' academic awareness in order to enable them to understand the lecture.

recitation method

2– Open dialogue method

3– Open question method

4– Brainstorming Method

3. Evaluation methods

1– Snap Exam Method (Cob)

2– Practical skills within educational laboratories

3. Open scientific report

4. Classroom Participation

4. Teaching staff

Faculty Members

Week	hours		Intended Learning Outcomes		Module / Course Name or	
	General	Private			Malak	Lectrurer
Demonstrator, Department of Information and Educational Technology, Faculty of Education, Dakahlia, Al-Azhar University		****			*****	

Professional Development

(New faculty members)

Briefly describe the process used to guide new, visiting, full-time and part-time faculty at the institution and department level.

Professional development of teaching staff:

Briefly describe the academic and professional development plan and arrangements for faculty members such as teaching and learning strategies, assessment of learning outcomes, professional development etc.

5. Acceptance Criteria

(Setting regulations related to enrollment in the college or institute, whether central admission or not)

6. The most important sources of information about the program

VanPutte, C. L., Regan, J. L., Russo, A. F. Seeley, R. R., Stephens, T., & Tate, P. (2017). Seeley's anatomy & physiology. McGraw-Hill.
Drake, R., Vogl, A. W., & Mitchell, A. W. (2014). Gray's anatomy for students.
S.Hombach-Klonish, T. Klonish, J. Peeler. Sobota clinical atlas of human anatomy.

h. Program Development Plan

Course Name: First Course Physics

1. Course Sign :
2. TERM 1 2024
3. Date of preparation of the description: 15/3/2024
4. Available attendance forms
5. Number of Credit Hours (Total) / Number of Units (Total)

Name of Course Director () Name: Dr.Mohammed Hamza Al-Mamouri Email:
wsci.mohamedhamza@uobabylon.edu.iq

Course Objectives • Understand the basic concepts of standard units of measurement and their importance in physics. •

Describe and apply the principles of measuring length, mass, and time in different physical contexts. •

Explain the laws of electrostatics, including Coulomb's law and the principles of electric fields. •

Definition of electrical voltage and description of its relationship to electrical fields and work.

• Describe the principles of electrodynamics, including the behavior of moving charges in electric and magnetic fields. • Analysis of simple electrical circuits and calculation of electrical power and energy consumption. •

Explain the principles of electromagnetism, including the relationship between electric currents and magnetic fields. • Describe electromagnetic induction and its applications in generating electric currents. •

Explanation of operation of electromechanical devices, including transformers. •

Define velocity and acceleration and describe their relationship to motion

. • Apply Newton's laws of motion to analyze the motion of objects. •

Describe the gravitational field and calculate the weight of objects in gravitational fields. •

Analyze the forces involved in the friction and calculate the force needed to overcome the friction. • Apply the principles of force and acceleration to analyze the motion of objects. •

Define momentum and thrust and describe their relationship to force and acceleration. •

Apply push-momentum relationship to crash analysis. • Describe the law of conservation of momentum and its application for collision analysis. • Define work and energy and describe their relationship. • Identify different types of energy (e.g. kinetic, latent, thermal) and describe energy conservation principles. • Apply the work-energy relationship to analyze the movement of objects. • Define capability and calculate the capability of mechanical systems. •

Distinguish between conservative and non-conservative forces and describe their effects on

energy. • Calculate gravitational potential energy in different physical situations. • Description of simple harmonic motion and analysis of spring-mass systems and simple pendulums...

6. TEACHING AND LEARNING STRATEGIES

7. Interactive presentations: Use demonstrations and practical activities to illustrate concepts such as standard units of measurement, laws of electrostatics, and simple harmonic motion.
8. Visual aids: Integrate visual aids such as diagrams, diagrams, and videos to help students understand abstract concepts such as electrical circuits and electromagnetic induction.
9. Problem-solving exercises: Engage students in problem-solving exercises to apply concepts such as Newton's laws of motion, the working relationship to energy, and the driving relationship to momentum.
10. Practical examples: Link concepts to practical examples to make them closer and more understandable. For example, discuss the use of electrical circuits in everyday appliances.
11. Peer-to-peer education: Encouraging students to teach concepts to each other, which promotes active learning and enhances understanding.
12. Discussion-based learning: Facilitating group discussions to encourage critical thinking and a better understanding深 of concepts.
13. Concept mapping: Using concept mapping as a visual tool to help students organize and understand complex relationships between concepts.
14. Technology Integration: Using technology such as simulations, interactive applications, and electronic resources to enhance learning and sharing.
15. Formative Assessment: Use formative assessment techniques such as quizzes, surveys, and concept tests to measure student understanding and adjust teaching accordingly.
16. Feedback: Provide timely and constructive feedback to students to help them improve their understanding and performance.
17. Differentiated Education: Adapting education to meet the diverse educational needs of students, including providing additional support or challenges as needed.
18. Meditation: Encourage students to reflect on their learning and make connections between concepts to deepen their understanding.
19. Course Structure Week Hours Learning Outcomes Required Module Name or Topic Learning Method Assessment Method First Week Second Week Third Week Fourth Week Fifth Week Sixth Week Seventh Week Eighth Week Ninth Week Tenth Week Eleventh

Week Twelfth Week Thirteenth Week Fourteenth Week Fifteenth Week Approved
Teaching Method and Direct Question Method Monthly and Oral Quizzes

20. Evaluation of the course Distribution of grades from one hundred according to the tasks assigned to the student such as daily readiness, daily oral exam, monthly or written exams, reports etc.

21. Learning and teaching resources Required textbooks (curriculum books, if any) Key references (resources) Recommended books and references (scientific journals, reports ...) E-References, Websites

وصف البرنامج الأكاديمي

It is accompanied by a description of each course within the program

11. Course Name	Al-Kafeel University
	Radiology Techniques
12. Course Code	Biology
	Bachelor of Radiology Techniques
13. Term / Year	Terms
2025-2026	
7. Description Date:	Preparation Provide community, family, culture, traditions, friends, technology and media
Date the description was prepared	20 Oct 24
Academic Program Objectives	

1. Understand the level of regulation among organisms.
2. The ability to recognize and describe the shape of the cell and its components.
3. Understanding the structure and role of DNA.

Required Program Outputs and Teaching, Learning and Evaluation Modalities

Knowledge Objectives

1. Understand the principles of biology.
2. Provides a comprehensive overview of biology and the enumeration of life traits and their use to determine whether something is biotic (living) or abiotic (non-living).
3. Identify the stages of biological structure, highlighting the links between them..
4. Classify organisms into domains (bacteria, archaea, eukaryotes) and identify major eukaryotic groups (protists, plants, fungi, animals) based on cellular and other traits.

B – Skill Objectives of the Program

Students will learn or be able to demonstrate their understanding of the basic principles of biology by systematically exploring the following characteristics of life:

- 1- Life is organized at hierarchical levels.
- 2- Life maintains internal stability through a process called equilibrium.
- 3- Life requires energy.
- 4- Life grows, develops and reproduces.
- 5- Life is evolving.
- 6- Life is interconnected.

Teaching and learning methods

- 1- Theoretical lectures.
- 2- Using teaching aids (presentations and scientific films)

Evaluation methods

Quarterly and Final Theoretical and Practical Tests

|||UNTRANSLATED_CONTENT_START|||ج- الأهداف الوجدانية والقيمية|||UNTRANSLATED_CONTENT_END|||

Biology Cognitive Objectives

Understand basic concepts: Students learn basic concepts such as cell, genetics, evolution, ecosystems, and biodiversity.

Developing critical thinking skills: analyzing data and scientific criticism, and evaluating hypotheses and theories.

Learn the scientific methodology: Understand how to design scientific studies, conduct experiments, and interpret results.

Applying knowledge: Using biological knowledge to solve practical problems and make informed decisions on environmental and health issues.

Promote scientific curiosity and desire to explore: Encourage students to ask questions and seek answers within the scientific context.

Emotional Objectives of Biology

Promoting respect for life and biodiversity: Developing awareness of and respect for the different forms of life on Earth and the importance of preserving them.

Developing environmental awareness: Encouraging students to appreciate the importance of the environment and the role of humans in protecting it.

Promoting Compassion for Organisms: Motivating students to reflect on the impact that human actions have on other organisms.

Promoting personal and community responsibility: Promoting a sense of responsibility towards preserving public health and the environment.

Developing positive attitudes towards science: Developing interest and appreciation for science in general and biology in particular.

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Personal Development Planning

Building leadership skills, nurturing self-management capabilities, and improving critical thinking styles

Participate in mental activities and stay away from imitation

Create a plan and list of goals
--

Intermediate school

Week	hours	Intend ed Learning Outcomes	Module / Course Name or	teaching method	Evaluation method
1			-History and General Concepts of Biology Theory -Comparing Prokaryotic and		Attend Daily exams +homework
2			Introduction to the Chemistry of Life -Cells chemistry and chemical bonds WATER -pH, Salts and ions		
3			Introduction to Cell Structure and Function - Cytoskeleton -Microfilaments, Intermediate Filaments, Flagella and Cilia		
4			Introduction to Cell Structure and Function - Plasma Membrane , Passive transport, active transport, factors effect on UNTRANSLATED_CONTENT_START permeability UNTRANSLATED_CONTENT_END - Cytoplasm	Lectures PDF Power point Video.	
5			Eukaryotic cell organelles: - Mitochondria (morphology, structure), -lysosomes (types, function).		
6			Eukaryotic cell organelles: - Golgi complex (morphology, function)		
7			-Endoplasmic reticulum (smooth & rough) and their function. -Vesicles and Vacuoles -Ribosome (protein synthesis).		
8			The nucleus, nuclear envelope.		
9			Chromosome structure - changes (duplication, translocation, inversion)		
10			DNA Replication and Protein Synthesis -The structure of the DNA		
11			DNA Replication and Protein Synthesis		
12			DNA Replication and Protein Synthesis الترجمة		
13			Introduction to Reproduction at the Cellular Levels -The Cell Cycle		

			-Mitosis		
14			Levels -Meiosis -Prokaryotic Cell Division		
15					
The most important sources of information about the program					
1. Elizabeth o Grady, Jason Cashmore, Marsha, Carol Wismer(2018). <i>Principles of Biology- An Introduction to Biological Concepts</i> . Second Edition. 2. Peter Raven (2016) <i>Biology</i> . Elven Edition. 3. VJ. Bekish, Yu.T. Nikulin (2006) <i>Practical Book on Medical Biology</i> .					

1	
Medical Terminology	
14. Course Code	
15. Term / Year	
2025–2026	
8. Description Preparation Date:	
10/24	
16. Available Attendance Forms My Attendance	
My presence is mandatory	
8. Available Attendance Forms:	
15 hours and above	
17. Course administrator's name (mention all, if more than one name)	
Name: Eng. Nabil Bassem Nasser Email :	
• Course Objectives	
Course Objectives	6. Teaching students how to deal with basic medical terminology in the field of radiology. 7. Introducing students to medical terminology in traditional medical imaging, 8. Train students to trade these terms. 9. Encourage students to be creative and think about specialized projects and follow developments in this field. 10. Provide students with scientific, practical and subjective skills that enable them to solve problems in the process in a scientific way.
• TEACHING AND LEARNING STRATEGIES	

Strategy	Objective: To apply theoretical knowledge in a practical environment by: Training in the use of medical terminology. The possibility of using medical terminology at the other stage.
Course Structure	
Required Program Outputs and Teaching, Learning and Evaluation Modalities	
Knowledge Objectives 1. Understand the principles of medical terminology. 2. Provides a comprehensive overview of medical terminology. 3. Identify important medical terms used in examinations . 4. Classification of medical terms as needed in the required examination.	
B – Skill Objectives of the Program Students will learn or be able to systematically demonstrate their understanding of the basic principles of medical terminology: 1-Learn to use medical terminology . 2- Analyzing the results of images and samples based on medical terminology . 4-Giving the final report to the patient .	
Teaching and learning methods	
1- Theoretical lectures. 2-Using teaching aids (presentations and scientific films)	
Evaluation methods	
Quarterly and Final Theoretical and Practical Tests	
Objective: To understand professional ethics related to the use of medical terms, such as: Patient confidentiality. Reduce radiation exposure as much as possible.	

Week	hours	Intend ed Learning Outcomes	Module / Course Name or	teaching method	Evaluation method
1			Structural analysis: Basic Elements of a Medical Word	Lectures PDF Power point Video.	Attend Daily exams +homework
2			suffixes		
3			Prefixes		
4			Roots , Word terminals , Conditions		
5			Terms concerning Body Structure		
6			Terms concerning Integumentary System		
7			Terms concerning Digestive System		
8			Terms concerning Respiratory System		
9			Terms concerning the skin & its appendages		
10			Terms concerning Cardiovascular System		
11			Terms concerning Blood, Lymph, and Immune Systems		
12			Terms concerning Musculoskeletal System		
13			Terms concerning the endocrine system		
14			Terms concerning the special senses		
15			Terms concerning the oncology		

• Course Evaluation

Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports etc.

• Learning and Teaching Resources

Required textbooks (methodology if)	. 1 David Andersson, Medical Terminology: The Best and Most Effective Way to Memorize, Pronounce and Understand Medical Terms: Second Edition
Key References (Sources)	. 2 Barbara A. Glys Medical Terminology Systems: A Body Systems Approach Eighth Edition.
Recommended books and references (scientific journals, reports...)	Perry Sprawls, "Physical principles of medical imaging", 2nd Edition 1996.
E-References , Websites	Internet

Course Development Plan

- 1- Identifying and improving the educational objectives of the course and related units.
2. Develop an assessment strategy aligned with the learning objectives
3. Detail a plan for educational resources aligned with assessments

4- Create a communication plan for influential participation

1	
Functional Physiology	
• Course Code	
RT124	
1. Term / Year	
2025-2026	
9. Description Preparation Date:	
10/24	
2. Available Attendance Forms My Attendance	
My presence is mandatory	
9. Available Attendance Forms:	
15 hours and above	
3. Course administrator's name (mention all, if more than one name)	
Name: M. M. Ali Rasa Ghobd Prince Email :	
• Course Objectives	
Course Objectives	11. Teaching students how to deal with basic functional physiology in field of radiology . 12. Introducing students to functional physiology in conventional medical imaging, 13. Train students to trade these terms. 14. Encourage students to be creative and think about specialized projects and follow developments in this field. 15. Provide students with scientific, practical and subjective skills that enable them to solve problems the process in a scientific way.
• TEACHING AND LEARNING STRATEGIES	

Strategy	Objective: To apply theoretical knowledge in a practical environment by: Training in the use of functional physiology. The possibility of using functional physiology in other stages.
• Course Structure	
.	Required Program Outputs and Teaching, Learning and Evaluation Modalities
	Knowledge Objectives 1. Understand the principles of functional physiology. 2. Provides a comprehensive overview of functional physiology. 3. Identify functional physiology and separate it from general physiology. 4. Classification of functional physiology as needed in the required examination.
	B – Skill Objectives of the Program -1 Students will learn or be able to systematically demonstrate their understanding of the basic principles of functional physiology: 2-Learn to use functional physiology. 3- Analyzing the results of images and samples based on functional physiology. 4-Giving the final report to the patient .
	Teaching and learning methods
	1- Theoretical lectures. 2-Using teaching aids (presentations and scientific films)
	Evaluation methods
	Quarterly and Final Theoretical and Practical Tests
	Objective: To understand the professional ethics related to the use of functional physiology,

Week	hours	Intend ed Learning Outcomes	Module / Course Name or	teaching method	Evaluation method
1			Physiology of cardiovascular system: Components of CVS and their functions Systole, diastole, peripheral resistance	Lectures PDF Power point Video.	Attend Daily exams +homework
2			Physiology of respiratory system: Pulmonary ventilation, elastic recoil, pressure changes during inspiration and expiration, pulmonary volumes, alveolar ventilation, respiratory control centers, factors influence breathing		
3			Physiology of Digestive system: stomach, gastric juice, regulation of stomach secretion, inhibition of secretion by nervous system, small intestine secretion		
4			Physiology of Pancreas and small and large Intestine pancreatic juice contains and function , regulation of pancreatic secretion, duodenum function , intestinal juice contents, large Intestine		
5			Physiology of liver and gallbladder: liver functions, gallbladder function		
6			Physiology of renal system: Parts of urinary system, function of urinary system, urine formation process, glomerular filtration		
7			Selective process of urine formation: Tubular reabsorption, Regulation of urine concentration and volume, tubular secretion		
8			Micturition reflex regulation and urination		
9			Female reproductive system: Puberty in females, menstrual cycle, menopause, female fertility and pregnancy		
10			Male reproductive system: Function, testosterone, puberty in males, regulation of male reproduction system, hormonal and neural mechanisms		
11			General organization , CNS, PNS, nerve fiber, brain parts, brainstem function, cerebrum		
12			Descending, ascending, intersegmental		
13			Hemi section and complete section		
14			Adrenal gland hormones role and function		
15			Pituitary gland hormones role and function		

• Course Evaluation

Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports etc.

• Learning and Teaching Resources

Required textbooks (methodology if) . 1. Seeleys anatomy and physiology (eleven edition) Cinnamon L. VanPutte , Jennifer L. Regan , and Andrew F. Russo (2017)

)	
Key References (Sources)	. 2-Essentials of Human Anatomy & Physiology, Global Edit Suzanne Keller Elaine Marieb (2017).
Recommended books and references (scientific journals, reports...)	3.Human Anatomy and Physiology, Global Edition [Sep 2015] Erin, C. Amerman
E-References , Websites	Internet

Course Development Plan

- 1- Identifying and improving the educational objectives of the course and related units.
2. Develop an assessment strategy aligned with the learning objectives
3. Detail a plan for educational resources aligned with assessments
- 4- Create a communication plan for influential participation

				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4.	A1	A2	A3	A4
2nd Year		Traditional Radiological Device Technologies	Basic	/	/	/		/	/	/		/	/	/	
		Upper extremity radiography techniques	Basic	/	/	/		/	/	/		/	/	/	
		Special radiographic examinations of the digestive tract and bones	Basic	/	/	/		/	/	/		/	/	/	
		Radiographic Anatomy of the Head and Upper Limbs	Basic	/	/	/		/	/	/		/	/	/	
		Fundamentals of Radiophysics	Basic	/	/	/		/	/	/		/	/	/	
		Fundamentals of Radiation Protection	Basic			/				/					/
		Crimes of the Baath regime in Iraq	Optional	/	/	/		/	/	/		/	/	/	
		Computed Tomography Techniques	Optional			/				/					/
		Lower Limb Radiography Techniques	Basic	/	/	/		/	/	/		/	/	/	
		Special radiological examinations of the biliary and	Basic	/	/	/		/	/	/		/	/	/	

		reproductive system													
		Radial Anatomy of the Lower Limbs	Basic	/	/	/		/	/	/		/	/	/	
		Computed Tomography	Basic	/	/	/		/	/	/		/	/	/	
		Radiographic Anatomy of the Head and Upper Limbs	Basic	/	/	/		/	/	/		/	/	/	

Course Description

1	
Traditional Radiological Device Technologies	
• Course Code	
RT211	
18. Term / Year	
2025-2026	
10. Description Preparation Date:	
10/24	
19. Available Attendance Forms My Attendance	
My presence is mandatory	
10. Available Attendance Forms:	
15 hours and above	
20. Course administrator's name (mention all, if more than one name)	
Name: Dr. Abdul Amir Al-Aboudi Email :	
• Course Objectives	
Course Objectives	16. Teaching students how to deal with basic devices in the field of radiology of all kinds. 17. Familiarize students with the knowledge and skills needed to understand and operate radiological devices used in conventional medical imaging. 18. Train students to manage and use a variety of devices. 19. Encourage students to be creative and think about specialized projects and follow developments in this field. 20. Providing students with scientific, practical and subjective skills to enable them to solve practical problems in a scientific manner.
• TEACHING AND LEARNING STRATEGIES	
Strategy	Objective: To apply theoretical knowledge in a practical environment by: Training on the operation of radiological devices. Analysis of radiological images and diagnosis of cases
• Course Structure	
•	Required Program Outputs and Teaching, Learning and Evaluation Modalities

Knowledge Objectives

1. Understand the principles of instrumentation.
2. Offers a comprehensive overview of conventional devices.
3. Identify important devices used in examinations .
4. Classification of conventional devices as needed in the required examination.

B – Skill Objectives of the Program

Students will learn or be able to systematically demonstrate their understanding of the basic principles of conventional devices:

- 1-Learn to work and operate devices .
- 2- Obtaining the basic images resulting from the work of the devices .
- 3- Analyzing the images resulting from the devices .
- 4-Giving the final report to the patient .

Teaching and learning methods

- 1- Theoretical lectures.
- 2-Using teaching aids (presentations and scientific films)

Evaluation methods

Quarterly and Final Theoretical and Practical Tests

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Objective: To understand professional ethics related to the use of radiological devices, such as:

Patient confidentiality.

Reduce radiation exposure as much as possible.

Week	hours	Intend ed Learning Outcomes	Module / Course Name or	teaching method	Evaluation method
1			X-Ray machine system: Operating console: line compensation, autotransformer, KVp adjustment, mA control Exposure timer	Lectures PDF Power point Video.	Attend Daily exams +homework
2			High voltage generators: I never get to pick. voltage rectification, phase power types, x-ray circuits Effect of waveform on radiation output & image quality		
3			X-RAY Basic design Line focus principle Heel effect		
4			X-ray tube failure: Causes of X-ray Tube Failure Results remedy.		
5			Construction of film, Intensifying screens, cassette. Processing the latent image: Manually Automatically		
6			Filters Monitoring Half-value layers		
7			Monitoring linear, crossed, focused, moving grids		
8			Digital radiography: Computed Radiography (CR): System apparatus, mechanism of work Image processing		
9			Direct to digital radiography (DDR): Flat Panel Detectors (DR): Indirect conversion detector (a-Si) Direct conversion detector (a-Se)		
10			Image quality: Contrast Example Depoussierant		
11			Magnification		
12			Distortion		

13			Mammography: Imaging system equipments, Types of mammography systems. Film-screen system		
14			Digital mammography (FFDM) CEDM Breast tomosynthesis Computer-aided detection (CAD) Scintimammography		
15			Fluoroscopy: Traditional imaging system apparatus & image Intensification Digital Fluoroscopy Digital subtraction angiography		

• Course Evaluation

Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports etc.

• Learning and Teaching Resources

Required textbooks (methodology if any)	1 Stewart Carlyle Bushong, "Radiologic Science Technologists Physics, Biology, and Protection" Elsevier, 7th edition, 2017.
Key References (Sources)	2Chris Guy & Dominic ffytche, "An Introduction to Principles of Medical Imaging" Imperial College Press, 2005.
Recommended books and references (scientific journals, reports...)	Perry Sprawls, "Physical principles of medical imaging", 2nd Edition 1996.
E-References , Websites	Internet

Course Development Plan

- 1- Identifying and improving the educational objectives of the course and related units.
2. Develop an assessment strategy aligned with the learning objectives
3. Detail a plan for educational resources aligned with assessments
- 4- Create a communication plan for influential participation

Course Description Form

1.
Radiographic Techniques for Upper Limbs
2. Course Code
RT212

21. Term / Year	
2025–2026	
11. Description Preparation Date:	
10/24	
22. Available Attendance Forms My Attendance	
My presence is mandatory	
11. Available Attendance Forms:	
15 hours and above	
23. Course administrator's name (mention all, if more than one name)	
Name: Ass. L.. Ali Hani Karim Hassan Email :	
3. Course Objectives	
Course Objectives	21. Teaching students how to deal with the imaging mechanism of the b upper limbs in the field of radiology of all kinds. 22. Familiarize students with the knowledge and skills needed understand images of upper limbs used in medical imaging. 23. Train students to manage and infer images for upper limbs . 24. Encourage students to be creative and think about specialized proje and follow developments in this field. 25. Providing students with scientific, practical and subjective skills t enable them to solve practical problems in a scientific manner
4. TEACHING AND LEARNING STRATEGIES	
Strategy	Objective: To apply theoretical knowledge in a practi environment by: Training in preparing images of the upper limbs resulting fr radiological devices. Analysis of radiological images of the upper limbs and diagno of cases
5. Course Structure	
Required Program Outputs and Teaching, Learning and Evaluation Modalities	
Knowledge Objectives	
1. Understand the principles of upper limb radiography . 2. Provides a comprehensive overview of upper extremity radiography . 3. Identify important devices used in examinations . 4. Classification of radiography of the upper extremities as needed in the required	

examination.

B – Skill Objectives of the Program

Students will learn or be able to systematically demonstrate their understanding of the basic principles of **upper limb radiography**:

- 1- Learning to work on **radiography of the upper limbs** .
- 2- Obtaining the basic images resulting from the work of the devices .
- 3- Analyzing the images resulting from the devices .
- 4- Giving the final report to the patient .

Teaching and learning methods

- 1- Theoretical lectures.
- 2- Using teaching aids (presentations and scientific films)

Evaluation methods

Quarterly and Final Theoretical and Practical Tests

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Objective: To understand the professional ethics related to the use of **upper limb radiography** , such as:

Patient confidentiality.

Reduce radiation exposure as much as possible.

Week	hours	Intend ed Learning Outcomes	Module / Course Name or	teaching method	Evaluation method
1			Terminology: body planes,section, lines, body position special projections		Attend Daily exams +homework
2			Image quality -exposure factor, brightness Contrast Example - distortion , noise		
3			Shoulder joint, AP, lateral , supero-inferior & oblique		
4			Glenohumeral joint positions	Lectures	
5			Acromioclavicular joints	PDF	
6			Clavicle positions	Power point	
7			Sternoclavicular joints	Video.	
8			Scapula & Coracoid process positions		
9			Humerus distal and proximal fracture		
10			Forearm , radius and ulna, type of fracture		
11			Elbow joint , AP, Lateral, oblique , shown structure		
12			Hand positions, shown structures		
13			Thumb& fingers positions		
14			Scaphoid bone positions, shown structures		
15			Wrist positions, shown structures		

6. Course Evaluation

Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports etc.

7. Learning and Teaching Resources

Required textbooks (methodology if any)	1. Whitley, A. S., Jefferson, G., Holmes, K., Sloane, C., Anderson, C., & Hoadley, G. (2015). Clark's Positioning in Radiography 13e. crc Press.
Key References (Sources)	2 Bontrager, K. L., & Lampignano, J. (2013). Bontrager's handbook of radiographic positioning and techniques. Elsevier Health Sciences.
Recommended books and references (scientific journals, reports...)	Perry Sprawls, "Physical principles of medical imaging", 2nd Edition 1996.

E-References , Websites	Internet
Course Development Plan	
1- Identifying and improving the educational objectives of the course and related units. 2. Develop an assessment strategy aligned with the learning objectives 3. Detail a plan for educational resources aligned with the assessments 4- Create a communication plan for influential participation	

Course Description Form

1.	
Special radiographic examinations of the digestive tract and bones	
2. Course Code	
RT213	
24. Term / Year	
2025-2026	
12. Description Preparation Date:	
10/24	
25. Available Attendance Forms My Attendance	
My presence is mandatory	
12. Available Attendance Forms:	
15 hours and above	
26. Course administrator's name (mention all, if more than one name)	
Name: Ass. L. Hussein Ayed Hussein Jassim Email :	
3. اهداف المقرر	
Course Objectives	26. Teaching students how to deal with the mechanism of radiographic examinations, especially of the digestive system . 27. Familiarize students with the knowledge and skills necessary to understand the special radiological examinations of the digestive system used in medical imaging, 28. Training students to manage and deduce the mechanism of special radiological examinations of the digestive system. 29. Encourage students to be creative and think about specialized projects and follow developments in this field. 30. Providing students with scientific, practical and subjective skills to

	enable them to solve practical problems	in a scientific manner
4. TEACHING AND LEARNING STRATEGIES		
Strategy	Objective: To apply theoretical knowledge in a practical environment by: Training in the preparation of special radiological examinations of the digestive tract . Analysis of results from special radiographic examinations of the gastrointestinal tract.	
5. Course Structure		
Required Program Outputs and Teaching, Learning and Evaluation Modalities		
Knowledge Objectives		
1. Understand the principles of special radiological examinations of the digestive tract.		
2. Provides a comprehensive overview of special radiological examinations of the gastrointestinal tract.		
3. Identify important devices used in radiological examinations of the digestive system.		
4. Classification of radiological examinations, especially of the digestive system.		
B – Skill Objectives of the Program		
Students will learn or be able to demonstrate their understanding of basic principles of gastrointestinal screening		
1-Learn to work on radiological examinations, especially of the digestive system.		
2- Obtaining the basic images resulting from the special radiological examinations of the digestive system.		
3- Analysis of radiological examinations, especially of the digestive system.		
4-Giving the final report to the patient .		
Teaching and learning methods		
1- Theoretical lectures.		
2-Using teaching aids (presentations and scientific films)		
Evaluation methods		
Quarterly and Final Theoretical and Practical Tests		
ج- الأهداف الوجدانية والقيمية		
Objective: To understand professional ethics related to the use of special gastrointestinal examinations, such as:		
Patient confidentiality.		

Week	hours	Intend ed Learn ing Outco mes	Module / Course Name or	teaching method	Evaluatio n method
1			Intravascular contrast media Adverse effect of Intravenous (IV) water soluble contrast media on specifc organs		Attend Daily exams +homewo rk
2			Contrast Agents in Magnetic Resonance Imaging Mechanism of Action Gadolinium Gastrointestinal Contrast Agents		
3			Methods of imagings of Gastrointestinal tract (Git) with barium water soluble contrase agents		
4			Barium examination: swallow and meal Barium examination: follow through,small bowel anema.	Lectures PDF Power point Video.	
5			Barium examin ation: barium enema,instant enema,air enema.		
6			Reduction of intussusception		
7			Computed Tomography of the Gastrointestinal Tract		
8			Magnetic Resonance Imaging of the Gastrointestinal Tract		
9			Imaging modalities of bones & joints.		
10			Muscloskeletal MRI-general points		
11			Arthrography-general points		
12			Arthrography of the knee & hip		
13			Arthrography of the shoulder &elbow		
14			Arthrography of the wrist & ankle		
15			Radionuclide bone scan		

Reduce radiation exposure as much as possible.

6. Course Evaluation

Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports etc.

7. Learning and Teaching Resources	
Required textbooks (methodology if)	1. Watson, N. & Jones, H. chapman &Nakielnys' 'Guide Radiological procedures' ', 7th edition, Elsevier Health Science
Key References (Sources)	. 2 Bontrager, K. L., & Lampignano, J. (2013). Bontrager's handbook of radiographic positioning and technique UNTRANSLATED_CONTENT_START Elsevier UNTRANSLATED_CONTENT_END
Recommended books and references (scientific journals, reports...)	Perry Sprawls, "Physical principles of medical imaging", 2nd Edition 1996.
E-References , Websites	Internet
Course Development Plan	

Course Description Form

1.	
Radiographic Anatomy of the Head and Upper Limbs	
2. Course Code	
RT214	
27. Term / Year	
2025-2026	
13. Description Preparation Date:	
10/24	
28. Available Attendance Forms My Attendance	
My presence is mandatory	
13. Available Attendance Forms:	
15 hours and above	
29. Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. Wassan Kazem Abbas Ahmed Email :	
3. Course Objectives	
Course Objectives	31. Teaching students how to deal with the mechanism of radiographic anatomy of the head and upper limbs. 32. Familiarize students with the knowledge and skills needed to understand the radiographic anatomy of the head and upper extremities used in medical imaging,

	33. Training students to manage and deduce the mechanism radiographic anatomy of the head and upper limbs. 34. Encourage students to be creative and think about specialized projects and follow developments in this field. 35. Providing students with scientific, practical and subjective skills to enable them to solve practical problems in a scientific manner
4. TEACHING AND LEARNING STRATEGIES	
Strategy	Objective: To apply theoretical knowledge in a practical environment by: Training in the preparation of radiological anatomy of the head and upper extremities . Analysis of results from radiographic anatomy of the head and upper extremities.
5. Course Structure	
Required Program Outputs and Teaching, Learning and Evaluation Modalities	
Knowledge Objectives	
1. Understand the principles of radiographic anatomy of the head and upper extremities. 2. Provides a comprehensive overview of the radiographic anatomy of the head and upper extremities. 3. Identify important devices used in radiological anatomy of the head and upper extremities. 4. Classification of radiographic anatomy of the head and upper extremities.	
B – Skill Objectives of the Program	
Students will learn or be able to demonstrate their understanding of the principles of radiological anatomy of the head and upper extremities. 1-Learn to work on radiographic anatomy of the head and upper limbs. 2- Obtaining the basic results resulting from radiological anatomy of the head and upper limbs. 3- Analysis of the results of radiological anatomy of the head and upper limbs. 4-Giving the final report to the patient.	
Teaching and learning methods	
1- Theoretical lectures. 2-Using teaching aids (presentations and scientific films)	

Evaluation methods
Quarterly and Final Theoretical and Practical Tests
Objective: To understand professional ethics related to the use of radiographic anatomy of the head and upper extremities, such as: Patient confidentiality. Reduce radiation exposure as much as possible.

Week	hours	Intend ed Learning Outcomes	Module / Course Name or	teaching method	Evaluation method
1			Normal anatomy of the skull (cranial) bones.		Attend Daily exams +homework
2			Radiological features of the skull (cranial) bones.		
3			Normal anatomy of the facial bones.		
4			Radiological features of the facial bones.		
5			Normal anatomy of nasal cavity & paranasal sinuses. Radiology of the nasal cavity and paranasal sinuses.		
6			shoulder girdle (scapula and clavicle bones). Radiological features of the scapula and clavicle bones. Ossification centers.		
7			Normal anatomy of the humerus, radiological features of the humerus. Ossification center.		
8			Normal anatomy of the radius and ulna bones, radiological features of the radius and ulna bone. Ossification centers.	Lectur es PDF Power point Video.	
9			Normal anatomy of the hand, radiological features of the hand. Ossification Cost Centers		
10			Shoulder joint: components, type of joint, articulating surfaces labrum, ligaments, radiological features of shoulder joint.		
11			Elbow joint: components, articulating surfaces, ligaments & radiological feature of the elbow joint.		
12			Wrist joint: components, articulating surfaces, ligaments & radiological features of the wrist joint.		
13			Blood supply of upper limbs: Arteries of the upper limb.		
14			Radiological features of the upper limb arteries.		
15			Veins of the upper limb, Radiological features of the upper limb veins.		

6. Course Evaluation

Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports etc.

7. Learning and Teaching Resources	
Required textbooks (methodology if)	1. Watson, N. & Jones, H. chapman & Nakielnys' 'Guide Radiological procedures' ', 7th edition, Elsevier Health Sciences, 2017.
Key References (Sources)	. 2 Bontrager, K. L., & Lampignano, J. (2013). Bontrag handbook of radiographic positioning and techniques. Elsev Health Sciences.
Recommended books and referen (scientific journals, reports...)	Perry Sprawls, "Physical principles of medical imaging", 2 Edition 1996.
E-References , Websites	Internet
Course Development Plan	
1- Identifying and improving the educational objectives of the course and related units. 2. Develop an assessment strategy aligned with the learning objectives 3. Detail a plan for educational resources aligned with assessments 4- Create a communication plan for influential participation	

Course Description Form

1.	
Fundamentals of Radiophysics	
2. Course Code	
RT215	
1. Term / Year	
2025-2026	
14. Description Preparation Date:	
10/24	
2. Available Attendance Forms My Attendance	
My presence is mandatory	
14. Available Attendance Forms:	
15 hours and above	
3. Course administrator's name (mention all, if more than one name)	
Name: Prof. Anis Ali Hassan	Email :
3. Course Objectives	
Course Objectives	36. Teaching students how to deal with the mechanism of radiophysics.

	37. Familiarize students with the knowledge and skills necessary understand the basics of radiophysics. 38. Train students to manage and deduce the basics of radiophysics. 39. Encourage students to be creative and think about specialized projects and follow developments in this field. 40. Providing students with scientific, practical and subjective skills to enable them to solve practical problems in a scientific manner
4. TEACHING AND LEARNING STRATEGIES	
Strategy	Objective: To apply theoretical knowledge in a practical environment by: Training in the basics of radiophysics. Analyzing the results and determining the handling of radiations risks.
5. Course Structure	
Required Program Outputs and Teaching, Learning and Evaluation Modalities	
Knowledge Objectives 1. Understand the basics of radiophysics. 2. Provides a comprehensive overview of radioactive materials and ways to deal with them . 3. Determine the risk of radioactive materials. 4. Classification of radioactive materials and how to deal with them .	
B – Skill Objectives of the Program Students will learn or be able to demonstrate their understanding of the basic principles of radiophysics. 1-Learn to work on how to deal with radioactive materials . 2- Analyzing the results of identifying radioactive materials and their danger . 4-Giving the final report to the patient.	
Teaching and learning methods	
1- Theoretical lectures. 2-Using teaching aids (presentations and scientific films)	
Evaluation methods	
Quarterly and Final Theoretical and Practical Tests	

Objective: To understand the professional ethics related to the use of radioactive hazardous materials .

Reduce radiation exposure as much as possible.

Week	hours	Intend ed Learning Outcomes	Module / Course Name or	teaching method	Evaluation method
1			Generating the tube voltage Exposure timing Falling load Filament voltage	Lectur es PDF Power point Video.	Attend Daily exams +homework
2			Line focus Rotation anode tube Heat rating		
3			X-Ray Tube Heating and Cooling Heat production Heat capacity Factors affecting the heat capacity Focal spot area Focal spot size Rotating anode		
4			X-Ray Production Characteristic radiation Bremsstrahlung radiation Emission spectrum Bremsstrahlung Importance in Imaging and Dose		
5			Characteristic Radiation Importance in Imaging and Dose Influence of Electron Energy		
6			Luminescence phenomenon X-ray fluorescence X-ray phosphorescence		
7			Factors affecting electron emission spectrum mA and mAs kVP Voltage Waveform Target Material Added Filtration		
8			X-ray Emission: Factors Influencing x-ray spectra and output X-ray quantity X-ray intensity Factors affecting x-ray quantity		
9			X-ray quality Penetrability Photon range filtration Half-Value Layer		
10			The Linear X-ray Attenuation Coefficient Interaction X-ray with matter processes Photoelectric Absorption		

			Compton process (Modified scatter) Effect of the angle of scattering Unmodified scatter		
11			Factors affecting image contrast Linear attenuation coefficient of subject Photon energy (KVp)		
12			Attenuation of X-ray by: The patient Contrast media		
13			Differential absorption Dependence on Atomic Number Dependence on Mass Density		
14			Quality assurance of exposure parameters		
15			Equipment tests Speed of film processor		

6. Course Evaluation

Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports etc.

7. Learning and Teaching Resources

Required textbooks (methodology if)	1. M. Radhi Al-Qurayshi and H. Qasim. AL-Mosawi "Radiation Physics and its applications in diagnostic radiology techniques", Middle Technical University (MTU), Iraq, (2015)
Key References (Sources)	2. W. R. Hendee and E. R. Ritenour "Medical Imaging Physics" 4th Edition, Wiley-Liss, Inc., (2002).
III Recommended books and references (scientific journals, reports...)	3. Allisy-Roberts PJ, Williams J. Farr's "physics for medical imaging". Elsevier Health Sciences; 2007 14 November
E-References , Websites	Internet

Course Development Plan

- 1- Identifying and improving the educational objectives of the course and related units.
2. Develop an assessment strategy aligned with the learning objectives
3. Detail a plan for educational resources aligned with assessments
- 4- Create a communication plan for influential participation

Course Description Form

1.
Fundamentals of Radiation Protection
2. Course Code

RT216	
1. Term / Year	
2025–2026	
15. Description Preparation Date:	
10/24	
2. Available Attendance Forms My Attendance	
My presence is mandatory	
15. Available Attendance Forms:	
15 hours and above	
3. Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. Morteza Shaker Aswad Email :	
3. Course Objectives	
Course Objectives	41. Teaching students how to deal with radiation protection. 42. Familiarize students with the knowledge and skills necessary understand the basics of radiation protection. 43. Train students to manage and infer radiation protection. 44. Encourage students to be creative and think about specialized projects and follow developments in this field. 45. Providing students with scientific, practical and subjective skills to enable them to solve practical problems in a scientific manner
4. TEACHING AND LEARNING STRATEGIES	
Strategy	Objective: To apply theoretical knowledge in a practical environment by: Training on the basics of radiation protection basics. Analyzing the results and determining the handling of radiation risks and how to deal with them .
5. Course Structure	
Required Program Outputs and Teaching, Learning and Evaluation Modalities	
Knowledge Objectives 1. Understand the basics of radiation protection. 2. Provides a comprehensive overview of radioactive materials and ways to deal with them . 3. Determine the danger of radioactive materials, especially from devices . 4. Classification of radioactive materials and how to deal with them and identify devices with radiation hazard.	

B – Skill Objectives of the Program

Students will learn or be able to demonstrate their understanding of the basic principles of radiation protection.

1-Learn to work on how to deal with radioactive materials .

2- Analyzing the results of the mechanisms of work of devices with radioactive materials and their danger .

4-Giving the final report to the patient.

Teaching and learning methods

1- Theoretical lectures.

2-Using teaching aids (presentations and scientific films)

Evaluation methods

Quarterly and Final Theoretical and Practical Tests

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Objective: To understand the professional ethics related to the use of radioactive hazardous materials .

Reduce radiation exposure as much as possible.

Week	hours	Intend ed Learning Outcomes	Module / Course Name or	teaching method	Evaluation method
1			Classification of ionizing radiation Sources of ionization radiation (background radiation) Natural sources Human-made (artificial) sources Comparison of Radiation Doses	Lectur es PDF Power point Video.	Attend Daily exams +homework
2			Radiation Measurement Units & International SI Units 13711 EXPOSURE: Absorbed dose Kerma Equivlant dose Effective dose Committed Equivlant & effective dose		
3			The Principles of Radiological Protection Justification of a practice Optimisation of Protection (Alara principles) introduction Distance Shielding		
4			Dose limits Maximum Permissible Occupational Doses Maximum Permissible public Doses Maximum Permissible patient Doses Whole-Body Dose Limits		
5			Radiation protection for classification of exposure: Occupational x Element Whole body non-occupational exposure		
6			Occupational Radiation Exposure in: Fluoroscopy Mammography Computed Tomography		
7			Patient Radiation Dose Descriptions Entrance Skin Exposure (ESE) Mean Marrow Dose (MMD)		
8			Dose and management principles in Special cases: X-ray and pregnancy Pregnancy patient Pregnancy technologist X-ray and obesity		

			Obese patient Obese technologist		
9			Design of Primary Protective Barrier Design of Secondary Protective Barrier		
10			Factors That Affect Barrier Thickness		
11			Radiation Detection and Measurement Ionization gases detectors (Gas-Filled Detectors) Geiger Counters Proportional counting		
12			Scintillation detectors Organic Scintillators Inorganic Scintillators Semiconductor Detectors Instrument Calibration		
13			Personnel Dosimeters Film Badges Thermoluminescence Dosimeters (TLDs) Optically stimulated luminescence (OSL) Pocket Dosimeters		
14			CT Dose Metrics and Calculation CT dose index (CTDI) dose-length product(DLP)		
15			Fluoroscopy dose: To patient To staff methods of minimizing		

6. Course Evaluation

Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports etc.

7. Learning and Teaching Resources

Required textbooks (methodology if) 1. M. Radhi Al-Qurayshi and H. Qasim. AL-Mosawi "Radiation Physics and its applications in diagnostic radiology techniques", Middle Technical University (MTU), Iraq, (2015)

Key References (Sources)

2. W. R. Hendee and E. R. Ritenour "Medical Imaging Physics" 4th Edition, Wiley-Liss, Inc., (2002)

III Recommended books and references (scientific journals, reports...)

3. Allisy-Roberts PJ, Williams J. Farr's "physics for medical imaging". Elsevier Health Sciences; 2007 Nov 14.

E-References , Websites

Internet

Course Development Plan

1- Identifying and improving the educational objectives of the course and related units.

2. Develop an assessment strategy aligned with the learning objectives

3. Detail a plan for educational resources aligned with assessments
4. Create a communication plan for influential participation

Course Description

This course outline provides a concise summary of the main features of the course and the expected learning outcomes for students, demonstrating whether they have achieved maximum benefit from the available learning opportunities. It must be linked to the description of the program.⁴

1.
Cream of Baath
2. Course Code
RT217
30. Term / Year
2025-2026
16. Description Preparation Date:
10/24
31. Available Attendance Forms My Attendance
My presence is mandatory
16. Available Attendance Forms:
15 hours and above
32. Course administrator's name (mention all, if more than one name)
Name: Eng. Moatasem Rabie Hussein
Email :

23. Course Outcomes and Teaching, Learning and Evaluation Methods
A- Cognitive Objectives Raising the student's awareness of the heinous crimes practiced by the defunct Baath Party

(b) Course Skills Objectives.

B 1 – Exchange ideas with students to listen to them and correct their intellectual path

B2 – Mention real-life examples of myriad Ba 'ath Party crimes

Teaching and learning methods

Presentation

Lecture method

method (discussion-)

Evaluation methods

|||UNTRANSLATED_CONTENT_START|||

أسئلة

شفهية|||UNTRANSLATED_CONTENT_END|||

Daily pop quizzes

Semi-final and final exams

Understanding history and political influences: Teaching students about Baathist crimes provides a deeper understanding of the recent history of Iraq and the long-term effects of repressive policies.

Promoting human rights awareness: Learning about these crimes helps students appreciate the importance of human rights and fundamental freedoms, and promotes awareness of civic rights and responsibilities.

Developing moral values: The in-depth study of the crimes of the Baath establishes the values of justice and fairness and respects human dignity, which contributes to the development of solid moral values among students.

Promoting tolerance and mutual understanding: Learning the history of injustice and authoritarianism can contribute to fostering values of tolerance and understanding among individuals from different backgrounds.

Stimulating Constructive Debate and Critical Thinking: Discussing and analyzing historical events motivates students to think critically and encourages them to constructively debate complex issues.

Sense of social responsibility: The study of these crimes encourages students to take social responsibility and actively participate in society to prevent the recurrence of these events.

Recognition of suffering and restorative justice: Promoting an understanding of the suffering experienced by victims and the importance of restorative justice in healing wounds and rebuilding society.

Developing research and analytical skills: Deepening the study of these topics enhances the research and analytical skills of students, which contributes to improving their academic abilities.

Enhanced capacity for civic and political participation: Understanding historical events and their impacts strengthens capacity for effective participation in future political and civic affairs.

Past re-evaluation: Provides an opportunity for students to rethink and evaluate historical events and draw lessons learned to avoid past mistakes in the future.

Teaching and learning methods

Presentation

Lecture method
method (discussion-)

Evaluation methods

|||UNTRANSLATED_CONTENT_START|||
شفهية|||UNTRANSLATED_CONTENT_END|||
Daily pop quizzes
Semi-final and final exams

أسئلة

(d) Transferred general andqualifying skills (other skills related to employability and personal development).

D1- Using books, sources and memos documenting the crimes of the defunct Baath Party

D2- Comparingthe previous system with the current system to come up with a convincing objective result

24.Course Structure					
Week	hours	Intended Learning Outcomes	Module / Course Name or	teaching method	Evaluation method
First	2	البكالوريوس	Modern history of Iraq	Theoretical	EXAMINATIONS
Second	2		A Brief History of the Ba 'ath Party		
The Third	2		Violation of rights and freedoms		
Fourth	2		The Impact of the Behaviors of the Baathist Regime on Society		
Fifth	2		Psychological Mechanisms in Controlling Governance		
Sixth	2		Transition and fighting tyranny		
Seventh	2		Social Mechanisms in Controlling Governance		
Eighth	2		The position of the Baath Party on religion		
Ninth and Tenth	2		Culture, media and militarization of society		
Eleventh	2		Use of internationally prohibited weapons		
Twelfth	2		Scorched earth		
Thirteenth	2		Marsh drainage and forced		

			displacement		
Fourteenth	2		Destruction of the agricultural and animal environment 2		
Fifteenth	2		Mass graves and bombing of places of worship		

25.Infrastructure

Required textbooks	The Platform of Crimes of the Defunct Ba 'ath Party (Ministerial Letter)
Key References (Sources)	Republic of Fear: Samir Khalil
Recommended books and references (scientific journals,reports ,.....))	Encyclopedia on the Killing and Persecution of the References to Religion and Scholars of the Shia of the Country of Mass Graves (Iraq)
Electronic references, websites ,.....	The Political Prisoners Foundation

26.Course Development Plan

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Course Description Form

1
Computed Tomography Techniques
• Course Code
RT221
1. Term / Year
2025-2026

17. Description Preparation Date:	
10/24	
2. Available Attendance Forms My Attendance	
My presence is mandatory	
17. Available Attendance Forms:	
15 hours and above	
3. Course administrator's name (mention all, if more than one name)	
Name: Dr. Abdul Amir Al-Aboudi Email :	
• Course Objectives	
Course Objectives	46. Teaching students how to deal with basic devices in the field computerized tomography of all kinds. 47. Familiarize students with the knowledge and skills needed to understand the techniques of computed tomography (CT) devices. 48. Train students in the management and use of CT scanner techniques. 49. Encourage students to be creative and think about specialized projects and follow developments in this field. 50. Providing students with scientific, practical and subjective skills to enable them to solve practical problems in a scientific manner.
• TEACHING AND LEARNING STRATEGIES	
Strategy	Objective: To apply theoretical knowledge in a practical environment by: Training in computed tomography (CT) device techniques. Analyze the results of CT scanner techniques and diagnose pathological conditions through it.
• Course Structure	
. Required Program Outputs and Teaching, Learning and Evaluation Modalities	
Knowledge Objectives	1. Understand the principles of CT device techniques. 2. Provides a comprehensive overview of CT device technologies. 3. Determine the important devices used in the tests resulting from the techniques of computerized tomography devices. 4. Classification of CT devices as needed in the required examination.

B – Skill Objectives of the Program

Students will learn or be able to demonstrate their understanding of the basic principles of CT techniques systematically:

- 1-Learn to work and operate computerized tomography devices .
- 2- Analysis of the resulting images, techniques of computerized tomography devices .
- 3-Giving the final report to the patient .

Teaching and learning methods

- 1- Theoretical lectures.
- 2-Using teaching aids (presentations and scientific films)

Evaluation methods

Quarterly and Final Theoretical and Practical Tests

ج- الأهداف الوجدانية والقيمية
|||UNTRANSLATED_CONTENT_START|||
|||UNTRANSLATED_CONTENT_END|||

Objective: To understand the professional ethics related to the use of all types of CT scanner techniques and to study their impact on the patient.

Reduce radiation exposure as much as possible.

Week	hours	Intend ed Learning Outcomes	Module / Course Name or	teaching method	Evaluation method
1			History of Computed Tomography Limitations of conventional radiography		Attend Daily exams +homework
2			Basic principles of CT Scanners : Generations of CT First-generation Second-generation Third-generation Fourth-generation Fifth-generation CT , electron beam (EBCT)		
3			Helical/spiral CT Scanners: Requirements for Volume Scanning: slip-ring technology dual source		
4			Interpolation Algorithms Pitch		
5			Multislice Computed Tomography (MSCT) (multidetector-row) CT		
6			CT system design: (SSCT & MSCT) X-Ray imaging system (gantry): X-Ray Tube , X-Ray tubes in MSCT (Straton x-ray tube)	Lectures PDF Power point Video.	
7			Collimation, Filtration		
8			Control Console Computer system: image display, recording, storage, and communication system. Patient Table or Couch		
9			Reconstruction methods: Backprojection reconstruction Filtered Backprojection		
10			Iterative reconstruction		
11			CT image quality: Image contrast Spatial resolution		
12			Image noise		
13			Types and causes Common artifacts and correction techniques		
14			Single-Photon Emission/ CT (SPECT/CT)		
15			Advanced technical CT applications: CT Angiography		

			Cardiac CT Imaging CT fluoroscopy		
Course Evaluation					
Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports etc.					
Learning and Teaching Resources					
Required textbooks (methodology if)			1. Stewart Carlyle Bushong, "Radiologic Science Technologists Physics, Biology, and Protection" Elsevier, 7th edition, 2017.		
Key References (Sources)			2. Chris Guy & Dominic ffytche, "An Introduction to Principles of Medical Imaging", Imperial College Press, 2005		
Recommended books and references (scientific journals, reports...)			3. Perry Sprawls, "Physical principles of medical imaging", 2nd Edition 1996		
E-References , Websites			Internet		
Course Development Plan					
1- Identifying and improving the educational objectives of the course and related units. 2. Develop an assessment strategy aligned with the learning objectives 3. Detail a plan for educational resources aligned with assessments 4- Create a communication plan for influential participation					

Course Description Form

1.
Radiographic Techniques for the Lower Limb
2. Course Code
RT222
3. Term / Year
2025-2026
18. Description Preparation Date:
10/24
4. Available Attendance Forms My Attendance
My presence is mandatory
18. Available Attendance Forms:
15 hours and above
5. Course administrator's name (mention all, if more than one name)
Name: Eng. Ali Hani Karim Hassan Email :

3. Course Objectives

Course Objectives	51. Teaching students how to deal with the imaging mechanism of the ba lower limbs in the field of radiology of all kinds. 52. Familiarize students with the knowledge and skills needed understand images of lower limbs used in medical imaging. 53. Train students to manage and infer images of lower limbs . 54. Encourage students to be creative and think about specialized proje and follow developments in this field. 55. Providing students with scientific, practical and subjective skills t enable them to solve practical problems in a scientific manner
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4. TEACHING AND LEARNING STRATEGIES

Strategy	Objective: To apply theoretical knowledge in a practi environment by: Training in preparing images of the lower extremities resulting fr radiological devices. Analysis of radiological images of the lower extremities a diagnosis of resulting cases
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5. Course Structure

Required Program Outputs and Teaching, Learning and Evaluation Modalities	
Knowledge Objectives	1. Understand the principles of radiography of the lower extremities . 2. Provides a comprehensive overview of radiography of the lower extremities . 3. Identify important devices used in examinations . 4. Classification of radiography of the lower extremities as needed in the required examination.
B – Skill Objectives of the Program	Students will learn or be able to systematically demonstrate their understanding of the basic principles of upper limb radiography: 1-Learn to work on radiography of the lower extremities . 2- Obtaining the basic images resulting from the work of the devices . 3- Analyzing the images resulting from the devices . 4-Giving the final report to the patient .
Teaching and learning methods	

- 1- Theoretical lectures.
- 2-Using teaching aids (presentations and scientific films)

Evaluation methods

Quarterly and Final Theoretical and Practical Tests

ج- الأهداف والوجدانية والقيمية
 .|||UNTRANSLATED_CONTENT_END|||

Objective: To understand the professional ethics related to the use of radiography of the lower extremities , such as:

Patient confidentiality.

Reduce radiation exposure as much as possible.

Week	hours	Intend ed Learning Outcomes	Module / Course Name or	teaching method	Evaluation method
1			Pelvis	Lectures PDF Power point Video.	Attend Daily exams +homework
2			Ilium		
3			Symphysis pubis		
4			Sacro-iliac joints		
5			Acetabulum		
6			Femur		
7			hip joint, AP, Lateral , frog-leginfo-superiorview , shown structure		
8			Tibia & fibula ,AP, Lateral		
9			Knee joint AP, lateral,skyline for patella, erect AP		
10			Patella positions		
11			Foot , AP, lateral, oblique , shown structure,		
12			Metatarsal-phalangealsesamoid bones		
13			Ankle joint , AP, lateral, oblique ,oblique & AP with inversion		
14			Subtalar joints		
15			Calcaneum positions		

6. Course Evaluation

Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports etc.

7. Learning and Teaching Resources	
Required textbooks (methodology if)	1. Whitley, A. S., Jefferson, G., Holmes, K., Sloane, C., Anders C., & Hoadley, G. (2015). Clark's Positioning in Radiography 13e. crc Press.
Key References (Sources)	. 2 Bontrager, K. L., & Lampignano, J. (2013). Bontrager handbook of radiographic positioning and techniques. Elsevier Health Sciences.
Recommended books and references (scientific journals, reports...)	Perry Sprawls, "Physical principles of medical imaging", 2nd Edition 1996.
E-References , Websites	Internet
Course Development Plan	
1- Identifying and improving the educational objectives of the course and related units. 2. Develop an assessment strategy aligned with the learning objectives 3. Detail a plan for educational resources aligned with assessments 4- Create a communication plan for influential participation	

Course Description Form

1.
Special radiological examinations of the biliary and reproductive system
2. Course Code
RT223
4. Term / Year
2025-2026
19. Description Preparation Date:
10/24
5. Available Attendance Forms My Attendance
My presence is mandatory
19. Available Attendance Forms:
15 hours and above

6. Course administrator's name (mention all, if more than one name)	
Name: Ass.L Hussein Ayed Hussein Jassim	Email :
3. Course Objectives	
Course Objectives	1. Teaching students how to deal with the mechanism of special radiological examinations of the biliary and reproductive system. Familiarize students with the knowledge and skills needed to understand special radiological examinations of the biliary and reproductive system used in medical imaging, 2. Training students to manage and deduce the mechanism of special radiological examinations of the biliary and reproductive system. 3. Encourage students to be creative and think about specialized projects and follow developments in this field. 4. Providing students with scientific, practical and subjective skills to enable them to solve practical problems in a scientific manner
4. TEACHING AND LEARNING STRATEGIES	
Strategy	Objective: To apply theoretical knowledge in a practical environment by: Training in the preparation of special radiological examinations of the biliary and reproductive system. Analysis of results from special radiological examinations of the biliary and reproductive system.
5. Course Structure	
Required Program Outputs and Teaching, Learning and Evaluation Modalities	
Knowledge Objectives 1. Understand the principles of special radiological examinations of the biliary and reproductive system. 2. Provides a comprehensive overview of special radiological examinations of the biliary and reproductive system. 3. Identify important devices used in radiological examinations of the biliary and reproductive system. 4. Classification of special radiological examinations of the biliary and reproductive system.	

B – Skill Objectives of the Program

Students will learn or be able to demonstrate their understanding of the basic principles of special radiological examinations of the biliary and reproductive system

- 1-Learning to work on special radiological examinations of the biliary and reproductive system.
- 2- Obtaining the basic images resulting from special radiological examinations of the biliary and reproductive system.
- 3- Analysis of special radiological examinations of the biliary and reproductive system.
- 4-Giving the final report to the patient.

Teaching and learning methods

- 1- Theoretical lectures.
- 2-Using teaching aids (presentations and scientific films)

Evaluation methods

Quarterly and Final Theoretical and Practical Tests

Objective: To understand the professional ethics related to the use of special radiological examinations of the biliary and reproductive system , such as:
Patient confidentiality.

Week	hours	Intend ed Learning Outcomes	Module / Course Name or	teaching method	Evaluation method
1			Methods of imaging of hepatobiliary system	Lectures PDF Power point Video.	Attend Daily exams +homework
2			U/S of the liver, gall bladder and biliary system		
3			CT for the liver biliary tree.		
4			MRI of the liver		
5			Intraoperative & postoperative T-tube, cholangiography		
6			Biliary drainage		
7			Methods of imaging of urinary tracts		
8			Excretion urography		
9			CT urinary tract		
10			MRI of the urinary tract.		
11			Micturating cystourethrography		
12			Ascending urethrography in the male		
13			Retrograde pyelourethrography		
14			Hystrosalpingography		
15			Percutaneous nephrostomy & nephrolithotomy.		

6. Course Evaluation

Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports etc.

7. Learning and Teaching Resources

Required textbooks (methodology if)	1. Watson, N. & Jones, H. chapman & Nakielnys' 'Guide Radiological procedures' , 7th edition, Elsevier Health Sciences, 2017.
Key References (Sources)	. 2 Bontrager, K. L., & Lampignano, J. (2013). Bontrager handbook of radiographic positioning and techniques. Elsevier Health Sciences.
Recommended books and references (scientific journals, reports...)	Perry Sprawls, "Physical principles of medical imaging", 2nd Edition 1996.
E-References , Websites	Internet

Course Development Plan

- 1- Identifying and improving the educational objectives of the course and related units.
2. Develop an assessment strategy aligned with the learning objectives
3. Detail a plan for educational resources aligned with assessments

4- Create a communication plan for influential participation

Course Description Form

1.	
Radial Anatomy of the Lower Extremity	
2. Course Code	
RT224	
1. Term / Year	
2025-2026	
20. Description Preparation Date:	
10/24	
2. Available Attendance Forms My Attendance	
My presence is mandatory	
20. Available Attendance Forms:	
15 hours and above	
3. Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. Wassan Kazem Abbas Ahmed Email :	
Cours Objectives	
Course Objectives	1. Teaching students how to deal with the mechanism of radiograph anatomy of the lower extremities. Familiarize students with the knowledge and skills needed to understand the radial anatomy of the lower limbs used MEDICAL IMAGING 2. Training students to manage and deduce the mechanism radiological anatomy of the lower extremities. 3. Encourage students to be creative and think about specialized projects and follow developments in this field. 4. Providing students with scientific, practical and subjective skills to enable them to solve practical problems in a scientific manner
3. TEACHING AND LEARNING STRATEGIES	

Strategy	Objective: To apply theoretical knowledge in a practical environment by: Training in the preparation of radiological anatomy of the lower extremities. Analysis of results from radiological anatomy of the lower extremities.
4. Course Structure	
Required Program Outputs and Teaching, Learning and Evaluation Modalities	
Knowledge Objectives 1. Understand the principles of radial anatomy of the lower extremities 2. Provides a comprehensive overview of the radiographic anatomy of the lower extremity. 3. Identification of important devices used in radiological anatomy of the lower extremity 4. Classification of radiographic anatomy of the lower extremity.	
B – Skill Objectives of the Program Students will learn or be able to demonstrate their understanding of the principles of radial anatomy of the lower extremities. 1-Learn to work on radiographic anatomy of the lower extremities 2- Obtaining the basic results resulting from radiological anatomy of the lower extremities. 4- Analysis of the results of radiological anatomy of the lower extremities 5-Giving the final report to the patient .	
Teaching and learning methods	
1- Theoretical lectures. 2-Using teaching aids (presentations and scientific films)	
Evaluation methods	
Quarterly and Final Theoretical and Practical Tests	
ج- الأهداف الوجدانية والقيمية . UNTRANSLATED_CONTENT_END Objective: To understand the professional ethics related to the use of radiological anatomy of the lower extremity, such as: Patient confidentiality.	

Week	hours	Intend ed Learning Outcomes	Module / Course Name or	teachin g method	Evaluati on method
1			Bony pelvis (pelvic girdle): sacrum, coccyx & hip bones.	Lectures PDF Power point Video.	Attend Daily exams +homework
2			Differences between male & female pelvis, Radiological features of the		
3			pelvic bones.		
4			Normal anatomy of the femur, radiological features of femur bone.		
5			Ossification centers.		
6			Normal anatomy of the tibia bone, radiological features of tibia bone.		
7			Ossification centers.		
8			Normal anatomy of the fibula bone, radiological features of fibula bone.		
9			Ossification center. Normal anatomy of patella, radiological features of		
10			patella & ossification center of patella.		
11			Knee joint: Internal structures of knee joint. Radiological features of knee		
12			Joint		
13			Ankle joint: type of joint, articular surfaces, capsule, ligament. Radiological		
14			features of ankle joint.		
15			Blood supply of lower limbs: Arteries of the lower limb.		

5. Course Evaluation

Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports etc.

6. Learning and Teaching Resources

Required textbooks (methodology if)	1-Kelley, L. L., & Petersen, C. (2018). Sectional Anatomy Imaging Professionals. Third & fourth edition.
Key References (Sources)	2. Ryan, S., McNicholas, M., & Eustace, S. (2011). Anatomy for diagnostic imaging.
Recommended books and references (scientific journals, reports...)	3. Lazo, D. L. (2015). Fundamentals of sectional anatomy: an imaging approach.
E-References , Websites	Internet

Course Development Plan

1- Identifying and improving the educational objectives of the course and related units.

2. Develop an assessment strategy aligned with the learning objectives
3. Detail a plan for educational resources aligned with assessments
- 4- Create a communication plan for influential participation

Course Description Form

1.	
Computed Tomography	
2. Course Code	
RT225	
3. Term / Year	
2025-2026	
21. Description Preparation Date:	
10/24	
4. Available Attendance Forms My Attendance	
My presence is mandatory	
21. Available Attendance Forms:	
15 hours and above	
5. Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. Morteza Shaker Aswad Email :	
3. Course Objectives	
Course Objectives	1. Teach students how to deal with the physics of computerized tomography. Familiarize students with the knowledge and skills needed to understand the physics of CT used in medical imaging, 2. Train students to manage and deduce the mechanism of the physics of computerized tomography. 3. Encourage students to be creative and think about specialized projects and follow developments in this field . 4. Provide students with scientific, practical and subjective skills to enable them to solve problems the process in a scientific way.
4. TEACHING AND LEARNING STRATEGIES	

Strategy	Objective: To apply theoretical knowledge in a practical environment by: Training in the preparation and understanding of the physics of CT. Analyze and discuss the results within the boundaries of CT physics.
5. Course Structure	
Required Program Outputs and Teaching, Learning and Evaluation Modalities	
Knowledge Objectives 1. Understand the principles of CT physics 2. Provides a comprehensive overview of the physics of CT . 3. Identify the important devices used to demonstrate the impact of CT physics . 4. Classification of devices that can identify CT.	
B – Skill Objectives of the Program 1- Students will learn or be able to demonstrate their understanding of the principles of CT physics. 2-Learn to work on the physical mechanisms used in computerized tomography. 3- Obtaining results inspired by the physics of computerized tomography. 4- Analyzing the results of computerized sectioning imaging devices.	
Teaching and learning methods	
1- Theoretical lectures. 2-Using teaching aids (presentations and scientific films)	
Evaluation methods	
Quarterly and Final Theoretical and Practical Tests	
Objective: To understand the professional ethics related to the use of CT physics, such as: Patient confidentiality.	

Week	hours	Intend ed Learning Outcomes	Module / Course Name or	teaching method	Evaluation method
1			Introduction and overview		
2			Basic Physics: -Projected ray - Radiation attenuation - Energy Dependence		
3			CT numbers: Accuracy & uniformity - Hounsfield unit, scale		
4			CT image: Windowing - Window width and level		
5			12inch -Basic concepts for data acquisition أخذ العينات		
6			Data Acquisition Geometries: Data acquisition in: - first generation Scanners - second generation Scanners - third generation Scanners -fourth generation Scanners		
7			fifth generation Scanners-Spiral-Helical Geometry		
8			- Multislice Computed Tomography (MSCT)		
9			Data Processing:		
10			- Sequence of Events		
11			Image Display, Storage, and Communication		
12			Format the CT image, - Image matrix - Pixel.		
13			Field Of View (FOV) in CT: - Display field of view (DFOV)		
14			Basic CT Physics		
15			image:		

Lectur
es
PDF
Power
point
Video.

Attend
Daily exams
+homework

6. Course Evaluation

Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports etc.

7. Learning and Teaching Resources

Required textbooks (methodology if)	. 1M Radhi Al-Qurayshiand H. Qasim. AL-Mosawi "Radiation Physics and its applications in diagnostic radiological techniques", Middle Technical University (MTU), Iraq, (2015).
Key References (Sources)	. 2W R. Hendee and E. R. Ritenour "Medical Imaging Physics", 4th Edition, Wiley-Liss, Inc., (2002).
Recommended books and references (scientific journals, reports...)	3. Stewart Carlyle Bushong, "Radiologic Science for Technologists Physics, Biology, and Protection" Elsevier, Inc. , 7th edition, 2017.

Course Development Plan

1- Identifying and improving the educational objectives of the course and related units.

2. Develop an assessment strategy aligned with the learning objectives

3. Detail a plan for educational resources aligned with assessments

4- Create a communication plan for influential participation

				Required program Learning outcomes البرنامج											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4.	A1	A2	A3	A4
Year 3		Number of MRI Devices	Basic	/	/	/		/	/	/		/	/	/	
		Head and spine radiography techniques	Basic	/	/	/		/	/	/		/	/	/	
		Special radiological examinations of the head, breast and respiratory tract	Basic	/	/	/		/	/	/		/	/	/	
		Radiographic Anatomy of the Brain and Spine	Basic	/	/	/		/	/	/		/	/	/	
		General Pathology	Basic	/	/	/		/	/	/		/	/	/	
		MRI.	Basic			/				/					/
		RADIATION RISKS	Optional	/	/	/		/	/	/		/	/	/	
		Sonar Technologies	Optional			/				/					/
		Special radiographic examinations of the cardiovascular system and	Basic	/	/	/		/	/	/		/	/	/	

		nervous system													
		Radiological anatomy	Basic	/	/	/		/	/	/		/	/	/	
		Pathology	Optional	/	/	/		/	/	/		/	/	/	
		Ultrasonic Physics	Optional	/	/	/		/	/	/		/	/	/	

course Description Form

22. Course Name:	
Equipment techniques of magnetic resonance imaging	
23. Course Code:	
RT311	
24. Semester / Year:	
The third stage/ First semester	
25. Description Preparation Date:	
2025/1/15	
26. Available Attendance Forms:	
Is mandatory	
27. Number of Credit Hours (Total) / Number of Units (Total)	
45h	
28. Course administrator's name (mention all, if more than one name)	
Name: Dr. Aref S Baron Email: arif.baron@alkafeel.edu.iq	
29. Course Objectives	
Course Objectives	- MRI technology aims to introduce students to the basic principles of the MRI and the basic units of its work and provide students with the scientific and practical knowledge necessary to understand and operate these devices. Learn about developing diagnostic and research skills. Contribute to improving health care through the use of advanced imaging techniques. - Name the major components of a magnetic resonance imaging (MRI) system and the subassemblies of each. - List the three types of MRI systems and describe features of each. - Explain the concepts of the spatial characterization. - Identify the principal controls on the MRI operating console. - Describe the MR image quality and artefact. - List & explain the important imaging methods & Pulse Sequences.

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30. Teaching and Learning Strategies

Strategy	Name of the unit/topic	Required learning outcomes	hours	week	
	Magnets: Magnet Types: - Permanent magnets - Resistive Magnets - Superconducting magnets			1	
	□ Gradient Coils: types & function			2	
	□ Matching layer(s) □ Lens □ Developments in transducer technology			3	
	MRI computer system: types & functions - Acquisition Control - Image Reconstruction - Image Storage and Retrieval			4	
	- Viewing Control and Post Processing □ MRI system electronics : - Frequency Synthesizer - Radio Frequency Amplifier			5	
	- Magnet Power Supply - Sequencing System			6	

	Data Acquisition: Spatial encoding - Frequency encoding - Phase encoding			7	
	☐ Slice encoding - Slice selection - Slice location - Slice thickness Image reconstruction: - K-space - decoding the signal, - Fourier Transformation (FT)			8	
	MR image quality: - Resolution ☐ Matrix size ☐ Field of view (FOV) ☐ - Slice thickness Noise			9	
	☐ Noise Sources ☐ Signal-to-Noise Ratio (SNR) consideration			10	
	Artefacts: ☐ Motion-Induced artifacts ☐ Radiofrequency artefacts			11	
	☐ Distortion artefacts ☐ Aliasing artefacts ☐ Sequence specific artefacts			12	
	Imaging Methods: Pulse Sequences - spin echo pulse sequence ☐ single-, multi-, and fast spin echo - Inversion recovery sequences ☐ short tau inversion recovery (STIR) ☐ fluid attenuated inversion recovery (FLAIR) ☐ phase-sensitive inversion recovery (PSIR) Gradient echo sequences ☐ Coherent gradient echo ☐ Incoherent Coherent gradient echo ☐ - Steady state free precession			13	
	Echo planar imaging (EPI)			14	
	Hybrid fast imaging technique (GRASE) Diffusion-weighted imaging.			15	
31. Course Structure Course evaluation Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.					

32. Learning and Teaching Resources	
Required textbooks (curriculum books, if any)	1. Stewart Carlyle Bushong, Geoffrey Clark "Magnetic resonance imaging : Physical and Biological Principles", Mosby, Inc., an affiliate of Elsevier Inc., 4th edition, 2015.
Main references (sources)	2 . Perry Sprawls "Magnetic Resonance Imaging Principles, Methods, and Techniques" , Medical Physics Publishing, Madison, Wisconsin, 2000..
Recommended books and references (scientific journals, reports...)	3. . Perry Sprawls, "Physical principles of medical imaging" , Medical Physics Publishing Madison Wisconsin 2nd edition, 1995.
Electronic References, Websites	Internet network

course Description Form

33. Course Name:
Ultrasound equipment techniques
34. Course Code:
RT311
35. Semester / Year:
The third stage/second semester
36. Description Preparation Date:
2025/1/15
37. Available Attendance Forms:
Is mandatory
38. Number of Credit Hours (Total) / Number of Units (Total)
45h
39. Course administrator's name (mention all, if more than one name)
Name: Dr. Aref S Baron Email: arif.baron@alkafeel.edu.iq
40. Course Objectives

Course Objectives	• The study of medical sonar devices aims to provide providing students with the scientific and practical knowledge necessary to understand and operate the devices. Developing diagnostic and research skills. Contribute to improving health care through the use of advanced imaging techniques. • . Understand the Ultrasound Equipment Techniques • Understand the transducers features • Explain components of transducer . • Explain functions of component of transducer . • Discuss the beam-stepping arrays.
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41. Teaching and Learning Strategies

Strategy	Name of the unit/topic	Required learning outcomes	hours	week	
	☐ Common features of all transducers and transducer elements	Bachelor's	1 theoretical + 2 practical	1	
	☐ Piezoelectric plate ☐ Backing layer			2	
	☐ Matching layer(s) ☐ Lens ☐ Developments in transducer technology			3	
	Linear- and curvilinear-array transducers (beam-stepping arrays) ☐ Active group of elements • Beam shape control in the scan plane			4	
	☐ Scan plane focusing in transmission ☐ Scan plane dynamic focusing and aperture in reception			5	
	☐ Grating lobes ☐ Slice thickness			6	

	Phased-array transducers (beam-steering arrays) • Image quality variation across the field of view			7	
	☐ Dependence of beam width and sensitivity on angle ☐ Grating lobes			8	
	Hybrid beam-stepping/beam-steering transducers			9	
	• 3D/4D transducers			10	
	Time-saving techniques for array transducers			11	
	• B-mode instrumentation Signal amplitude processing ☐ Amplification			12	
	Transmit power control ☐ Time – gain compensation			13	
	Dynamic range of echoes			14	
	☐ Analogue-to-digital conversion ☐ Harmonic imaging			15	

42. Course Structure
Course evaluation
Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.

43. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	1. M. Radhi Al-Qurayshi and H. Qasim. AL-Mosa " Radiation Physics and its applications diagnostic radiological techniques", Mid Technical University (MTU), Iraq, (2015).
Main references (sources)	2 . Hoskins PR, Martin K, Thrush A, editors. Diagnostic ultrasound: physics and equipment. CRC Press; 2019 Apr 29.
Recommended books and references (scientific journals, reports...)	3. . Perry Sprawls, "Physical principles of medical imaging" , Medical Physics Publishing Madison Wisconsin 2nd edition, 1995.
Electronic References, Websites	Internet network

نموذج وصف المقرر

Course Description Form

1. Course Name:

Physics of Ultrasound

2. Course Code:

3. Semester/ Year:

Semester

4. Description Preparation Date:

20/1/2025

5. Available Attendance Forms:

Attendance

6. Number of Credit Hours (Total) / Number of Units(Total)

() Unit

7. Course administrator's name (mention, all if more than one name)

Name: Murtadha Shakir Aswood E. mail: murtadha.alnafiey@qu.edu.iq; murtadhababylon@gmail.com

8. Course Objective

Course Objectives

- 1- Understand what ultrasound transmission technology.
- 2- Properties of mechanical transmission and its latest types Ultrasound transmission.
- 3- Ability to determine the characteristics of ultrasound transmission.
- 4- Understand the development of ultrasound transmission technology.
- 5- Understand the ultrasound radio channel with living tissues.
- 6- Understand the most important medical applications of ultrasound.

9. Teaching and Learning Strategies

Strategy

- 1- Oral test and Trial.
- 3- Midterm Exams.
- 4- Daily Assessment.
- 5- Final Exams.
- 6- Reports.
- 7- Laboratory application (practical).
- 8- The use of electronic scientific programs and applications.
- 9- Dialogue, discussion and brainstorming.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
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1st	2	The student learns about the principle of ultrasound.	Introduction to physics of ultrasound	-Explain -Dialogue and discussion -View photos and videos -Practical training	-Oral -Written examination -Reports
2nd	2	The student learns about ultrasound velocity with living cell	Phase velocity–group velocity	-Explain -Dialogue and discussion -View photos and videos -Practical training	-Oral -Written examination -Reports
3rd	2	The student understands the properties of ultrasonic radio.	Properties ultrasound, ultrasound waves	-Explain -Dialogue and discussion -View photos and videos -Practical training	-Oral -Written examination -Reports
4th	2	Understand the types of Ultrasound imaging	Ultrasound imaging systems	-Explain -Dialogue and discussion -View photos and videos -Practical training	-Oral -Written examination -Reports
5th	2	Understand the concept of piezoelectric effect	Piezoelectric effect	-Explain -Dialogue and discussion -View photos and videos -Practical training	-Oral -Written examination -Reports
6th	2	Materials that have piezoelectric effect	Piezoelectric materials, reverse Piezoelectric effect	-Explain -Dialogue and discussion -View photos and videos -Practical training	-Oral -Written examination -Reports
7th	2	Amplification and its components in amplifying the signal coming from it from the tissue	Amplification	-Explain -Dialogue and discussion -View photos and videos -Practical training	-Oral -Written examination -Reports

8th	2	The student learns about power transformers of Ultrasound	Ultrasound transducers , structure of transducers	-Explain -Dialogue and discussion -View photos and videos -Practical training	-Oral -Written examination -Reports
9th	2	The student learns about its types of Transducers	Types of ultrasound transducers	-Explain -Dialogue and discussion -View photos and videos -Practical training	-Oral -Written examination -Reports
10th	2	The student understands the different types of continuous and pulse energy.	Ultrasound modalities	-Explain -Dialogue and discussion -View photos and videos -Practical training	-Oral -Written examination -Reports
11th	2	Identify the properties of ultrasound waves (frequency, amplitude, wavelength and velocity)	ultrasound characteristics	-Explain -Dialogue and discussion -View photos and videos -Practical training	-Oral -Written examination -Reports
12th	2	Knowing the power and sound power	Intensity and power	-Explain -Dialogue and discussion -View photos and videos -Practical training	-Oral -Written examination -Reports
13th	2	The student understands how transmission and reception interact.	Interactions of Ultrasound with Tissue	-Explain -Dialogue and discussion -View photos and videos -Practical training	-Oral -Written examination -Reports
14th	2	Learn the types of Ultrasound used in system imaging	Overview of Diagnostic Ultrasound Modes	-Explain -Dialogue and discussion -View photos and videos -Practical training	-Oral -Written examination -Reports

15th	2	Recognizing the Nyquist limit and Doppler phenomenon	Nyquist limit and pulsed and continuous wave Doppler	-Explain -Dialogue and discussion -View photos and videos -Practical training	-Oral -Written examination -Reports
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11- Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

12- Learning and Teaching Resources

(Required textbooks (curricular books, if any)

Main references (sources)	C. B. Stewart, "Radiologic Science for Technologists Physics, Biology, and Protection", Houston, Texas published, 2012.
Recommended books and references (scientific journals, reports...)	k. Thayalan, "The Physics of Radiology and Imaging" Jaypee Brothers Medical Publishers, 2014
Electronic References, Websites	

course Description Form

44. Course Name: Computer applications
Computer Fundamentals(1)
45. Course Code:
Computer Fundamentals(1)
46. Semester / Year:
The third stage/first semester
47. Description Preparation Date:
2024/3/15
48. Available Attendance Forms:
Is mandatory
49. Number of Credit Hours (Total) / Number of Units (Total)
45h
50. Course administrator's name (mention all, if more than one name)

Name: Hussein Fadhil Abdulabbas
 Email: hussein.fadhil@alkafeel.edu.iq

51. Course Objectives

Course Objectives	• Special goal: • Equip students with essential skills to effectively use basic off applications, create and manage office files and documents, and navigate operating systems, while understanding the fundamentals of working in a digital environment. • Overall goal: • By the end of the academic year, students will: • • Acquire comprehensive knowledge of managing and utilizing various computer applications. • Be encouraged to engage in creative thinking, develop specialization-related projects, and stay updated with advancements in the field. • Gain scientific, practical, and personal skills that empower them to identify and solve real-world problems using scientific methodologies.
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52. Teaching and Learning Strategies

Strategy	Name of the unit/topic	Required learning outcomes	hours	week	
	Introduction to Excel, understanding its interface, and learning basic navigation	Bachelor's	1 theoretical + 2 practical	1	
	Workbook structure: sheets, rows, columns, and basic formatting methods			2	
	Cell data entry and introduction to essential data types (numeric, text, and formulas)			3	
	Saving, opening, and managing workbooks, including password-protecting files			4	
	Overview of basic formulas: Average, Sum, Min, Max, Count, and Sqrt			5	

	Chart handling: creating, formatting, and exploring chart elements and types.			6	
	Introduction to creating and formatting data tables, understanding conditional formatting.			7	
	Sorting methods: ascending, descending, and customized sorting			8	
	Data filtering techniques and criteria-based filtering applications			9	
	Data validation and creating dropdown lists			10	
	SPSS overview: introduction to statistical analysis and dataset management			11	
	Creating histograms and statistical visualization using SPSS			12	
	Applying regression analysis techniques and identifying correlation			13	
	Understanding pivot tables for data summarization and grouping			14	
	File importing/exporting techniques and database linking.			15	

53. Course Structure
Course evaluation
Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.

54. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	Microsoft Office Manuals (Excel, Word, PowerPoint guides).
Main references (sources)	- Lectures provided by the subject teacher - Books available in the college library
Recommended books and references (scientific journals, reports...)	- Data Analysis Using Excel by Winston and Albright. - SPSS Survival Manual by Julie Pallant.
Electronic References, Websites	Microsoft Learn - Excel

Course Structure

Week	Hours	Intended Learning Outcomes	Module / Course Name or	teaching method	طريقة التقييم
الأول The second is Nmap, And the third	2n	Student understanding of the lesson	□ Magnetic Resonance Imaging System Components Introduction and Overview Magnets: Magnet Types: -Permanent magnets - Resistive Magnets - Superconducting magnets □ Gradient Coils: types & function	N	Daily and Monthly Tests
Fourth/Fifth Scheduled and the sixth	2n	Student understanding of the lesson	MRI computer system: types & functions -Acquisition Control - Image Reconstruction - Image Storage and Retrieval -Viewing Control and Post Processing MRI system electronics : - Frequency Synthesizer - Radio Frequency Amplifier Power Supply - Sequencing System	theoretical	Daily and Monthly Tests
7th and 8th	2n	Student understanding of the lesson	Data Acquisition: Spatial encoding - Frequency encoding -Phase encoding Slice encoding - Slice selection - Slice location - Slice thickness Image reconstruction: Space	theoretical	Daily and Monthly Tests

			- decoding the signal, - Fourier Transformation (FT)		
Ninth and Tenth	2n	Student understanding of the lesson	MR image quality: Example Matrix size Field of view (FOV) - Slice thickness Depoussierant Noise Sources Signal-to-Noise Ratio (SNR) consideration	theoretical	Daily and Monthly Tests
Eleventh Twelfth	2n	Student understanding of the lesson	Artefacts: Motion-Induced artifacts Radiofrequency artefacts Distortion artefacts Aliasing artefacts Sequence specific artefacts	theoretical	Daily and Monthly Tests
Thirteenth	2n	Student understanding of the lesson	Imaging Methods: Pulse Sequences -spin echo pulse sequence single-, multi-, and fast spin echo -Inversion recovery sequences short tau inversion recovery (stir) fluid attenuated inversion recovery (flair) phase-sensitive inversion recovery (psir) Gradient echo sequences Coherent gradient echo Incoherent Coherent gradient echo - Steady state free precession	theoretical	Daily and Monthly Tests
Fourteenth	2n	Student understanding	Echo planar	N	Daily and

and the fifteenth		of the lesson	imaging (EPI) Hybrid fast imaging technique (grace) Diffusion-weighted imaging		Monthly Tests
Infrastructure					
Required textbooks			1. Stewart Carlyle Bushong, Geoffrey Clarke, “Magnetic resonance imaging : Physical and Biological Principles”, Mosby, Inc., an affiliate of Elsevier Inc., 4th edition, 2015.		
Key References (Sources)			2. Perry Sprawls “Magnetic Resonance Imaging, Principles, Methods, and Techniques” , Medical Physics Publishing, Madison, Wisconsin, 2000.		
UNTRANSLATED_CONTENT_STAR T المجلات العلمية , (الكتب والمراجع التي يوصى بها) التقارير UNTRANSLATED_CONTENT_END ID			3. Perry Sprawls, “Physical principles of medical imaging” , Medical Physics Publishing Madison, Wisconsin 2nd edition, 1995.		
Electronic references, websites ,.....			.		

Course Development Plan
1- Identifying and improving the educational objectives of the course and related units. 2. Develop an assessment strategy aligned with the learning objectives 3. Detail a plan for educational resources aligned with assessments 4- Create a communication plan for influential participation

Course Description Form

55. Course Name:
Biological Radiation hazards
56. Course Code:
Biological Radiation hazards(1)
57. Semester / Year:

The third stage/first semester					
58. Description Preparation Date:					
2024/3/15					
59. Available Attendance Forms:					
Is mandatory					
60. Number of Credit Hours (Total) / Number of Units (Total)					
45h					
61. Course administrator's name (mention all, if more than one name)					
Name: Dr. Mohammad Malik Abood mohammad.malik@alkafeel.edu.iq					
62. Course Objectives					
Course Objectives	1. Know the biological effects of ionization radiation. 2. Estimate of and explain the basis for possible risk of injury, illness, death resulting from occupational radiation exposure. 3. Describe the physical & chemical factors that affect radiation response 4. Estimate of radiation risk and comparisons with other types of risk 5. Define the Stochastic & Deterministic effects of the ionizing radiation. 6. Discuss the radiation-induced malignancy. 7. Explain the effect of ionization radiation the Embryo, Fetus & Central Nervous System				
63. Teaching and Learning Strategies					
Strategy	Name of the unit/topic	Required learning outcomes	hours	week	
	☐ Law of Bergonie and Tribondeau ☐ Physical factors that affect radiosensitivity ☐ Relative Biological Effectiveness			1	

☐ (RBE) ☐ Linear energy transfer (LET) ☐ Protraction and Fractionation ☐ Biological factors that affect radiosensitivity ☐ Oxygen Effect ☐ Age ☐ Recovery ☐ Chemical Agents ☐ Hormesis ☐ Radiation Dose-Response Relationships ☐ Linear ☐ Non-linear ☐ Constructing a Dose-Response relationship ☐ The Biological Effects of Radiation ☐ Stage 1 : The Atomic Level ☐ Stage 2 : Chemical Interactions ☐ Stage 3 : Cellular and Whole Animal Changes ☐ Deterministic Effects of ionizing radiation ☐ Acute Radiation Lethality ☐ Local Tissue Damage ☐ Somatic effects ☐ Effects on the Skin ☐ Effects on the Gonads ☐ Hematologic Effects ☐ Cytogenetic Effects ☐ Normal Karyotype ☐ Single-Hit chromosome aberrations ☐ Multi-Hit chromosome aberrations ☐ Kinetics of chromosome aberration ☐ Stochastic Effects of ionizing radiation ☐ Local Tissue Effects ☐ Skin ☐ Chromosomes ☐ Cataracts ☐ Bone marrow ☐ Thyroid ☐ Breast ☐ Gonadal ☐ Life Span Shortening	Bachelor's	1 theoretical + 2 practical		
			2	
			3	
			4	
			5	
			6	
			7	

	☐ Effects on Fertility ☐ In-Utero Effects ☐ Genetic effects			8	
	☐ Risk Estimates ☐ Relative risk ☐ Excess risk ☐ Absolute risk			9	
	☐ Radiation-Induced Malignancy ☐ Leukemia ☐ Cancer			10	
	☐ Factors determine biological effects of radiation ☐ Nature of tissue irradiated ☐ Irradiated area ☐ Rate of dose			11	
	☐ Age of the patient ☐ Type of irradiation ☐ Others			12	
	☐ Effects of Radiation on the Embryo and Fetus ☐ Lethal effects ☐ Malformations (Teratogenic effects) ☐ Growth disturbances			13	
	☐ Effects of radiation on Central Nervous System			14	
	☐ Hereditary effects of ionizing radiation			15	
64. Course Structure Course evaluation Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.					
65. Learning and Teaching Resources					
Required textbooks (curriculum books, if any)	1. Stewart Carlyle Bushong, "Radiologic Science Technologists Physics, Biology, and Protection" Elsevier, 7th edition, 2017.				
Main references (sources)	2. D.L. Bailey & J.L. "Humm Nuclear medicine physics Nuclear medicine physics : a handbook for students and teachers" International Atomic Energy Agency, 2014				
Recommended books and references (scientific journals, reports...)	3. A. H. W. Nias, "An Introduction to Radiobiology", Wiley, 2nd Edition, 2000.				
Electronic References, Websites	Internet network				

Course Description Form

66. Course Name:
Computer Fundamentals(1)
67. Course Code:
Computer Fundamentals(1)
68. Semester / Year:
The first stage/first semester
69. Description Preparation Date:
2024/3/15
70. Available Attendance Forms:
Is mandatory
71. Number of Credit Hours (Total) / Number of Units (Total)
45h
72. Course administrator's name (mention all, if more than one name)
Name: huda noman obaied Email: huda.noman@alkafeel.edu.iq
73. Course Objectives

Course Objectives	• Special goal: • Providing the student with the skills of dealing with basic office applications, creating office files and documents, and using the operating system, as well as the basics of working within the digital environment. • Overall goal: • At the end of the academic year, the student should be able to: • Provide the student with knowledge in managing and using various computer applications. • ☐ Urging the student to be creative and think about specialization projects and keep pace with developments in the field. • ☐ Providing students with scientific, practical and personal skills that enable them to solve practical problems and deal with them using scientific concepts.
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74. Teaching and Learning Strategies

Strategy	Name of the unit/topic	Required learning outcomes	hours	week	
	Computer Fundamentals, computer concept, phases of the computer life cycle, development of computer generations	Bachelor's	1 theoretical + 2 practical	1	
	Computer advantages and areas of use. Computer classification in terms of purpose, size and type of data			2	
	Computer Components Computer Components The physical parts of a computer and the software entities			3	
	Your personal computer, the concept of computer security and software licenses			4	
	Computer Safety & Software License			5	
	Ethics of the electronic world, forms of abuse, computer security, computer privacy.			6	

	Computer software licenses and their types, intellectual property, electronic hacking, malware, the most important steps necessary to protect against hacking operations, computer harm to health.			7	
	Definition of Operating Systems Operating system, functions, goals, classification, examples of some operating systems			8	
	Operating System Windows 7 Operating System			9	
	Desktop components Start menu, taskbar			10	
	Folders and files icons			11	
	Performing operations on windows desktop backgrounds			12	
	Control Panel Windows Control Panel "Control Category" Groups "Panel".			13	
	From the Defragment control panel, you can organize files inside the computer, install programs, and delete them			14	
	Some common conditions and settings in the computer, managing the printer, setting the time and date, maintaining the initial disks.			15	

75. Course Structure
Course evaluation
Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.

76. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	- Computer basics and office applications / Part O - Mr. Dr. Ghassan Hamid Abdel Majeed and Ziad Muhammad Abboud and others.
Main references (sources)	- Lectures provided by the subject teacher - Books available in the college library
Recommended books and references (scientific journals, reports...)	- All reputable scientific journals related to computer science - And solid scientific research published on social networks
Electronic References, Websites	Internet network

Course Description Form

1	
Special radiological examinations of the head, breast and respiratory tract	
• Course Code	
RT124	
1. Term / Year	
2025-2026	
22. Description Preparation Date:	
10/24	
2. Available Attendance Forms My Attendance	
My presence is mandatory	
77. Available Attendance Forms:	
15 hours and above	
3. Course administrator's name (mention all, if more than one name)	
Name: Ass.L Hussein Ayed Hussein Email :	
• Course Objectives	
Course Objectives	1. Teaching students how to deal with the techniques of radiological examinations of the head, breast and respiratory system in field of radiology . 2. Familiarize students with medical terminology in special radiological examination techniques for the head, breast and respiratory tract . 3. Train students to trade these techniques. 4. Encourage students to be creative and think about specialized projects and follow developments in this field. 5. Provide students with scientific, practical and subjective skills to enable them to solve problems the process in a scientific way.
• TEACHING AND LEARNING STRATEGIES	
Strategy	Objective: To apply theoretical knowledge in a practical environment by: Training on the use of special radiological examination techniques for cardiovascular system and the nervous system. The possibility of using radiographic techniques for the chest and abdomen in the other stage.

• Course Structure
RequiredProgram Outputs and Teaching, Learning and Evaluation Modalities
Knowledge Objectives 1. Understand the principles of imaging techniques 2. Provides a comprehensive overview of imaging techniques. 3. Identify important medical terms used in special radiological examinations of the head, breast and respiratory tract. 4. Classification of imaging techniques as needed in the required examination.
B – Skill Objectives oftheProgram Students will learn or be able to demonstrate their understanding of the basic principles of special radiographic examinations of the head, breast and respiratory tract systematically: 1-Learn to use special radiographic examinations of the head, breast and respiratory tract. 2- Analyzing the results of images and samples based on imaging techniques . 4-Giving the final report to the patient .
Teaching and learning methods
1- Theoretical lectures. 2-Using teaching aids (presentations and scientific films)
Evaluation methods
Quarterly and Final Theoretical and Practical Tests
Objective: To understand the professional ethics related to the use of special radiological examinations of the cardiovascular and nervous systems, such as: Patient confidentiality. Reduce radiation exposure as much as possible.

Week	hours	Intend ed Learning Outcomes	Module / Course Name or	teaching method	Evaluation method
1			Method of imaging the brain	Lectures PDF Power point Video.	Attend Daily exams +homework
2			CT & MRI of the brain		
3			Cerebral &lumber myelography		
4			Methods of imaging the spine		
5			Cervical & lumbar myelography		
6			Methods of imaging of the salivary glands		
7			Methods of imaging the thyroid ¶thyroid glands with CT & MRI of		
8			the thyroid and parathriod glands		
9			Vascular emolization		
10			Preoperative Localization		
11			Methods imaging of respiratory system		
12			C.T of respiratory system		
13			Guided lung biopsy CT scan		
14			Methods of imagings pulmonary embolism .		
15			Pulmonary arteriography andpet-CTscan for respiratory system		

• Course Evaluation

Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports etc.

• Learning and Teaching Resources

Required textbooks (methodology if)	. 1 Watson, N. & Jones, H. chapman &Nakielnys' 'Guide Radiological procedures' ' , 7th edition, Elsevier Health Sciences, 2017.
Key References (Sources)	. 2 Bontrager, K. L., & Lampignano, J. (2013). Bontrager handbook of radiographic positioning and technique Elsevier Health Sciences..
Recommended books and references (scientific journals, reports...)	Perry Sprawls, "Physical principles of medical imaging 2nd Edition 1996.
E-References , Websites	Internet

Course Development Plan

- 1- Identifying and improving the educational objectives of the course and related units.
2. Develop an assessment strategy aligned with the learning objectives
3. Detail a plan for educational resources aligned with assessments
- 4- Create a communication plan for influential participation

Course Description Form

1	
Special radiographic examinations of the cardiovascular system and nervous system	
• Course Code	
RT124	
1. Term / Year	
2025–2026	
23. Description Preparation Date:	
10/24	
2. Available Attendance Forms My Attendance	
My presence is mandatory	
78. Available Attendance Forms:	
15 hours and above	
3. Course administrator's name (mention all, if more than one name)	
Name: Ass. L. Hussein Ayed Hussein Email :	
• Course Objectives	
Course Objectives	6. Teaching students how to deal with special radiological examination techniques for the heart device The basic blood vessels and nervous system circulating in field of radiology. 7. Introducing students to medical terminology in special radiological examination techniques for a device cardiovascular and nervous system , 8. Train students to trade these techniques. 9. Encourage students to be creative and think about specialized projects and follow developments in this field. 10. Provide students with scientific, practical and subjective skills to enable them to solve problems the process in a scientific way.
• TEACHING AND LEARNING STRATEGIES	

Strategy	Objective: To apply theoretical knowledge in a practical environment by: Training on the use of special radiological examination techniques for cardiovascular system and the nervous system. The possibility of using radiographic techniques for the chest and abdomen in the other stage.
• Course Structure	
Required Program Outputs and Teaching, Learning and Evaluation Modalities	
Knowledge Objectives 1. Understand the principles of imaging techniques 2. Provides a comprehensive overview of imaging techniques. 3. Identify important medical terms used in special radiological examinations of the cardiovascular system and nervous system. 4. Classification of imaging techniques as needed in the required examination.	
B – Skill Objectives of the Program Students will learn or be able to systematically demonstrate their understanding of the basic principles of cardiovascular and nervous system-specific radiographic examinations: 1-Learn to use special radiographic examinations of the cardiovascular system and the nervous system. 2- Analyzing the results of images and samples based on imaging techniques . 4-Giving the final report to the patient .	
Teaching and learning methods	
1- Theoretical lectures. 2-Using teaching aids (presentations and scientific films)	
Evaluation methods	
Quarterly and Final Theoretical and Practical Tests	
ج- الأهداف الوجدانية والقيمية UNTRANSLATED_CONTENT_START . UNTRANSLATED_CONTENT_END Objective: To understand the professional ethics related to the use of special radiological examinations of the cardiovascular and nervous systems, such as: Patient confidentiality. Reduce radiation exposure as much as possible.	

Week	hours	Intend ed Learning Outcomes	Module / Course Name or	teaching method	Evaluation method
1			Methods of imaging of the heart and angiocardiology	Lectures PDF Power point Video.	Attend Daily exams +homework
2			Coronary arteriography & cardiac CT including coronary angiography		
3			Methods of imaging the arterial system & introduction to catheter techniques		
4					
5			Femoral ,brachial & axillary punctures for catheterization		
6			General complications of catheter techniques.		
7			Ascending aortography and lower limb arteriography		
8			Balloon angiography		
9			Vascular embolization		
10			CT & MRI angiography		
11			Methods of imaging the venous system & peripheral venography.		
12			Central venography		
13			Portal venography		
14			Position emission tomography imaging		
15			18f-FDG pet scanning		

• Course Evaluation

Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports etc.

• Learning and Teaching Resources

Required textbooks (methodology if) . 1 Watson, N. & Jones, H. Chapman & Nakielny's 'Guide Radiological procedures' , 7th edition, Elsevier Health Sciences, 2017.

Key References (Sources) . 2 Bontrager, K. L., & Lampignano, J. (2013). Bontrager's handbook of radiographic positioning and technique Elsevier Health Sciences..

Recommended books and references (scientific journals, reports...)

Perry Sprawls, "Physical principles of medical imaging" 2nd Edition 1996.

E-References , Websites Internet

Course Development Plan

- 1- Identifying and improving the educational objectives of the course and related units.
2. Develop an assessment strategy aligned with the learning objectives
3. Detail a plan for educational resources aligned with assessments

4- Create a communication plan for influential participation

Course Description Form

1	
Radiographic Anatomy of the Brain and Spine	
• Course Code	
RT124	
1. Term / Year	
2025-2026	
24. Description Preparation Date:	
10/24	
2. Available Attendance Forms My Attendance	
My presence is mandatory	
79. Available Attendance Forms:	
15 hours and above	
3. Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. Haider Sahib Mahdi Email :	
• Course Objectives	
Course Objectives	1. Teaching students how to deal with radiological anatomy techniques the brain and spine Basic circulating in the field of radiology. 2. Familiarize students with medical terminology in brain and spine radiographic anatomy techniques 3. Train students to trade these techniques. 4. Encourage students to be creative and think about specialized projects and follow developments in this field. 5. Provide students with scientific, practical and subjective skills to enable them to solve problems the process in a scientific way.
• TEACHING AND LEARNING STRATEGIES	

Strategy	Objective: To apply theoretical knowledge in a practical environment by: Training in the use of radiological anatomy techniques for the brain and spine. The possibility of using radiological anatomy techniques for the brain and spine in the other stage.
• Course Structure	
Required Program Outputs and Teaching, Learning and Evaluation Modalities	
Knowledge Objectives 1. Understand the principles of brain-specific anatomy techniques 2. Provides a comprehensive overview of dissection techniques. 3. Identify important medical terms used in radiological anatomy of the brain and spine. 4. Classification of dissection techniques as needed in the required examination.	
B – Skill Objectives of the Program Students will learn or be able to demonstrate their understanding of the basic principles of radial anatomy of the brain systematically: 1-Learning to use advanced mechanisms of anatomy . 2- Analyzing the results of images and samples based on imaging techniques . 4-Giving the final report to the patient .	
Teaching and learning methods	
1- Theoretical lectures. 2-Using teaching aids (presentations and scientific films)	
Evaluation methods	
Quarterly and Final Theoretical and Practical Tests	
ج- الأهداف الوجدانية والقيمية UNTRANSLATED_CONTENT_START . UNTRANSLATED_CONTENT_END Objective: To understand professional ethics related to the use of radiological anatomy of the chest and abdomen, such as: Patient confidentiality. Reduce radiation exposure as much as possible.	

Week	hours	Intend ed Learning Outcomes	Module / Course Name or	teaching method	Evaluation method
1			Normal anatomy of the brain:	Lectures PDF Power point Video.	Attend Daily exams +homework
2			- Cerebrum, cerebral cortex and lobes of the brain.		
3			- Radiological features of the cerebrum.		
4			Normal anatomy of corpus callosum,		
5			Radiological features of corpus callosum.		
6			Normal anatomy of basal ganglia,		
7			Radiological features of the basal ganglia.		
8			Normal anatomy of thalamus, hypothalamus, pituitary and pineal glands,		
9			- Radiological features of the thalamus, hypothalamus, pituitary and pineal		
10			Radiological features of the cerebellum.		
11			Normal anatomy of ventricles, cisterns, CSF production and flow		
12			Normal anatomy of the vertebral column: - Cervical vertebrae, - Thoracic vertebrae,		
13			Radiological features of vertebral column.		
14			Normal anatomy of joints and ligaments of the vertebral column,		
15			- Radiological features of the joints and ligaments of the vertebral column,		

• Course Evaluation

Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports etc.

• Learning and Teaching Resources

Required textbooks (methodology if)	. 1 Anatomy for Diagnostic Imaging by Stephanie Ry 3rd edition, 2010.
Key References (Sources)	. 2 Bontrager, K. L., & Lampignano, J. (2013). Bontrager handbook of radiographic positioning and technique Elsevier Health Sciences..
Recommended books and references (scientific journals, reports	Perry Sprawls, "Physical principles of medical imaging 2nd Edition 1996.
E-References , Websites	Internet

Course Development Plan

- 1- Identifying and improving the educational objectives of the course and related units.
2. Develop an assessment strategy aligned with the learning objectives

3. Detail a plan for educational resources aligned with assessments
- 4- Create a communication plan for influential participation

Course Description Form

1	
Radiographic anatomy of the thorax and abdomen	
• Course Code	
RT124	
33. Term / Year	
2025-2026	
25. Description Preparation Date:	
10/24	
34. Available Attendance Forms My Attendance	
My presence is mandatory	
80. Available Attendance Forms:	
15 hours and above	
35. Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. Haider Sahib Mahdi Email :	
• Course Objectives	
Course Objectives	6. Teach students how to deal with thoracic and abdominal radiographic anatomy techniques Basic circulating in the field of radiology. 7. Familiarize students with medical terminology in thoracic and abdominal radiological anatomy techniques 8. Train students to trade these techniques. 9. Encourage students to be creative and think about specialized projects and follow developments in this field. 10. Providing students with scientific, practical and subjective skills that enable them to solve problems the process in a scientific way.

• TEACHING AND LEARNING STRATEGIES

Strategy

Objective: To apply theoretical knowledge in a practical environment by:
Training in the use of radiological anatomy techniques for the chest and abdomen.
The possibility of using radiological anatomy techniques for the chest and abdomen in the other stage.

• Course Structure

Required Program Outputs and Teaching, Learning and Evaluation Modalities

Knowledge Objectives

1. Understand the principles of abdominal anatomy techniques.
2. Provides a comprehensive overview of dissection techniques.
3. Identify important medical terms used in radiological anatomy of the chest and abdomen.
4. Classification of dissection techniques as needed in the required examination.

B – Skill Objectives of the Program

Students will learn or be able to systematically demonstrate their understanding of basic principles of thoracic and abdominal radiographic anatomy:

- 1-Learn to use radiographic anatomy of the chest and abdomen.
- 2- Analyzing the results of images and samples based on imaging techniques .
- 4-Giving the final report to the patient .

Teaching and learning methods

- 1- Theoretical lectures.
- 2-Using teaching aids (presentations and scientific films)

Evaluation methods

Quarterly and Final Theoretical and Practical Tests

ج- الأهداف
الوجدانية والقيمية
|||UNTRANSLATED_CONTENT_START|||
|||UNTRANSLATED_CONTENT_END|||

Objective: To understand professional ethics related to the use of radiological anatomy of the chest and abdomen, such as:

- Patient confidentiality.
- Reduce radiation exposure as much as possible.

Week	hours	Intend ed Learning Outcomes	Module / Course Name or	teaching method	Evaluation n method
1			Normal anatomy of thoracic cage and sternum, radiological features of the thoracic cage and sternum:	Lectures PDF Power point Video.	Attend Daily exams +homework
2			ormal anatomy of heart, radiological features of the heart.		
3			4 Normal anatomy of the breast and radiological features of the breast.		
4			Normal anatomy of esophagus, peritoneal covering, anatomical relations of		
5			the esophagus, blood supply of esophagus, radiological features of		
6			Normal anatomy of the liver and biliary system, peritoneal covering, anatomical relations of the liver, lobes and segments of the liver, hepatic		
7			Radiological features of the liver and biliary system.		
8			Normal anatomy of large intestine, peritoneal covering, anatomical relations of the large intestine, blood supply, venous drainage		
9			Normal anatomy of the liver and biliary system, peritoneal covering,		
10			Normal anatomy of pancreas, peritoneal covering, anatomical relations of		
11			the pancreas, blood supply of pancreas, Radiological features of the		
12			pancreas, blood supply of spleen, radiological features of the spleen.		
13			Normal anatomy of kidney, site, peritoneal covering and anatomical relations of the kidneys, fascial spaces around the kidneys,		
14			Set up for endoscopy. Normal anatomy of the vertebral column: - Cervical vertebrae, - Thoracic vertebrae,		
15			bladder, urethra, blood supply, radiological features of the female		

• Course Evaluation

Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports etc.

• Learning and Teaching Resources

Required textbooks (methodology if)	. 1 Anatomy for Diagnostic Imaging by Stephanie Ry 3rd edition, 2010.
Key References (Sources)	. 2 Bontrager, K. L., & Lampignano, J. (2013). Bontrager handbook of radiographic positioning and technique Elsevier Health Sciences..
Recommended books and	Perry Sprawls, "Physical principles of medical imaging

references (scientific journals, reports	2nd Edition 1996.
E-References , Websites	Internet

Course Development Plan

- 1- Identifying and improving the educational objectives of the course and related units.
2. Develop an assessment strategy aligned with the learning objectives
3. Detail a plan for educational resources aligned with assessments
- 4- Create a communication plan for influential participation

				Required program Learning outcomes البرنامج											
Year /Level	Course Code	Course Name	Basic or option al	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4.	A1	A2	A3	A4
Year 4		Computed tomography imaging of head and spinal cord	Basic	/	/	/		/	/	/		/	/	/	
		Magnetic resonance imaging principles and head exam	Basic	/	/	/		/	/	/		/	/	/	
		Abdominal Ultrasound imaging	Basic	/	/	/		/	/	/		/	/	/	
		Medicine of internal diseases	Basic	/	/	/		/	/	/		/	/	/	
		Biostatistics and computer applications	Basic	/	/	/		/	/	/		/	/	/	
		Computed tomography imaging of chest, abdomen and pelvis	Basic			/				/					/
		Magnetic resonance imaging of musculoskeletal system, abdomen and pelvis	Optional	/	/	/		/	/	/		/	/	/	
		Obstetrics and gynecologic ultrasound imaging	Optional			/				/					/
		Medicine of surgical diseases	Basic	/	/	/		/	/	/		/	/	/	
		Professional ethics	Basic	/	/	/		/	/	/		/	/	/	
		Graduation projec	Optional	/	/	/		/	/	/		/	/	/	

Course Description Form

1	
Computed tomography imaging of head and spinal cord	
• Course Code	
RT124	
36. Term / Year	
2025-2026	
26. Description Preparation Date:	
10/24	
37. Available Attendance Forms My Attendance	
My presence is mandatory	
81. Available Attendance Forms:	
15 hours and above	
38. Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. Haider Sahib Mahdi Email :	
• Course Objectives	
Course Objectives	11. Teach students how to deal with thoracic and abdominal radiographic anatomy techniques Basic circulating in the field of radiology. 12. Familiarize students with medical terminology in thoracic and abdominal radiological anatomy techniques 13. Train students to trade these techniques. 14. Encourage students to be creative and think about specialized projects and follow developments in this field. 15. Providing students with scientific, practical and subjective skills that enable them to solve problems the process in a scientific way.
• TEACHING AND LEARNING STRATEGIES	
Strategy	Objective: To apply theoretical knowledge in a practical environment by: Training in the use of radiological anatomy techniques for the chest and abdomen. The possibility of using radiological anatomy techniques for the chest and abdomen in the other stage.

• Course Structure
Required Program Outputs and Teaching, Learning and Evaluation Modalities
Knowledge Objectives 1. Understand the principles of abdominal anatomy techniques. 2. Provides a comprehensive overview of dissection techniques. 3. Identify important medical terms used in radiological anatomy of the chest and abdomen. 4. Classification of dissection techniques as needed in the required examination.
B – Skill Objectives of the Program Students will learn or be able to systematically demonstrate their understanding of basic principles of thoracic and abdominal radiographic anatomy: 1-Learn to use radiographic anatomy of the chest and abdomen. 2- Analyzing the results of images and samples based on imaging techniques . 4-Giving the final report to the patient .
Teaching and learning methods
1- Theoretical lectures. 2-Using teaching aids (presentations and scientific films)
Evaluation methods
Quarterly and Final Theoretical and Practical Tests
Objective: To understand professional ethics related to the use of radiological anatomy of the chest and abdomen, such as: Patient confidentiality. Reduce radiation exposure as much as possible.

Evaluation method	teaching method	Module / Course Name or	Intended Learning Outcomes	hours	Week
	PDF power point Video	Review about CT machines: - Internal and external structures - Types of CT machines			1
		Role of the CT Technologist in: - Patient Management - Patient Screening - Patient safety and radiation protection			2
		Radiographic Technique - Milliamperage, Kilovoltage, Helical Pitch - Rotation Time - Slice Thickness - Matrix Size and Reconstruction Algorithms Window setting: - Different levels - Different organs and exams			3
		Contrast Media usage: - Types of contrast media - Clinically; adverse reactions to CM CT injectors: - Injector preparation - Types of injectors Administration of contrast agents			4
		CT scan of brain: - Brain intravenous contrast medium - CT venography - CT scan for the Stroke			5
		CT scan of petrous bone: - Indications - Patient Positioning - Technical Considerations - Scanning Protocols			6
		CT scan of orbit: - Technique and position - Scanning Protocols			7
		CT scan of paranasal sinus: - Indications - Patient Positioning - Technical Considerations - Scanning Protocols			8
		CT scan of skull and facial bone: - Patient Preparation & Positioning - Scanning Protocols			9
		CT scan of the neck: - Patient Preparation & Positioning - Scanning Protocols			10

		CT scan of the pituitary gland: - Patient Preparation & Positioning - Scanning Protocols			11
		CT scan of the spine: - cervical spine - dorasal spine			12
		- lumber spine - whole spine - Mylography			13
		CT artifacts: - Detection - Remedies			14
		Role of CT Compared with Other Imaging Modalities			15

Course Evaluation .8

Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports etc.

Learning and Teaching Resources .9

Required textbooks (methodology if any)

Required textbooks (methodology if any)

Key References (Sources)

Key References (Sources)

Recommended books and references (scientific journals, reports

Recommended books and references (scientific journals, reports

Course Evaluation

Course Evaluation

Course Description Form

2	
Magnetic resonance imaging principles and head exam	
• Course Code	
RT124	
39. Term / Year	
2025–2026	
27. Description Preparation Date:	
10/24	
40. Available Attendance Forms My Attendance	
My presence is mandatory	
82. Available Attendance Forms:	
15 hours and above	
41. Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. Haider Sahib Mahdi Email :	
• Course Objectives	
Course Objectives	16. Teach students how to deal with thoracic and abdominal radiographic anatomy techniques Basic circulating in the field of radiology. 17. Familiarize students with medical terminology in thoracic and abdominal radiological anatomy techniques 18. Train students to trade these techniques. 19. Encourage students to be creative and think about specialized projects and follow developments in this field. 20. Providing students with scientific, practical and subjective skills that enable them to solve problems the process in a scientific way.
• TEACHING AND LEARNING STRATEGIES	
Strategy	Objective: To apply theoretical knowledge in a practical environment by: Training in the use of radiological anatomy techniques for the chest and abdomen. The possibility of using radiological anatomy techniques for the chest and abdomen in the other stage.

• Course Structure
RequiredProgram Outputs and Teaching, Learning and Evaluation Modalities
Knowledge Objectives 1. Understand the principles of abdominal anatomy techniques. 2. Provides a comprehensive overview of dissection techniques. 3. Identify important medical terms used in radiological anatomy of the chest and abdomen. 4. Classification of dissection techniques as needed in the required examination.
B – Skill Objectives oftheProgram Students will learn or be able to systematically demonstrate their understanding of basic principles of thoracic and abdominal radiographic anatomy: 1-Learn to use radiographic anatomy of the chest and abdomen. 2- Analyzing the results of images and samples based on imaging techniques . 4-Giving the final report to the patient .
Teaching and learning methods
1- Theoretical lectures. 2-Using teaching aids (presentations and scientific films)
Evaluation methods
Quarterly and Final Theoretical and Practical Tests
UNTRANSLATED_CONTENT_START TRANSLATED_CONTENT_END Objective: To understand professional ethics related to the use of radiological anatomy of the chest and abdomen, such as: Patient confidentiality. Reduce radiation exposure as much as possible.

Evaluation method	teaching method	Module / Course Name or	Intended Learning Outcomes	hours	Week
	PDF power point Video	Review about MRI machines: - Components of MRI system - Types of MRI machines Role of the MRI Technologist in: - Precaution to be taken - Patients' contraindication and preparation - patient safety			1
		Review about MRI pulse sequences - Types - Choosing the appropriate sequence for the required examination -Overview of imaging protocol			2
		Tissue characterization: - Role of MRI in diseases - Intensities of normal anatomical structures Pathological changes and effect of relation time			3
		MRI artifact during the exam : Types, Remedies			4
		Technical Factors Influencing MRI Image quality			5
		MRI Contrast Media: - Positive and Negative contrast media - Administration of Contrast Agent - Magnetization transfer contrast (MTC) - Clinical Applications of MRI Contrast Media			6
		MRI of the Brain (pediatrics and adults): - patient position - coil selection - indications - the suitable protocols (series of sequences) for each indication - Planning			7
		MRI of the Temporal Lobes: - patient position - coil selection - indications - the suitable protocols (series of sequences) for each indication - Planning			8

		MRI of the Internal Auditory Meatus : - patient position - coil selection - indications - the suitable protocols (series of sequences)for each indication - Planning			9
		MRI of the Pituitary: - patient position - coil selection - indications - the suitable protocols (series of sequences)for each indication - Planning			10
		MRI of the Orbits: - patient position - coil selection - indications , the suitable protocols (series of sequences)for each indication - Planning			11
		MR Angiography and MR Venography: - patient position - coil selection - indications , the suitable protocols (series of sequences) for each indication - Planning			12
		MRI of the Chest: - patient position - coil selection - indications - the suitable protocols (series of sequences)for each indication - Planning			13
		MRI of the Breast: - patient position - coil selection - indications - the suitable protocols (series of sequences)for each indication - Planning			14
		Recent Advances in Pulse Sequences and protocols Some applications on the MRI - Diffusion weighted imaging sequence			15

		- Perfusion sequence - Magnetic Resonance Spectroscopy			
Course Evaluation .10					
Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports etc.					
Learning and Teaching Resources .11					
Required textbooks (methodology if any)			Required textbooks (methodology if any)		
Key References (Sources)			Key References (Sources)		
Recommended books and references (scientific journals, reports			Recommended books and references (scientific journals, reports		
Course Evaluation			Course Evaluation		

Course Description Form

3	
Abdominal Ultrasound imaging	
• Course Code	
RT124	
42. Term / Year	
2025-2026	
28. Description Preparation Date:	
10/24	
43. Available Attendance Forms My Attendance	
My presence is mandatory	
83. Available Attendance Forms:	
15 hours and above	
44. Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. Haider Sahib Mahdi Email :	
• Course Objectives	
Course Objectives	21. Teach students how to deal with thoracic and abdominal radiographic anatomy techniques Basic circulating in the field of radiology. 22. Familiarize students with medical terminology in thoracic and abdominal radiological anatomy techniques 23. Train students to trade these techniques. 24. Encourage students to be creative and think about specialized projects and follow developments in this field. 25. Providing students with scientific, practical and subjective skills that enable them to solve problems the process in a scientific way.
• TEACHING AND LEARNING STRATEGIES	

Strategy	Objective: To apply theoretical knowledge in a practical environment by: Training in the use of radiological anatomy techniques for the chest and abdomen. The possibility of using radiological anatomy techniques for the chest and abdomen in the other stage.
• Course Structure	
Required Program Outputs and Teaching, Learning and Evaluation Modalities	
Knowledge Objectives 1. Understand the principles of abdominal anatomy techniques. 2. Provides a comprehensive overview of dissection techniques. 3. Identify important medical terms used in radiological anatomy of the chest and abdomen. 4. Classification of dissection techniques as needed in the required examination.	
B – Skill Objectives of the Program Students will learn or be able to systematically demonstrate their understanding of basic principles of thoracic and abdominal radiographic anatomy: 1-Learn to use radiographic anatomy of the chest and abdomen. 2- Analyzing the results of images and samples based on imaging techniques . 4-Giving the final report to the patient .	
Teaching and learning methods	
1- Theoretical lectures. 2-Using teaching aids (presentations and scientific films)	
Evaluation methods	
Quarterly and Final Theoretical and Practical Tests	
UNTRANSLATED_CONTENT_START TRANSLATED_CONTENT_END Objective: To understand professional ethics related to the use of radiological anatomy of the chest and abdomen, such as: Patient confidentiality. Reduce radiation exposure as much as possible.	

Evaluation method	teaching method	Module / Course Name or	Intended Learning Outcomes	hours	Week
	PDF power point Video	Principle of ultrasound and its terms			1
		Normal appearance of the liver			2
		Abnormal liver: - Enlarged liver/hepatomegaly: - homogeneous pattern, Enlarged liver: - non-homogeneous pattern, - Small liver/shrunk liver			3
		Cystic lesions in normal or large liver			4
		Differential diagnosis of liver masses, Trauma of the liver			5
		Normal appearance gallbladder and biliary tract			6
		abnormal gallbladder and biliary tract: - distended gallbladder, - Acute cholecystitis, - Echoes within the gallbladder			7
		Thick gallbladder walls, Small gallbladder, Gallbladder in jaundice			8
		Normal and abnormal appearance of the pancreas			9
		Normal and abnormal appearance of the spleen			10
		- Normal appearance of the kidney and ureters, - considerations of the absent kidney, - abnormal kidney: large kidney			11
		Renal cysts, Renal masses			12
		- Small kidney, - Renal calculi, - Trauma, - Perirenal fluid			13
		Normal and abnormal appearance of the urinary bladder			14
		Normal and abnormal appearance of the thyroid gland			15

Course Evaluation .12

Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports etc.

Learning and Teaching Resources .13

Required textbooks (methodology if any)	Required textbooks (methodology if any)
Key References (Sources)	Key References (Sources)
Recommended books and references (scientific journals, reports	Recommended books and references

	(scientific journals, reports
Course Evaluation	Course Evaluation

Course Description Form

4	
Medicine of internal diseases	
• Course Code	
RT124	
45. Term / Year	
2025–2026	
29. Description Preparation Date:	
10/24	
46. Available Attendance Forms My Attendance	
My presence is mandatory	
84. Available Attendance Forms:	
15 hours and above	
47. Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. Haider Sahib Mahdi Email :	
• Course Objectives	
Course Objectives	26. Teach students how to deal with thoracic and abdominal radiographic anatomy techniques Basic circulating in the field of radiology. 27. Familiarize students with medical terminology in thoracic and abdominal radiological anatomy techniques ‘ 28. Train students to trade these techniques. 29. Encourage students to be creative and think about specialized projects and follow developments in this field. 30. Providing students with scientific, practical and subjective skills that enable them to solve problems the process in a scientific way.
• TEACHING AND LEARNING STRATEGIES	

Strategy	Objective: To apply theoretical knowledge in a practical environment by: Training in the use of radiological anatomy techniques for the chest and abdomen. The possibility of using radiological anatomy techniques for the chest and abdomen in the other stage.
• Course Structure	
Required Program Outputs and Teaching, Learning and Evaluation Modalities	
Knowledge Objectives 1. Understand the principles of abdominal anatomy techniques. 2. Provides a comprehensive overview of dissection techniques. 3. Identify important medical terms used in radiological anatomy of the chest and abdomen. 4. Classification of dissection techniques as needed in the required examination.	
B – Skill Objectives of the Program Students will learn or be able to systematically demonstrate their understanding of basic principles of thoracic and abdominal radiographic anatomy: 1-Learn to use radiographic anatomy of the chest and abdomen. 2- Analyzing the results of images and samples based on imaging techniques . 4-Giving the final report to the patient .	
Teaching and learning methods	
1- Theoretical lectures. 2-Using teaching aids (presentations and scientific films)	
Evaluation methods	
Quarterly and Final Theoretical and Practical Tests	
UNTRANSLATED_CONTENT_START ع- UNTRANSLATED_CONTENT_END Objective: To understand professional ethics related to the use of radiological anatomy of the chest and abdomen, such as: Patient confidentiality. Reduce radiation exposure as much as possible.	

Evaluation method	teaching method	Module / Course Name or	Intended Learning Outcomes	hours	Week
	PDF power point Video	Headache - Types - Imaging of headache			1
		Cerebrovascular accident(CVA):imaging in CVA			2
		Bone disease: - Infection - Tumor			3
		Respiratory tract diseases: - Infections , - Chest trauma, - Lung masses			4
		- Pulmonary embolism, - pneumothorax, - pleural effusion			5
		Urinary tract infection: imaging in UTI			6
		GIT: diseases of esophagus			7
		Diseases of the stomach: - Gastric mass, - Ulcer			8
		- GIT: diseases of esophagus			9
		Diseases of duodenum : Duodenal ulcer (DU)			10
		Diseases of jejunum & ileum			11
		Diseases of colon			12
		Liver : Hepatitis, Jaundice,			13
		Cholecystitis, Portal hypertension			14
		Diseases of vascular system			15
Course Evaluation .14					
Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports etc.					
Learning and Teaching Resources .15					
Required textbooks (methodology if any)			Required textbooks (methodology if any)		
Key References (Sources)			Key References (Sources)		
Recommended books and references (scientific journals, reports			Recommended books and references (scientific journals, reports		
Course Evaluation			Course Evaluation		

Course Description Form

5	
Biostatistics and computer applications	
• Course Code	
RT124	
48. Term / Year	
2025–2026	
30. Description Preparation Date:	
10/24	
49. Available Attendance Forms My Attendance	
My presence is mandatory	
85. Available Attendance Forms:	
15 hours and above	
50. Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. Haider Sahib Mahdi Email :	
• Course Objectives	
Course Objectives	31. Teach students how to deal with thoracic and abdominal radiographic anatomy techniques Basic circulating in the field of radiology. 32. Familiarize students with medical terminology in thoracic and abdominal radiological anatomy techniques 33. Train students to trade these techniques. 34. Encourage students to be creative and think about specialized projects and follow developments in this field. 35. Providing students with scientific, practical and subjective skills that enable them to solve problems the process in a scientific way.
• TEACHING AND LEARNING STRATEGIES	
Strategy	Objective: To apply theoretical knowledge in a practical environment by: Training in the use of radiological anatomy techniques for the chest and abdomen. The possibility of using radiological anatomy techniques for the chest and abdomen in the other stage.

• Course Structure	
RequiredProgram Outputs and Teaching, Learning and Evaluation Modalities	
Knowledge Objectives	1. Understand the principles of abdominal anatomy techniques. 2. Provides a comprehensive overview of dissection techniques. 3. Identify important medical terms used in radiological anatomy of the chest and abdomen. 4. Classification of dissection techniques as needed in the required examination.
B – Skill Objectives oftheProgram	Students will learn or be able to systematically demonstrate their understanding of basic principles of thoracic and abdominal radiographic anatomy: 1-Learn to use radiographic anatomy of the chest and abdomen. 2- Analyzing the results of images and samples based on imaging techniques . 4-Giving the final report to the patient .
Teaching and learning methods	
1- Theoretical lectures. 2-Using teaching aids (presentations and scientific films)	
Evaluation methods	
Quarterly and Final Theoretical and Practical Tests	
Objective: To understand professional ethics related to the use of radiological anatomy of the chest and abdomen, such as: Patient confidentiality. Reduce radiation exposure as much as possible.	

Evaluation method	teaching method	Module / Course Name or	Intended Learning Outcomes	hours	Week
	power point Video	Introduction to Biostatistics -Important Terms in Biostatistics -Types of Data - Data presentation . Frequency Table Presentation . Two way cross classification Tables .Histogram .Frequency Polygon . Pie Chart . Scatter Plot			1
		Arithmetical Description Measures -Central Tendency Measures (Mean, Median, Mode, Geometric Mean, Harmonic Mean, Root Mean Square)			2
		Dispersion Measures -Range and Interquartile -Mean deviation, standard deviation, Variance, Coefficient of Variation -Finding Outliers			3
		Kurtosis and Skewness -Moments -Kurtosis Measures -Skewness Measures			4
		Hypothesis Testing -Null and Alternatives Hypothesis -Region and Nonrejection area -Decision Making Error (Type1 and Type2)			5
		Hypothesis Testing -A Single Population Mean -Testing Ho by Means of a Confident Interval -One Sided Hypothesis Tests			6
		Hypothesis Testing -- t distribution -Sampling From Normally Distributed Population: Population Variance Unknown -Paired Comparisons(Student Test)			7
		Hypothesis Testing -The Difference between Two Population Means - Sampling From Normally Distributed Population: Population Variance known			8

		- Sampling From Normally Distributed Populations: Population Variance Unknown			
		Normal Distribution - Normal Distribution and Standard Normal Distribution - p value, level of Significant		9	
		Diagnostic Accuracy Tests -prevalence -Accuracy -specificity -Sensitivity -Positive and Negative predictive Value - Comparing Accuracy between Two test		10	
		Correlation and regression -Simple Linear Regression (Least Square Method) -Correlation Coefficient (r) -r ² - Testing significance of correlation		11	
		Chi Square test -Characteristic features of Chi Square -Chi Square methods (Goodness of fit, test of independence, homogeneity) - Examples on calculating expecting values -Hypothesis testing using Chi Square Test		12	
		One Way Anova -Testing for the difference among the means of more than Two Groups -Understand the summary Table of Anova results		13	
		Estimation - Estimation usage and types -Confident intervals using T distribution - Confident interval for the difference between two population Means variance known - Confident interval for the difference between two population Means variance		14	

		unknown			
		Vital Statistics -Delivery rates -Deaths rates			15
Course Evaluation					.16
Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports etc.					
Learning and Teaching Resources					.17
Required textbooks (methodology if any)			Required textbooks (methodology if any)		
Key References (Sources)			Key References (Sources)		
Recommended books and references (scientific journals, reports			Recommended books and references (scientific journals, reports		
Course Evaluation			Course Evaluation		

Course Description Form

6	
Computed tomography imaging of chest, abdomen and pelvis	
• Course Code	
RT124	
51. Term / Year	
2025-2026	
31. Description Preparation Date:	
10/24	
52. Available Attendance Forms My Attendance	
My presence is mandatory	
86. Available Attendance Forms:	
15 hours and above	
53. Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. Haider Sahib Mahdi Email :	
• Course Objectives	
Course Objectives	36. Teach students how to deal with thoracic and abdominal radiographic anatomy techniques Basic circulating in the field of radiology. 37. Familiarize students with medical terminology in thoracic and abdominal radiological anatomy techniques 38. Train students to trade these techniques. 39. Encourage students to be creative and think about specialized projects and follow developments in this field. 40. Providing students with scientific, practical and subjective skills that enable them to solve problems the process in a scientific way.
• TEACHING AND LEARNING STRATEGIES	
Strategy	Objective: To apply theoretical knowledge in a practical environment by: Training in the use of radiological anatomy techniques for the chest and abdomen. The possibility of using radiological anatomy techniques for the chest and abdomen in the other stage.

•	Course Structure
.	RequiredProgram Outputs and Teaching, Learning and Evaluation Modalities
	Knowledge Objectives 1. Understand the principles of abdominal anatomy techniques. 2. Provides a comprehensive overview of dissection techniques. 3. Identify important medical terms used in radiological anatomy of the chest and abdomen. 4. Classification of dissection techniques as needed in the required examination.
	B – Skill Objectives oftheProgram Students will learn or be able to systematically demonstrate their understanding of basic principles of thoracic and abdominal radiographic anatomy: 1-Learn to use radiographic anatomy of the chest and abdomen. 2- Analyzing the results of images and samples based on imaging techniques . 4-Giving the final report to the patient .
	Teaching and learning methods
	1- Theoretical lectures. 2-Using teaching aids (presentations and scientific films)
	Evaluation methods
	Quarterly and Final Theoretical and Practical Tests
	UNTRANSLATED_CONTENT_START ع- UNTRANSLATED_CONTENT_END Objective: To understand professional ethics related to the use of radiological anatomy of the chest and abdomen, such as: Patient confidentiality. Reduce radiation exposure as much as possible.

Evaluation method	teaching method	Module / Course Name or	Intended Learning Outcomes	hours	Week
	PDF power point Video	CT of the Chest: - Cardiac CT - High Resolution CT			1
		CT Angiography, - Indications - Patient Positioning and Preparation - Technical Considerations - Scanning Protocols			2
		CT of the esophagus and stomach: - CT in Esophageal - CT of the stomach			3
		Kurtosis and Skewness -Moments -Kurtosis Measures -Skewness Measures			4
		- CT of the small intestine - CT of the large bowel			5
		Computed Tomography of the liver : - intravenous and native studies - early phase			6
		- late phase - delay phase			7
		Computed Tomography of the pancreas:			8
		CT scan of the urinary system: - native scan - ct urography			9
		CT scan of pelvis: - Male exams and preparation - Female exams and preparation			10
		CT scan of Trauma - Clinical consideration			11
		Role of CT in interventional Applications - Abscess Drainage - Biopsy			12
		CT scan of Musculoskeletal System			13
		CT artifacts: - Detection - Remedies			14
		Cone Beam CT - Technique and position Role of CT Compared with Other Imaging Modalities			15

Course Evaluation .18

Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral,

monthly and written examinations and reports etc.	
Learning and Teaching Resources .19	
Required textbooks (methodology if any)	Required textbooks (methodology if any)
Key References (Sources)	Key References (Sources)
Recommended books and references (scientific journals, reports	Recommended books and references (scientific journals, reports
Course Evaluation	Course Evaluation

Course Description Form

7	
Magnetic resonance imaging of musculoskeletal system,abdomen and pelvis	
• Course Code	
RT124	
54. Term / Year	
2025-2026	
32. Description Preparation Date:	
10/24	
55. Available Attendance Forms My Attendance	
My presence is mandatory	
87. Available Attendance Forms:	
15 hours and above	
56. Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. Haider Sahib Mahdi Email :	
• Course Objectives	
Course Objectives	41. Teach students how to deal with thoracic and abdominal radiographic anatomy techniques Basic circulating in the field of radiology. 42. Familiarize students with medical terminology in thoracic and abdominal radiological anatomy techniques 43. Train students to trade these techniques. 44. Encourage students to be creative and think about specialized projects and follow developments in this field.

	45. Providing students with scientific, practical and subjective skills that enable them to solve problems the process in a scientific way.
• TEACHING AND LEARNING STRATEGIES	
Strategy	Objective: To apply theoretical knowledge in a practical environment by: Training in the use of radiological anatomy techniques for the chest and abdomen. The possibility of using radiological anatomy techniques for the chest and abdomen in the other stage.
• Course Structure	
Required Program Outputs and Teaching, Learning and Evaluation Modalities	
Knowledge Objectives 1. Understand the principles of abdominal anatomy techniques. 2. Provides a comprehensive overview of dissection techniques. 3. Identify important medical terms used in radiological anatomy of the chest and abdomen. 4. Classification of dissection techniques as needed in the required examination.	
B – Skill Objectives of the Program Students will learn or be able to systematically demonstrate their understanding of basic principles of thoracic and abdominal radiographic anatomy: 1- Learn to use radiographic anatomy of the chest and abdomen. 2- Analyzing the results of images and samples based on imaging techniques . 4- Giving the final report to the patient .	
Teaching and learning methods	
1- Theoretical lectures. 2- Using teaching aids (presentations and scientific films)	
Evaluation methods	
Quarterly and Final Theoretical and Practical Tests	
UNTRANSLATED_CONTENT_START ع- UNTRANSLATED_CONTENT_END Objective: To understand professional ethics related to the use of radiological anatomy of the chest and abdomen, such as: Patient confidentiality. Reduce radiation exposure as much as possible.	

Evaluation method	teaching method	Module / Course Name or	Intended Learning Outcomes	hours	Week
	PDF power point Video	MRI of the Cervical Spine and Brachial Plexus: . patient position . coil selection . Indications, the suitable protocols (series of sequences) for each indication. .Planning			1
		MRI of the Dorsal Spine: . patient position . coil selection . Indications, the suitable protocols (series of sequences) for each indication. . Planning			2
		MRI of the Lumbar Spine: . patient position . coil selection . Indications, the suitable protocols (series of sequences) for each indication. . Planning			3
		Total spin for moving table or large field of view (FOV): . patient position . Indications, the suitable protocols (series of sequences) for each indication. .Planning			4
		MRI of the female Pelvis: . patient position . coil selection . Indications, the suitable protocols (series of sequences) for each indication. . Planning			5
		MRI of the Prostate: . patient position . coil selection . Planning			6
		MRI of the Endorectal: . patient position . coil selection . Indications, the suitable protocols (series of sequences) for each indication. . Planning			7

		MRI of the Shoulder: . patient position . coil selection . Indications, the suitable protocols (series of sequences) for each indication. . Planning			8
		MRI of the Wrist and Hand: . patient position . coil selection . Indications, the suitable protocols (series of sequences) for each indication. . Planning			9
		MRI of the Hips: . patient position . coil selection . Indications, the suitable protocols (series of sequences) for each indication. . Planning			10
		MRI of the Knee: . patient position . coil selection . Indications, the suitable protocols (series of sequences) for each indication. . Planning			11
		MRI of the neck: . patient position . coil selection . Indications, the suitable protocols (series of sequences) for each indication. . Planning			12
		Magnetic resonance cholangiopancreatography and liver dynamic study during contrasts: - patient position - coil selection - requirement of examination - agent - Indications, the suitable protocols (series of sequences) for each indication. - Planning			13
		MRI of the Kidney and MRU: . patient position . coil selection . Indications, the suitable protocols (series of sequences) for each indication.			14

		- Planning			
		MRI of adrenal gland: . patient position . coil selection . Indications, the suitable protocols (series of sequences) for each indication. - Planning			15

Course Description Form

8	
Obstetrics and gynecologic ultrasound imaging	
• Course Code	
RT124	
57. Term / Year	
2025-2026	
33. Description Preparation Date:	
10/24	
58. Available Attendance Forms My Attendance	
My presence is mandatory	
88. Available Attendance Forms:	
15 hours and above	
59. Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. Haider Sahib Mahdi Email :	
• Course Objectives	
Course Objectives	46. Teach students how to deal with thoracic and abdominal radiographic anatomy techniques Basic circulating in the field of radiology. 47. Familiarize students with medical terminology in thoracic and abdominal radiological anatomy techniques 48. Train students to trade these techniques. 49. Encourage students to be creative and think about specialized projects and follow developments in this field. 50. Providing students with scientific, practical and subjective skills that enable them to solve problems the process in a scientific way.
• TEACHING AND LEARNING STRATEGIES	
Strategy	Objective: To apply theoretical knowledge in a practical environment by: Training in the use of radiological anatomy techniques for the chest and abdomen. The possibility of using radiological anatomy techniques for the chest and abdomen in the other stage.

• Course Structure
Required Program Outputs and Teaching, Learning and Evaluation Modalities
Knowledge Objectives 1. Understand the principles of abdominal anatomy techniques. 2. Provides a comprehensive overview of dissection techniques. 3. Identify important medical terms used in radiological anatomy of the chest and abdomen. 4. Classification of dissection techniques as needed in the required examination.
B – Skill Objectives of the Program Students will learn or be able to systematically demonstrate their understanding of basic principles of thoracic and abdominal radiographic anatomy: 1- Learn to use radiographic anatomy of the chest and abdomen. 2- Analyzing the results of images and samples based on imaging techniques . 4- Giving the final report to the patient .
Teaching and learning methods
1- Theoretical lectures. 2- Using teaching aids (presentations and scientific films)
Evaluation methods
Quarterly and Final Theoretical and Practical Tests
Objective: To understand professional ethics related to the use of radiological anatomy of the chest and abdomen, such as: Patient confidentiality. Reduce radiation exposure as much as possible.

Evaluation method	teaching method	Module / Course Name or	Intended Learning Outcomes	hours	Week
	power point Video	Head injury: the role of imaging in head injury			1
		Paranasal sinuses: imaging in paranasal sinuses diseases			2
		The orbit: imaging in orbital diseases			3
		The spine : imaging of spinal lesions			4
		The neck : role of imaging in neck masses			5
		Bone fracture: types & imaging			6
		Urinary tract obstruction: - causes, - clinical features - imaging.			7
		7			
		8 Renal & vesical tu			
		Renal & vesical tumors: types, features, imaging.			8
		□ Cystic diseases of kidney, □ congenital anomalies of urinary tract.			9
		Hepatic masses: role of imaging			10
		Breast masses: benign & malignant			11
		Abnormalities in the first trimester of the pregnancy			12
		Female reproductive system: - infertility - causes & role of imaging			13
		Male reproductive system: infertility, causes & role of imaging			14
		Prostate : - Diseases, prostate enlargement - Methods of treatments			15

Course Evaluation .20

Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports etc.

Learning and Teaching Resources .21

Required textbooks (methodology if any)

Required textbooks (methodology if any)

Key References (Sources)

Key References (Sources)

Recommended books and references (scientific journals, reports

Recommended books and references (scientific journals, reports

Course Evaluation

Course Evaluation

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