

**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

2026–2025

Introduction:

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

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: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

Academic Program Description Form

Institute name: Collage of Health and Medical Techniques

Scientific Department: Radiological techniques

Academic or Professional Program Name: Bachelor Degree in Radiological techniques

Final Certificate Name: Bachelor Degree in Radiological techniques

Academic System: courses

Description Preparation Date: 14\9\2025

File Completion Date: 17/12/2025

Signature: 

Head of Department Name: *Thuray*
Amer

Date:

Signature: 

Scientific Associate Name:

Sanan Tamer Abdelwahab

Date:

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date: *22/8/2026* *Dr. Mohammed Anwar Abboud*

Signature: 



Approval of the Dean

1. Program Vision

The Department of Radiologic Technology is dedicated to preparing highly qualified professionals equipped with solid scientific knowledge and advanced practical skills in medical imaging and the operation of modern diagnostic equipment. The program emphasizes the development of analytical abilities and precise diagnostic competencies, while fostering professional values and ethical standards. In addition, the department promotes research skills in radiologic sciences, ensuring the provision of competent expertise to the local and regional healthcare sectors. Its graduates are prepared to deliver high-quality healthcare services and to keep pace with global advancements in diagnostic imaging.

2. Program Mission

The mission of the Radiologic Technology academic program is to prepare highly qualified radiology technologists who possess the competence, knowledge, and skills required to work effectively in healthcare institutions across both the public and private sectors. The program seeks to advance students' capabilities in medical imaging and radiologic diagnosis through the use of state-of-the-art equipment and technologies. It also emphasizes the promotion of scientific research in radiologic sciences and their applications, in addition to serving the community by offering educational and training programs that enhance the proficiency of healthcare professionals and address the evolving needs of the labor market.

3. Program Objectives

1. To graduate competent radiologic technologists capable of working in diverse healthcare institutions within the field of medical imaging.
2. To equip students with the knowledge and skills necessary for operating various imaging modalities, including X-ray, computed tomography (CT), magnetic resonance imaging (MRI), and ultrasound.
3. To contribute to disease diagnosis through the production of accurate, high-quality radiographic images.
4. To ensure adherence to radiation safety standards and safeguard both patients and healthcare personnel from radiation risks.
5. To develop research skills and encourage participation in scientific activities related to radiologic technologies.

4. Program Accreditation

None

5. Other external influences

- Regulations of the Ministry of Higher Education, academic accreditation standards, and the requirements of the National Qualifications Framework (NQF).
- Requirements for program alignment with corresponding colleges, as well as scientific and academic exchange.
- The actual needs of medical centers and hospitals, alongside the required professional competencies for graduates.
- Continuous updates in diagnostic radiology equipment and modern calibration systems.
- Ministry of Health guidelines for professional practice and radiation hazard prevention protocols.

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements				
College Requirements				
Department Requirements	53	176	100%	
Summer Training				Fulfilled – no credit units required, only a two-month graduation requirement.
Other				

* This can include notes whether the course is basic or optional.

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
First Year – First Semester			theoretical	practical
	1001	Anatomy of skeleton	2	3
	1002	General physics	2	3
	1003	General Physiology	2	3
	1004	Biology	2	3
	1005	General chemistry	2	3
	1006	Computer Fundamentals	1	2
	1007	Human rights and Democracy	2	–
	1008	Medical terminology	1	–
	1009	Arabic Language	1	–
First Year – Second Semester				
	2101	Anatomy of body systems	2	3
	2102	Physics of atom	2	3
	2103	Systemic physiology	2	3
	2104	Radiobiology	2	4
	2105	Principles of Nursing	2	4
	2106	Medical Terminology	1	–
	2107	Arabic language	1	–
Total			40 Credits	

Year/Level	Course Code	Course Name	Credit Hours	
Second Year – First Semester			theoretical	practical
	2001	Computed Tomography Equipment techniques	2	5
	2002	Radiographic techniques for lower limbs	2	5
	2003	Special radiological procedures of gastrointestinal tract and bones	2	5
	2004	Radiological anatomy of lower limbs	2	4
	2005	Fundamentals of Radio-physics	2	3
	2006	Fundamentals of radiation protection	2	3
	2007	Computer applications	1	2
	2008	The Crimes of the Ba'ath Regime in Iraq	2	–
	2009	Arabic Language	1	–

Second Year – Second Semester				
	21001	Conventional Radiological Equipment Techniques	2	5
	21002	Radiographic techniques for upper limbs	2	5
	21003	Special radiological procedures of biliary and reproductive system	2	5
	21004	Radiological anatomy of head and upper limbs	2	4
	21005	Physics of Computed Tomography	2	3
	21006	Arabic Language	2	-
Total			47 Credits	

Year/Level	Course Code	Course Name	Credit Hours	
Third Year – First Semester			theoretical	practical
	3001	Ultrasound equipment techniques	2	4
	3002	Radiographic techniques for head and spinal cord	2	4
	3003	Special radiological procedures of the head, breast and respiratory system	2	4
	3004	Radiological anatomy of brain and spinal column	2	2
	3005	General Pathology	2	2
	3006	Physics of ultrasound	1	3
	3007	Biological Radiation hazards	2	3
Third Year – Second Semester				
	3101	Equipment techniques magnetic resonance imaging	2	4
	3102	Radiographic techniques for thorax and abdomen	2	4
	3103	Special radiological procedures of the cardiovascular and central nervous system	2	4
	3104	Radiological anatomy of thorax and abdomen	2	2
	3105	Physics of magnetic resonance imaging	2	2
	3106	Systemic Pathology	1	3
Total			43 Credits	

Year/Level	Course Code	Course Name	Credit Hours	
Fourth Year – First Semester			theoretical	practical
	40011	Computed tomography imaging of head and spinal cord	2	5
	40022	Magnetic resonance imaging	2	5

		principles and head exam		
	40033	Abdominal Ultrasound imaging	2	5
	40044	Medicine of internal diseases	2	3
	40055	Biostatistics and computer applications	2	4
Forth Year – Second Semester				
	41011	Computed tomography imaging of chest, abdomen and pelvis	2	4
	41022	Magnetic resonance imaging of musculoskeletal system, abdomen and pelvis	2	4
	41033	Obstetrics and gynecologic ultrasound imaging	2	4
	41044	Medicine of surgical diseases	2	2
	41055	Professional Ethics	2	2
	41066	Graduation project	-	3
Total			40 Credits	

8. Expected learning outcomes of the program

Knowledge

- A1. Understand and comprehend general anatomy, radiographic anatomy, physiology, and pathology to identify anatomical landmarks of organ systems and differentiate between normal and pathological conditions.
- A2. Comprehend the physical principles of radiation generation, atomic physics, and the physics of advanced imaging modalities (X-Ray, CT, MRI, Ultrasound).
- A3. Understand the biological effects of radiation and apply national and international protection standards to safeguard patients, staff, and the environment from radiation hazards.
- A4. Demonstrate knowledge of specialized medical terminology, as well as medical ethics, laws, and regulations.

Skills

- B1. Operate X-ray equipment and digital radiography systems (DR & CR), efficiently applying precise positioning techniques.
- B2. Perform all types of advanced imaging examinations using Computed Tomography (CT), Magnetic Resonance Imaging (MRI), and Ultrasound systems.
- B3. Adjust exposure parameters (kVp, mAs) to optimize the balance between image quality and absorbed dose.
- B4. Apply radiation safety protocols, personal protective measures, and dose optimization strategies tailored to patient age, gender, and the target organ.

Ethics

- C1. Rigorously apply the ALARA (As Low As Reasonably Achievable)

principle in clinical practice to protect patients, the public, and healthcare personnel.

C2. Adhere to professional ethics for medical radiographers, maintaining patient data confidentiality and providing safe clinical care.

C3. Demonstrate effective communication and coordination skills within multidisciplinary healthcare teams.

C4. Engage in self-development, critical thinking, and applied clinical research within radiography and medical imaging.

9. Teaching and Learning Strategies

- Interactive Theoretical Instruction and Blended Learning:
- Simulation-Based Learning and Virtual Labs
- Direct Field and Clinical Training in Hospitals
- Problem-Based Learning and Case Studies (PBL)
- Practical Application of Safety and Radiation Protection Protocols

10. Evaluation methods

- Oral and written examinations
- Ministry-level evaluations
- Daily, monthly, and semester exams
- Mid-year assessments
- End-of-course examinations
- Annual examinations

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Asst. Prof. Dr. Nathir Abbas Ibrahim	✓				✓	
Asst. Prof. Dr. Sahar Ahmed Mahdi		✓			✓	

Asst. Prof. Dr. Thuraya Amer Abdul-Hussein	✓				✓	
Lecturer Dr. Anwar Khalid Farman	✓				✓	
Lecturer Dr. Shahad Abdul-Wahhab Ibraheem		✓			✓	
Lecturer Dr. Qais Latif Atiyah		✓			✓	
Lecturer Dr. Alaa Kareem Rasheed		✓			✓	
Lecturer Dr. Hala Hussein Kareem	✓				✓	
Lecturer Dr. Hummam Issam Abdul-Rahman	✓				✓	
Lecturer Dr. Huda Ali Hashim		✓			✓	
Asst. Lect. Hutham Faraj Abdul-Aziz	✓				✓	
Asst. Lect. Ahmed Al-Mudhafar Kazem		✓			✓	
Asst. Lect. Rususl Hamid	✓				✓	
Asst. Lect. Ban Musa Naseef		✓			✓	
Lecturer Dr. Nebras Jassam Hamadi		✓				✓
Lecturer Dr. Abdul-Sattar Aref Khumas		✓				✓
Lecturer Dr. Aysar Sabah Keteb	✓					✓
Lecturer Dr. Ghufraan Sattar Jaber	✓					✓
Lecturer Dr. Omar Nadhir Abbas	✓					✓
Asst. Lect. Raad Owaid		✓				✓
Asst. Lect. Khaldoun Saadoun Juma		✓				✓
Asst. Lect. Safiya Saad Dheif	✓					✓
Asst. Lect. Hind Muwafaq		✓				✓
Asst. Lect. Ali Hatef	✓					✓

Professional Development

Mentoring new faculty members

Monitoring completion rates and academic progress, Oversight of teaching by the Department Chair. Organizing training courses and professional development sessions. Conducting departmental meetings

Professional development of faculty members

Organizing seminars and workshops, Conducting training courses, Establishing partnerships and twinning programs with governmental colleges. Implementing modern learning strategies, Utilizing up-to-date research and contemporary academic literature

12. Acceptance Criterion

- **Centralized admission based on Biology and Science scores, in accordance with the regulations of the Ministry of Higher Education and Scientific Research.**
- **Qualified students must undergo an interview to assess their suitability for the department, including evaluation of psychological readiness, language proficiency, understanding of the significance of their chosen profession, and ethical and behavioural competencies.**

13. The most important sources of information about the program

1. The department's presence on Al-Turath University's official social media platforms and website.
2. Accessing information about the college's scientific, social, and athletic activities through electronic publications.

14. Program Development Plan

1. Distributing periodic surveys (mid-term and end-of-term) to measure students' understanding of required radiological knowledge and skills (e.g., managing radiation doses, image quality). Linking student responses to the academic specification matrix to identify subjects or skills with lower comprehension levels relative to the minimum required standard. Measuring student satisfaction regarding the learning environment, radiology lab equipment, and the clarity of evaluation criteria.
2. Coordinating with radiology technology departments in prestigious universities to benchmark course contents and curricula, keeping pace with modern advances (such as molecular imaging techniques and AI in radiology).
3. Holding periodic online or in-person sessions with faculty members from peer universities to exchange expertise on modern teaching and assessment methods (e.g., formative evaluation and skill-based exam design).

4. Benefiting from the experiences of peer departments in drafting academic program specifications that align with international program accreditation standards.
5. Enhancing the practical and applied aspects to prepare students for the labor market by increasing clinical training hours in collaboration with hospitals and specialized centers, distributing students across various radiology departments (X-Ray, CT, MRI, Ultrasound) starting from early stages.
6. Utilizing digital simulation software (Radiography Simulators) for PACS systems and medical equipment to train students on adjusting radiation exposure factors and managing clinical cases without real radiation risks.
7. Adopting a continuous clinical and skill-based assessment system in an environment simulating real-world working conditions to ensure graduates are fully prepared before entering the job market.

Program Skills Outline															
Year/Level	Course Code	Course Name	Basic or optional	Required program Learning outcomes											
				Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
First Year – First Semester	1001	Anatomy of skeleton		←				←							
	1002	General physics			←										
	1003	General Physiology		←											
	1004	Biology		←											
	1005	General chemistry		←											
	1006	Computer Fundamentals					←								
	1007	Human rights and Democracy		←			←							←	
	1008	Medical Terminology		←			←							←	
	1009	Arabic language												←	
First Year – Second Semester															
	2101	Anatomy of body systems		←				←							
	2102	Physics of atom			←										
	2103	Systemic physiology		←											
	2104	Radiobiology				←					←	←			
	2105	Principles of Nursing					←				←		←		
	2106	Medical Terminology		←			←							←	
	2107	Arabic language	←											←	

				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
Second Year – First Semester	2001	Computed Tomography Equipment techniques			←			←	←	←		←			
	2002	Radiographic techniques for lower limbs		←				←		←			←		
	2003	Special radiological procedures of gastrointestinal tract and bones		←				←		←		←	←		
	2004	Radiological anatomy of lower limbs		←				←							
	2005	Fundamentals of Radio-physics			←					←					
	2006	Fundamentals of radiation protection				←					←				
	2007	Computer application					←					←		←	
	2008	Arabic Language					←						←	←	
	2009	The Crimes of the Ba'ath Regime in Iraq					←							←	
Second Year – Second Semester															

	21001	Conventional Radiological Equipment Techniques			←			←	←	←		←			
	21002	Radiographic techniques for upper limbs		←				←		←			←		
	21003	Special radiological procedures of biliary and reproductive system		←				←		←			←	←	
	21004	Radiological anatomy of head and upper limbs		←				←							
	21005	Physics of Computed Tomography			←					←					
	21006	Arabic Language					←							←	

Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
Third Year – First Semester	3001	Ultrasound equipment techniques			←				←	←			←		
	3002	Radiographic techniques for head and spinal cord		←				←		←		←	←		
	3003	Special radiological procedures of the head, breast and respiratory system		←				←	←	←		←	←		
	3004	Radiological anatomy of brain and spinal column		←				←	←						
	3005	General Pathology		←											←
	3006	Physics of Ultrasound			←				←						
	3007	Biological Radiation hazards				←					←	←			
Third Year – Second Semester															
	3101	Equipment techniques of magnetic resonance imaging			←				←	←			←		

	3102	Radiographic techniques for thorax and abdomen		←				←		←		←	←		
	3103	Special radiological procedures of the cardiovascular and central nervous system		←				←	←	←		←	←		
	3104	Radiological anatomy of thorax and abdomen		←				←	←						
	3105	Physics of magnetic resonance imaging		←											←
	3106	Systemic Pathology			←				←						

Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
Fourth Year – First Semester	40011	Computed tomography imaging of head and spinal cord		←	←				←	←		←	←		
	40022	Magnetic resonance imaging principles and head exam		←	←				←	←			←		
	40033	Abdominal Ultrasound imaging		←	←				←	←			←		
	40044	Medicine of internal diseases		←											←
	40055	Biostatistics and computer applications		←			←							←	←
Fourth Year – Second Semester															
	41011	Computed tomography imaging of chest, abdomen and pelvis		←	←				←	←		←	←		
	41022	Magnetic resonance imaging of musculoskeletal system, abdomen and pelvis		←	←				←	←					

	41033	Obstetrics and gynecologic ultrasound imaging		←	←				←	←					
	41044	Medicine of surgical diseases		←											←
	41055	Professional Ethics		←			←						←	←	
	41066	Graduation project		←	←		←		←	←				←	←

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

Course Description Form

• Course Name: Anatomy of The Skeleton					
• Course Code: 1001					
• Semester / Year: 2025-2026					
• Description Preparation Date: 2025/9/15					
• Available Attendance Forms: Attendance is mandatory and must take place on campus only. Remote attendance is not permitted.					
• Number of Credit Hours (Total) / Number of Units (Total): 5H./ 3Units					
• Course administrator's name (mention all, if more than one name)					
Name: Ahmed Mudhafer Email: ahmed.mudhafar@uoturath.edu.iq					
• Course Objectives					
Course Objectives			Understanding anatomical fundamentals Studying the structure and function of the musculoskeletal system Linking anatomy to clinical applications		
• Teaching and Learning Strategies					
Strategy		1. Training using anatomical models and structures 2. Organized practical application sessions 3. Guided discussions and simplified clinical applications			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	• Describe surface anatomy, body positions, and planes.	Skeleton of the upper limb	• Interactive lectures supported by multimedia presentations	Weekly quizzes to assess understanding of medical terminology
2	2		The hand		
3	2		The	• Group	Written midterm
4	2				

5	2	• Demonstrate basic skeletal anatomy of major body regions.	muscles of upper limbs Joints	discussions and peer-teaching activities	and final exams (multiple choice, matching, and short-answer questions)
6	2				
7	2	• Compare structure and function of limb muscle groups.	Skeleton of the chest	• Case-based learning using real clinical scenarios	Class participation and attendance
8	2		Vertebrate		
9	2	• Classify joints and analyze their functions.	Skeleton of the lower limb The femur, tibia and fibula bones The foot The muscles of lower limbs Skull	• Quizzes and educational games to reinforce understanding (e.g., Kahoot, Jeopardy)	Individual or group presentations on body systems or case studies Written assignments and paper-based activities Practical exercises such as interpreting medical records or SOAP notes

• Course Evaluation

Class Attendance	5%
Class Engagement and Participation	5%
Quizzes (4 of 5% each)	20%
Midterm Exam	15%
Final Exam	25%
Assignments/Homework (6 of 5 % each)	30%
Total	100 %

• Learning and Teaching Resources

Required textbooks (curricular books, if any)	None
Main references (sources)	VanPutte, C. L., Regan, J. L., Russo, A. F., Seeley, R. R., Stephens, T., & Tate, P. (2017). Seeley's anatomy & physiology. McGraw-Hill. (Eleventh edition).
Recommended books and references (scientific journals, reports...)	Netter, F. H. (2018). Atlas of Human Anatomy Drake, R., Vogl, A. W., & Mitchell, A. W. (2014). Gray's anatomy for students. (Third edition).
Electronic References, Websites	None

Course Description Form

• Course Name: General Physics					
• Course Code: 1002					
• Semester / Year: 1 st year / 1 st semester					
• Description Preparation Date: 10/9/2025					
• Available Attendance Forms: classes and laboratory					
• Number of Credit Hours (Total) / Number of Units (Total) : 5hr/ 3 units					
• Course administrator's name (mention all, if more than one name)					
Name: Dr. Thuraya Amer Email: thuraya.amer@uoturath.edu.iq					
Name: Rusul Hameed Email: rusul.h444@gmail.com					
• Course Objectives					
Course Objectives	○ Learn the standard units of measurements. ○ Define the Electricity & Magnetism. ○ Know the Gravitation and Kinetic Energy. ○ Define the Work-energy relation. ○ Know the Conservative and neoconservative forces. ○ Define Momentum, Impulse and Collisions. ○ Define Periodic Motion. ○ State and explain the Dynamics of Rotational Motion. ○ Define the heat and pressure.				
• Teaching and Learning Strategies					
Strategy	Theoretical literatures as a power point (ppt) on smart board And experiments at a laboratory for the practical part				
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Learning about units and measurements	Units and measurements	ppt on smart board	Q s and discussion
2 & 3	3	Electricity	Electricity & its laws	ppt on smart board	Q s and discussion
4 & 5	3	Magnetism & its relation with electricity	Magnetism & its relation with electricity	ppt on smart board	Q s and discussion
		Midterm Exam			

6	2	Fundamental of motion	Fundamental of motion		
7	3	Momentum , work & energy	Momentum , work & energy	ppt on smart board	Q s and discussion
8&9	3	Parodic motion and S.H.M	Parodic motion and S.H.M	ppt on smart board	
10	3	Heat and thermal energy	Heat and thermal energy	ppt on smart board	Q s and discussion
11&12	3	Overall review		ppt on smart board	Parodic motion and S.H.M
13&14	3	Final exam			
15	2				Q s and discussion

• 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

• Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	RF Farr and PJ Allisy-Roberts <i>“Physics for Medical Imaging”</i> , Saunders, 4 th edition (2001)
Recommended books and references (scientific journals, reports...)	All physics books for university students
Electronic References, Websites	All the web site that discussed this subject

Course Description Form

Course Name: General Physiology					
Course Code: 1003					
Semester / Year: 1st year / 2025/2026					
Description Preparation Date: Not mentioned in the source					
Available Attendance Forms: Theoretical classes					
Number of Credit Hours (Total) / Number of Units (Total): 4 credits (Theory: 2 units + Lab: 3 units)					
Course administrator's name (mention all, if more than one name)					
Name: Safiya Saad Dhaif		Email: safya-saad@uotrath.edu.iq			
Name: Huda Ali Hashim		Email: huda.ali@uoturath.edu.iq			
Course Objectives					
Course Objectives		1. Understand the main physiologic concepts of cells and their components. 2. Understand the factors involved in homeostasis regulation in the human body. 3. Understand the physiologic mechanisms of blood flow, gas exchange, and gastric secretions. 4. Understand the functions of important physiological systems, including the cardiovascular, respiratory, renal, reproductive, and digestive systems.			
Teaching and Learning Strategies					
Strategy		The source specifies a theoretical course schedule but does not state specific teaching/learning strategies.			
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	Not mentioned	Understand the main physiologic concepts of cells and their components.	Introduction to Human Physiology – Cell components and organelles	Theoretical lecture	Course assessment (not specified by week)
2	Not mentioned	Understand the physiologic mechanisms related	Blood – Blood functions; blood components;	Theoretical lecture	Course assessment (not

		to blood and its components.	blood plasma; plasma proteins and their functions		specified by week)
3	Not mentioned	Understand the functions of formed blood elements and erythropoietin.	Formed elements – leukocytes (types and function), platelets, erythrocytes, and role of erythropoietin in erythrocyte production	Theoretical lecture	Course assessment (not specified by week)
4	Not mentioned	Understand the mechanism of blood clot formation.	Blood Clotting – clotting factors and mechanism of blood clot formation	Theoretical lecture	Course assessment (not specified by week)
5	Not mentioned	Understand body fluid compartments and their composition.	Fluid Compartments in the Body – ICF, ECF, interstitial fluid, transcellular fluids, and composition of body fluids	Theoretical lecture	Course assessment (not specified by week)
6	Not mentioned	Understand mechanisms of fluid movement across cell membranes.	Fluid Shift – diffusion, osmosis, hydrostatic pressure, filtration, and active transport across cell membranes	Theoretical lecture	Course assessment (not specified by week)
7	Not mentioned	Understand factors involved in homeostasis regulation in the human body.	Homeostasis – blood glucose homeostasis, excretion homeostasis, and body temperature regulation	Theoretical lecture	Course assessment (not specified by week)
8	Not mentioned	Understand functions of the heart, blood vessels, valves, and heart sounds.	Heart and Blood Vessels – heart function, blood vessel function, cardiac valves and their functions, and	Theoretical lecture	Course assessment (not specified by week)

			heart sounds		
9	Not mentioned	Understand systemic and pulmonary circulation and cardiac electrical/functional properties.	Circulations – systemic circulation, pulmonary circulation, cardiac cycle, cardiac output, and electrical properties	Theoretical lecture	Course assessment (not specified by week)
10	Not mentioned	Understand mean arterial blood pressure and its regulation.	Blood Pressure – mean arterial blood pressure and its regulation; role of the kidney in regulation of blood pressure	Theoretical lecture	Course assessment (not specified by week)
11	Not mentioned	Understand lung volumes, capacities, and gas exchange/transport.	Measurement of Lung Function – lung volumes and capacities; exchange and transport of gases in the blood	Theoretical lecture	Course assessment (not specified by week)
12	Not mentioned	Understand the general functions of the gastrointestinal tract and its major organs.	Gastrointestinal Tract – general functions; oral cavity; salivary glands; stomach; small intestine; large intestine	Theoretical lecture	Course assessment (not specified by week)
13	Not mentioned	Understand the general characteristics and functions of gastrointestinal secretions.	Gastrointestinal Tract Secretions – general characteristics of GI secretions and their functions	Theoretical lecture	Course assessment (not specified by week)
14	Not mentioned	Understand physiological aspects of pregnancy, parturition, and lactation.	Physiology of Pregnancy – parturition, stages of labor, hormonal stimulation of parturition, and lactation	Theoretical lecture	Course assessment (not specified by week)
15	Not mentioned	Understand fetal development and major stages after birth.	Fetal Development – the newborn; first year after birth; aging and death	Theoretical lecture	Course assessment (not specified by week)

Course Evaluation

Class Attendance: 5%
 Class Engagement and Participation: 5%
 Quizzes (4 of 5% each): 10%
 Midterm Exam: 20%
 Final Exam: 35%
 Assignments/Homework (6 of 5% each): 25%
 Total: 100%

Grading Scale:
 49.4% and less – Failed
 50%-59% – Accepted
 60%-69% – Intermediate
 70%-79% – Good
 80%-89% – Very Good
 90%-100% – Exceptional

Learning and Teaching Resources

Required Resources:	1. Seeley's Anatomy and Physiology (11th edition), Cinnamon L. VanPutte, Jennifer L. Regan, and Andrew F. Russo (2011) 2. Essentials of Human Anatomy & Physiology, Global Edition, Suzanne C. Keller, Elaine N. Marieb (2011)
Additional Resources:	1. Human Anatomy and Physiology, Global Edition (Sep 14, 2015), Erin Amerman. 2. Study Guide to Human Anatomy and Physiology 1 (2012), Michael Harrell M.S.
Technology support mentioned in the source:	data show projector; Microsoft PowerPoint; Internet access and email; Telegram channel.

Course Description Form

• Course Name: Biology					
• Course Code: 1004					
• Semester / Year: 1 st Semester/ 1 st Year					
• Description Preparation Date: 1/12/2025					
• Available Attendance Forms: Classes and Laboratory					
• Number of Credit Hours (5) / Number of Units (3)					
• Course administrator's name (mention all, if more than one name)					
Name: Dr. Omer Natheer		Email: omernatheer@uoturath.edu.iq			
• Course Objectives					
Course Objectives			Understand the biological concepts. Applying the scientific methods. Describe cellular structure and functions. Understand the molecular basis. Demonstrate laboratory skills.		
• Teaching and Learning Strategies					
Strategy		Active learning techniques. Presenting the theoretical concepts of upper biology with active student participation. Visual aids and multimedia – using diagrams, 3D models, cellular images, and videos. Practical laboratory sessions using the microscope.			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	The student recognizes The biological concepts	biology theory introducyion	Theoretical lecture Slide presentation	Short Concluding question at the end of the lecture
2	2	Using microscopes	Types of microscopes safety requirements	Using microscope	laboratory
3		Chemistry of cells	Cells chemistry	Slides presentation	theoretical
4	2	Types of cells	Living organisms	Slides presentation	theoretical
5	2	Preparing cells on microscope	Eukaryotic cells	Using microscope	laboratory
6	2	Eukaryotic cells	Principles of Eukaryotic cell	Slides presentation	theoretical
7	2	Prokaryotic cells	Types of prokaryotic	Slides presentation	theoretical

8	2	cognizing prokaryotic cells on microscope	Prokaryotic cells	Using microscope	laboratory
9	2	Animal cell structure	Animal cell	Slides presentation	theoretical
10	2	Preparing Animal cell	The animal cell	Using microscope	laboratory
11	2	Plant cell structure	Plant cell	Slides presentation	theoretical
12	2	Preparing pimal cell	The plant cell	Using microscope	laboratory
13	2	Types of compounds	compounds	Slides presentation	theoretical
14	2	Molecular concepts	Molecular	Slides presentation	theoretical
15	2	Separation of DNA	Molecular	Lab Work	laboratory

• Course Evaluation

- Regular class attendance. Active participation in discussions and practical sessions.
- Assignments / Quizzes – 10–15%
- Short quizzes to assess continuous learning and homework and imaging interpretation exercises.
- Midterm Examination – 20–25%
- Covers theoretical and practical components studied in the first half of the course.
- Practical / OSPE (Objective Structured Practical Exam) – 20–25%
- Identification of radiological anatomy on X-ray, CT, MRI, and ultrasound images.
- Application of anatomical knowledge to clinical cases.
- Final Examination (Comprehensive) – 30–35%
- Multiple-choice questions, short answer questions, and image-based questions.

Assesses both theoretical knowledge and applied interpretation skills.

• Learning and Teaching Resources

Required textbooks (curriculum books, if any)	Lectures
Main references (sources)	Abbas, O. N., Mhawesh, A. A., & Al-Shaibani, A. B. (2020). Molecular identification of pathogenic klebsiella pneumoniae strains producing biofilm. <i>Medico-legal Update</i>, 20(3), 5. Abbas, O. N., & Majeed, M. R. (2025). Antimicrobial and Antibiofilm Activity of Local Wheat Bran Extract and Bacteriocin Combination Against Gastrointestinal Pathogens. <i>Baghdad Science Journal</i>, 22(5), 1549-1559. Elizabeth o Grady, Jason Cashmore, Marsha,) Carol Wismer(2018). <i>Principles of Biology- An introduction to Biological Concepts</i> . second Edition.
Recommended books and references (scientific journals, reports...)	Peter Raven (2016) Biology. Elven Edition. VJ. Bekish, Yu.T. Nikulin (2006) Practical Book on Medical Biology

Course Description Form

• Course Name: General Chemistry					
• Course Code:1005					
• Semester / Year: First Year / First Semester					
• Description Preparation Date:22\10\2025					
• Available Attendance Forms: theoretical and practical(lecture+laboratory)					
• Number of Credit Hours (5) / Number of Units (3)					
• Course administrator's name (mention all, if more than one name)					
Name: Hussain Hassan Karnob Email: Hussain.hassan@uoturath.edu.i					
• Course Objectives					
Course Objectives			1. To introduce the student to the science of chemistry 2. How to deal with chemical materials 3. To detect and separate materials and prepare standard materials 4. Skills for developing Algorithmic (math) problem solving 5. Concept analysis and construction 6. Writing objective reports and statements 7. Use of laboratory equipment/safety		
• Teaching and Learning Strategies					
Strategy					
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Identify the structure of the atom, molecular structure, and electronic distribution.	The Atom – Molecular Structure – Electronic Distribution	Lecture + Laboratory	Weekly quiz

2	2	Understand the characteristics of solutions and mixtures and their types.	Solutions and Mixtures	Lecture + Practical experiment	Lab report
3	2	Gain skills in quantitative and qualitative analysis methods.	Quantitative and Qualitative Analysis	Lecture + Laboratory work	Practical test
4	2	Understand molar and normal concentrations and related calculations.	Molar and Normal Concentrations	Lecture + Laboratory	Class discussion
5	2	Identify acids and bases and understand their reactions.	Acids and Bases	Lecture + Laboratory	Exam
6	2	Comprehend the concept of oxidation and reduction.	Oxidation and Reduction	Lecture + Practical experiment	Midterm exam
7	2	Understand basic principles of organic chemistry.	Hydrocarbons and Alkenes	Lecture + Laboratory	Practical report
8	2	Differentiate alcohols, ketones, aldehydes, and carboxylic acids.	Alcohols, Ketones, Aldehydes, and Carboxylic Acids	Laboratory experiment	Lab report
9	2	Understand aromatic hydrocarbons and carbohydrates and their reactions.	Aromatic Hydrocarbons and Carbohydrates	Lecture + Laboratory	Practical test
10	2	Identify amines and aryl amines.	Amines and Aryl Amines	Lecture + Laboratory	Exam

11	2	Introduction to biochemistry and understanding the machinery of life.	Biochemistry and the Machinery of Life	Lecture + Laboratory	Practical exam
12	2	Understand the relationship between biochemistry and nutrition.	Biochemistry and Nutrition	Lecture + Laboratory	Practical test
13	2	Identify sugars, starches, and fibers.	Sugars, Starches, and Fibers	Laboratory experiment	Lab report
14	2	Understand isomers and their classifications.	Isomers and Classifications	Lecture + Practical	Lab report
15	2	Understand electrolytes and electrochemistry.	Electrolytes and Electrochemistry	Lecture + Practical	Final exam

- **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

- **Learning and Teaching Resources**

Required textbooks (curricular books, if any)	Solutions for General Chemistry: Principles Modern Applications (11th Edition) — Ralph Petrucci, F. Geoffrey Herring, Jeffry D. Mad Carey Bissonnette.
Main references (sources)	Chemistry: The Molecular Nature of Matter Change (7th Edition) — Martin S. Silberb Patricia G. Amateis.
Recommended books and references (scientific journals, reports...)	General Chemistry laboratory manuals and sele academic references approved by the Departmen Chemistry.
Electronic References, Websites	

Course Description Form

• Course Name: Computer Principles					
• Course Code: 1006					
• Semester / Year: First Year / First Course					
• Description Preparation Date: 2025 – 2026					
• Available Attendance Forms: Smart Attendance & Lab.					
• Number of Credit Hours (3) / Number of Units (2):					
• Course administrator's name (mention all, if more than one name)					
Name: Ass. Prof. Nathier Abas Ibrahim					
Email: nazir.abass@uoturath.edu.iq					
• Course Objectives					
Course Objectives			– Providing the student with the skills of dealing with basic office applications and creating Office files and documents – Using the operating system as well as the basics of work within the digital environment – Providing the student with knowledge in the management and use of various computer applications		
• Teaching and Learning Strategies					
Strategy	At the end of the course, the student will have learned additional information for his specialty regarding how to use a computer in his daily life and in his field of specialization by realizing the importance of storing information to be consulted when needed as well as using some ready-made software such as Microsoft Office programs				
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

		Learn computer basics	computer Fundamentals concept of a computer, phases of the computer cycle the development computer generations	Lab	Quiz
		Practical examples about customization, dealing with icons and changing screen resolution	Computer advantages and areas of use computer classification in terms of purpose, size and data type	Lab	Quiz
		Training student to create new user, enlarge windows, show keyboard, identify the physical components of computer	Computer components, physical parts of a computer	Lab	Quiz
		The concept of computer security and software licenses	The concept of computer security and software licenses	Lab	Quiz
		Training student to deal with computer security	Computer security and software licenses	Lab	Quiz
		Training student to deal with computer privacy	Ethics of the electronic world forms of abuse, computer security, computer privacy	Lab	Quiz
		Training student to deal with electronic penetration and types, types and recipes of viruses how to make Backup image of computer protection	Licenses of computer programs and their types, intellectual property, electronic penetration, malicious software, the most important The necessary steps to protect against hacks, computer damage to health	Lab	Quiz
		Train the student to deal with operating systems	Operating systems definition Operating system, functions, objectives, classification, examples of some operating systems	Lab	Quiz

		Training student for inauguration	Operating systems	Lab.	Quiz
		Training student on the list	Desktop components Taskbar Start menu	Lab.	Quiz
		Create a folder with a specific name and train about changing the name, hiding, retrieving, deleting and path to it.	Folders, files, icons	Lab.	Quiz
		Training student to perform operations Windows desktop backgrounds	Perform operations Windows desktop wallpaper	Lab.	Quiz
		Training student to use control panel	Control panel Windows Control Panel	Lab.	Quiz
		Train the student to delete a specific program and install it again	Organizing files inside computer, installing and deleting programs	Lab.	Quiz
		Training student on common computer settings	Some common computer situations and settings	Lab.	Quiz

• 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

• Learning and Teaching Resources

Required textbooks (curricular books if any)	Hilal Al-qabati (2019): computer and internet basics, Amin for printing and publishing, Sana'a.
Main references (sources)	Computer literacy BASICS 2012, LeBlanc, Brandon closer look at the, windows 7. 2009
Recommended books and references (scientific journals, reports...)	Computing Fundamentals, Innovative training works USA Inc, 2006
Electronic References, Websites	https://www.agitraining.com/books/microsoft-officebooks/word-2010-digital-classroom-book

Course Description Form

• Course Name:	
Democracy and Human Rights	
• Course Code: 1007	
• Semester / Year: 2nd year / 2nd semester	
Courses	
• Description Preparation Date: 10/9/2025	
18/09/2025	
• Available Attendance Forms: classes and laboratory	
In-person (Classroom)	
• Number of Credit Hours (Total) / Number of Units (Total):	
2 hours / 2 units	
• Course administrator's name (mention all, if more than one name)	
Name: Dr. Sarab Mansour Mahdi Email: sarab.mansur@uoturath.edu.iq	
• Course Objectives	
Course Objectives	- Introduce students to the fundamental concepts and principles of democracy and human rights. - Analyze the historical and intellectual development of both concepts in modern and contemporary political thought. - Clarify the relationship between democracy, citizenship, and the rule of law. - Familiarize students with international organizations and conventions concerned with human rights. - Enhance awareness of the role of individuals and institutions in protecting rights and public freedoms. - Develop students' critical thinking and democratic dialogue skills.
• Teaching and Learning Strategies	
Strategy	- Interactive lectures: Presenting basic concepts, theories, and intellectual frameworks related to democracy and human rights. - Structured classroom discussions: Encouraging dialogue, respect for different opinions, and critical thinking. - Project-Based Learning: Conducting research or case studies on real-world issues related to democracy and human rights. - Analysis of legal and documentary texts: Studying international charters and declarations to enhance applied understanding. - Individual and group presentations: Developing communication and persuasion skills in defending academic viewpoints. - Simulation: Practicing parliamentary sessions or activities of international human rights organizations. - Collaborative learning: Working in small groups to analyze specific human rights

	issues.				
	- E-learning and open sources: Using digital platforms and international resources to promote independent learning.				
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	30	. First: Knowledge and understanding. Second: Intellectual skills. Third: Practical and applied skills. Fourth: Values and attitudes.	-The Concept of Human Rights -The Fundamental Characteristics of Human Rights -Types of Human Rights -Categories (or Groups) of Human Rights -Human Rights in Ancient Civilizations Human Rights in the Middle Ages - Human Rights in Islam and Other Divine Religions - Human Rights in Renaissance Societies - Human Rights in Modern Times 1 - Human Rights in Modern Times 2 - Non-Governmental Organizations and Human Rights - Guarantees of Respect and Protection of Human Rights - Water and Environmental Awareness in Iraq 1 - Water and Environmental Awareness in Iraq 1 - The Concept of Equality	- Interactive Classroom lectures - Group discussions and workshops - Simulations and practical applications - Self-paced learning	- Written exams (monthly, midterm, and final). dividual reports or research. - Class participation and presentations.
• Section Course Evaluation					
• The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.					
• Learning and Teaching Resources					

Required textbooks (curricular books, if any)	Lectures
Main references (sources)	- United Nations. Universal Declaration of Human Rights - Dr. Abdelilah Belkeziz. The State in Contemporary Arab Thought. - Dr. Ali Khalifa Al Kuwari. Democracy in Thought and Practice. - International Human Rights Organizations - Selected Annual Reports.
Recommended books and references (scientific journals, reports...)	- Book: Democracy, Freedom, and Human Rights (A Study in Political Sociology) by Hussein Abdel Hamid Ahmed Rashwan, Alexandria, Modern University Office, 2006. Al-Quds Library - Book: Democracy and Human Rights: For the Professional Diploma Program in Security Sciences (Arab University/Academy) – Group of authors: Muhammad Abed al Jabri, Johnny Assi, Amir Musa, Osama Halabi, Jamil Hilal, Kamal Qabaa, Jericho, 2009. Al-Quds Library+1 - Research article: Difficulties and Challenges Facing the Teaching of Human Rights and Democracy in Iraqi Universities by Abbas Fadhil Mahmoud (University of Baghdad), which highlights the shortage of "required textbooks" and the absence of clear standards.
Electronic References, Websites	• The United Nations, Democracy and Human Rights — An analytical paper linking the United Nations, democracy, and human rights (SSRN) • Artificial intelligence, human rights, democracy, and the rule of law: a primer — Addresses contemporary challenges between artificial intelligence, human rights, and democracy

Course Description Form

Course Name:					
Medical Terminology					
Course Code: 1008					
Semester / Year:					
First semester					
Description Preparation Date: 13/2/2024					
Available Attendance Forms: Weekly/ theoretical					
Weekly/ theoretical					
Number of Credit Hours (Total) / Number of Units (Total)					
2 units					
Course administrator's name (mention all, if more than one name)					
Name: Ban Mousa			Email: ban.mousa@uoturath.edu.iq		
Course Objectives					
Course Objectives		- Develop familiarity with medical terminology and its structure. - Understand and apply terms related to body systems, diagnostic tools, and medical procedures. - Interpret and use abbreviations, eponyms, and homonyms in medical contexts.			
Teaching and Learning Strategies					
Strategy		- Identify the four word elements used to build medical words. - Divide medical words into their component parts. - Apply the basic rules to define and build medical words. - Locate the pronunciation guidelines chart and interpret pronunciation marks. - Pronounce medical terms - Determine how to link combining forms and word roots to various types of s - List and identify the terms related to direction, position, and planes of the bo Describe pathological conditions, diagnostic and therapeutic procedures, and ot terms related to the body system			
Course Structure					
Week	Hours	Required Learning	Unit or subject	Learning	Evaluation

		Outcomes	name	method	method
1	3	The student understands the topic	Word Analysis & Combining Forms, Suffixes, and Prefixes	theoretical	general questions And discuss
2	3	The student identifies the topic	In Person: Living With Type 2 Diabetes & Exercises and Answers	theoretical	general questions And discuss
3	3	The student understands the topic	Pronunciation of Terms & Practical Applications	theoretical	general questions And discuss
4	3	The student identifies the topic	Picture Show & Review	theoretical	general questions And discuss
5	3	The student identifies the topic	Terminology CheckUp & Introduction to Body Systems	theoretical	general questions And discuss
6	3	The student identifies the topic	Body Cavities & Divisions of the Back	theoretical	general questions And discuss
7	3	The student identifies the topic	Planes of the Body & Terminology	theoretical	general questions And discuss
8	3	The student identifies the topic	In Person: CT and MRI & Exercises and Answers	theoretical	general questions And discuss
9	3	The student identifies the topic	Pronunciation of Terms & Practical Applications	theoretical	general questions And discuss
10	3	The student identifies the topic	Picture Show & Review	theoretical	general questions And discuss
11	3	The student identifies the topic	Combining Forms, Suffixes, and Terminology	theoretical	general questions And discuss

12	3	The student identifies the topic	In Person: Gallbladder Stone & Exercises and Answers	theoretical	general questions And discuss
13	3	The student identifies the topic	Pronunciation of Terms & Practical Applications	theoretical	general questions And discuss
14	3	The student identifies the topic	Picture Show & Review	theoretical	general questions And discuss
15	3	The student identifies the topic	Additional Topic (e.g., Medical Ethics, Legal Issues)	theoretical	general questions And discuss

• Course Evaluation

Total Marks: 100

30 Marks for Continuous Assessment:

- 15 Marks for Midterm Exam
- 10 Quizzes
- 5 Marks for Lesson Attendance and Activities

70 Marks for Final Exam

• Learning and Teaching Resources

Required textbooks (curricular books, if any)	Medical Terminology: A Short Course, 8th Edition Author: Davi-Ellen Chabner Publisher (Imprint): Saunders Elsevier Year: 2018 The book includes online training quizzes available on EVOLVE.ELSEVIER.COM.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	/
Electronic References, Websites	/

Course Description Form

• Course Name: Arabic Language					
• Course Code: 1009					
• Semester / Year:					
• Description Preparation Date:					
• Available Attendance Forms: In-person					
• Number of Credit Hours (Total) / Number of Units (Total) Hours: 1 Units: 1					
• Course administrator's name (mention all, if more than one name)					
Name: Mohmed kasim					
Email: mustafmohmed2005@gmail.com					
• Course Objectives					
Course Objectives	Spelling & Punctuation: Correct common spelling mistakes (<i>Hamza, Taa, Dhad/Zha</i>) and apply proper punctuation. Grammar Foundations: Understand core Arabic grammar rules (Nouns vs. Verbs, Objects, Numbers, Prepositions). Administrative Writing: Master drafting official letters and administrative correspondence using correct professional language. Practical Editing: Apply linguistic and editing skills through practical exercises and real-world examples.				
• Teaching and Learning Strategies					
Strategy	1- Interactive Lectures: Direct teaching with open discussion. 2- Practical Training: In-class exercises on grammar, spelling, and drafting. 3- Collaborative Tasks: Group assignments and student seminars.				
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 Theore 1		Introduction to linguistic errors – Taa Marbuta, Taa Maftuha, and Long Taa	Theoretical	General questions discussion, and daily quizzes
2	2 Theore 1		Rules for writing Ali Maqsura and Alif Mamduda – Sun and Moon letters	Theoretical	General questions discussion, and practical applicati
3	2		Distinguishing	Theoretical	General questions

	Theore l		between Dhad (ض) and Zha (ظ)		discussion, and practical applicati
4	2 Theore l		Rules of writing Har	Theoretical	Instant quiz and practical applicati
5	2 Theore l		Punctuation marks	Theoretical	Exam and practica application
6	2 Theore l		Nouns Verbs and how to distinguish between them	Theoretical	General questions and discussion
7	2 Theore l		The Objects (Al- Mafaeel / المفاعيل)	Theoretical	General questions instant quiz, and practical applicati
8	2 Theore l		Numbers (العدد)	Theoretical	Group assignment
9	2 Theore l		Practical applications on common linguistic errors	Theoretical	General questions and discussion
1	2 Theore l		Noon and Tanween – Meanings of Prepositions	Theoretical	Exam
1	2 Theore l		Formal aspects of administrative correspondence	Theoretical	General questions discussion, and student seminars
1	2 Theore l		Language of administrative correspondence	Theoretical	General questions discussion, and student seminars
1	2 Theore l		Samples of administrative correspondence	Theoretical	General questions and instant quiz
1	2 Theore l			Theoretical	Group assignment student seminars, and practical application
1	2 Theore l			Theoretical	Exam questions

• Course Evaluation

- Coursework (40%): Daily quizzes, active participation, group assignments, and student seminars.
- Midterm Exam (10%): Theoretical and practical written test.
- Final Exam (**50%**): Comprehensive final written examination

• Learning and Teaching Resources

Required textbooks (curricular books, if any)	• Ibrahim, A. (1998). <i>Dictation and Punctuation in Arabic Writing</i>. Gharib Library, Cairo. • Al-Ghalayini, M. (2005). <i>Lessons in Arabic Grammar (Jami' Al-Duroos Al-Arabiyyah)</i>. Modern Library, Beirut.
Main references (sources)	• Al-Adnani, M. (1999). <i>A Dictionary of Common</i>

	<i>Linguistic Errors</i>. Librairie du Liban Publishers. • Al-Shanti, M. S. (2001). <i>Arabic Editing: Rules and Patterns</i>. Dar Al-Andalus.
Recommended books and references (scientific journals, reports...)	• Omar, A. M. (2000). <i>Errors in Contemporary Arabic Language</i>. Alam Al-Kutub. • Mahmoud, I. A. (2010). <i>Administrative Correspondence: Forms and Style</i>. Dar Al-Manhal.
Electronic References, Websites	• King Sejong Institute & Arabic Language Academy Digital Repositories. • Almaany Online Arabic Dictionary

Course Description Form

• Course Name: Anatomy of The Skeleton					
• Course Code: 2101					
• Semester / Year: 2025-2026					
• Description Preparation Date: 2025/9/15					
• Available Attendance Forms: Attendance is mandatory and must take place on campus only. Remote attendance is not permitted.					
• Number of Credit Hours (Total) / Number of Units (Total): 5 H./ 3 Units					
• Course administrator's name (mention all, if more than one name)					
Name: Ahmed Mudhafer Email: ahmed.mudhafar@uoturath.edu.iq					
• Course Objectives					
Course Objectives		Understanding anatomical fundamentals Studying the structure and function of the musculoskeletal system Linking anatomy to clinical applications			
• Teaching and Learning Strategies					
Strategy	1- Training using anatomical models and structures 2- Organized practical application sessions 3- Guided discussions and simplified clinical applications				
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	- Describe surface anatomy, body positions, and planes. - Demonstrate basic skeletal anatomy of major body regions. - Compare structure and function of limb muscle groups.	Skeleton of the upper limb	Interactive lectures supported by multimedia presentations	Weekly quizzes to assess understanding of medical terminology
2	2		The hand		
3	2		The muscles of upper limbs	Group discussions and peer-teaching activities	Written midterm and final exams (multiple choice, matching, and short-answer questions)
4	2		Joints		
5	2		Skeleton of the		

6	2	Classify joints and analyze their functions.	chest Vertebrate	learning using real clinical scenarios	Class participation and attendance
7	2		Skeleton of the lower limb	Quizzes and educational games to reinforce understanding (e.g., Kahoot, Jeopardy)	Individual or group presentations on body systems or case studies
8	2		The femur, tibia and fibula		Written assignments and paper-based activities
9	2		bones The foot The muscles of lower limbs Skull		Practical exercises such as interpreting medical records or SOAP notes

• Course Evaluation

Class Attendance	5%
Class Engagement and Participation	5%
Quizzes (4 of 5% each)	20%
Midterm Exam	15%
Final Exam	25%
Assignments/Homework (6 of 5 % each)	30%
Total	100 %

• Learning and Teaching Resources

Required textbooks (curricular books any)	None
Main references (sources)	VanPutte, C. L., Regan, J. L., Russo, A. F., Seeley, R. R., Stephens, T., & Tate, P. (2017). Seeley's anatomy & physiology. McGraw-Hill. (Eleventh edition).
Recommended books and references (scientific journals, reports...)	Netter, F. H. (2018). Atlas of Human Anatomy. Drake, R., Vogl, A. W., & Mitchell, A. W. (2014). Gray anatomy for students. (Third edition).
Electronic References, Websites	None

Course Description Form

• Course Name: Physics of atom					
• Course Code: 2102					
• Semester / Year: 1 st year / 2 nd semester					
• Description Preparation Date: 10/9/2025					
• Available Attendance Forms: classes and laboratory					
• Number of Credit Hours (Total) / Number of Units (Total): 5hr/ 3 units					
• Course administrator's name (mention all, if more than one name)					
Name: Dr. Thuraya Amer			Email: thuraya.amer@uoturath.edu.iq		
Name: Rusul Hameed			Email: rusul.h444@gmail.com		
• Course Objectives					
		○ Introducing students to the basic concepts of atomic structure .of atomic models and the development ○ Enable students to understand the quantitative principles .governing the movement of electrons within an atom ○ -Study and analyze atomic spectra to understand fine and super .structure ○ cal Train students to use atomic concepts to explain physi .phenomena and practical applications			
• Teaching and Learning Strategies					
Strategy		Theoretical literatures as a power point (ppt) on smart board And experiments at a laboratory for the practical part			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Atomic and Nuclear .Structure	Strcture of atom	ppt on smart board	Q s and discussion
2 & 3	3	– Radioactive Decay	Radio active material, radioactivity	ppt on smart board	Q s and discussion

4 & 5	3	radiation Types of Decay models	Classification of radiation	ppt on smart board	Q s and discussion
6	2	Photon Attenuation Coefficients	Linear attenuation coefficient		
7	3	☐ Interactions of electron with matter	☐ Exponential attenuation	ppt on smart board	Q s and discussion
8&9	3		Properties of nanoparticles	ppt on smart board	Q s and discussion
10	3	Introduction of Nanomaterials	Bottom-Up Approaches	ppt on smart board	Parodic motion and S.H.M
11&12	3	☐ ☐	☐ Top-Down Approaches		
13&14	3		☐ Applications of nanomaterials in medicine & biology	ppt on smart board	Q s and discussion
15	2				
Final exam					

• Stion 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

• Learning and Teaching Resources

Required textbooks (curricular books, if a	
Main references (sources)	RF Farr and PJ Allisy-Roberts <i>“Physics for Med Imaging”</i> , Saunders, 4 th edition (2001)
Recommended books and references (scientific journals, reports...)	All physics books for university students
Electronic References, Websites	All the web site that discussed this subjects

Course Description Form

Course Name: Systemic Physiology					
Course Code: 2103					
Semester / Year: 2025-2026					
Description Preparation Date: 10/9/2025					
Available Attendance Forms: classes and laboratory					
Number of Credit Hours (Total) / Number of Units (Total): 4 credits (Theory: 2 units + Lab: 3 units)					
Course administrator's name (mention all, if more than one name)					
Name: Safiya Saad Dhaif		Email: safya-saad@uotrath.edu.iq			
Name: Huda Ali Hashim		Email: huda.ali@uoturath.edu.iq			
• Course Objectives					
Course Objectives		1. Understand the fundamental mechanisms that operate in human body and how they interact. 2. Understand the functions of important physiological systems including the cardio, respiratory, renal, reproductive and digestive systems.			
• Teaching and Learning Strategies					
Strategy		- Lectures and classroom teaching - Microsoft PowerPoint for lectures presentation - Data show projector - Internet access and educational website - Telegram Channel for broadcasting information and patients' cases			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Understand the components and functions of the cardiovascular system; pulse; systole; diastole; peripheral resistance.	Physiology of cardiovascular system	Lecture + PowerPoint	Quiz
2	2	Understand pulmonary ventilation, elastic recoil, pressure, pulmonary volumes, alveolar ventilation and respiratory control.	Physiology of respiratory system	Lecture + PowerPoint	Quiz
3	2	Understand gastric juice, regulation of stomach secretion and small intestine secretion.	Physiology of digestive system	Lecture + PowerPoint	Assignment
4	2	Understand pancreatic juice, regulation of pancreatic secretion, duodenum and intestinal juice.	Physiology of pancreas and small and large intestine	Lecture + PowerPoint	Quiz
5	2	Understand liver	Physiology of liver and	Lecture +	Assignment

		functions and gallbladder function.	gallbladder	PowerPoint	
6	2	Understand the urinary system, urine formation and glomerular filtration.	Arterial blood pressure / Physiology of renal system	Lecture + PowerPoint	Quiz
7	2	Understand tubular reabsorption, regulation of urine concentration and volume, and tubular secretion.	Selective process of urine formation	Lecture + PowerPoint	Assignment
8	2	Understand the micturition reflex, regulation and urination.	Micturition	Lecture + PowerPoint	Midterm Exam
9	2	Understand female puberty, menstrual cycle, menopause, fertility and pregnancy.	Female reproductive system	Lecture + PowerPoint	Quiz
10	2	Understand male reproductive function, testosterone, puberty and hormonal/neural regulation.	Male reproductive system	Lecture + PowerPoint	Assignment
11	2	Understand the organization and functions of CNS and PNS, nerve fibers, brain parts, nerve impulses and sensory/motor systems.	Physiology of nervous system	Lecture + PowerPoint	Quiz
12	2	Understand descending, ascending and intersegmental tracts of the spinal cord.	Tract of spinal cord	Lecture + PowerPoint	Assignment
13	2	Understand hemi-section and complete section of the spinal cord.	Physiology of spinal cord sections	Lecture + PowerPoint	Quiz
14	2	Understand adrenal gland hormones, their roles and functions.	Endocrine control mechanism	Lecture + PowerPoint	Assignment
15	2	Understand pituitary gland hormones, their roles and functions.	Endocrine control mechanism	Lecture + PowerPoint	Final Exam

● Course Evaluation

Class Attendance: 5%
Class Engagement and Participation: 5%
Quizzes: 10%
Midterm Exam: 20%
Final Exam: 35%
Assignments/Homework: 25%
Total: 100%

● Learning and Teaching Resources

Required:	Seelys Anatomy and Physiology (11th edition), Cinnamon VanPutte, Jennifer L. Regan, and Andrew F. Russo (2017)
Required:	Essentials of Human Anatomy & Physiology, Global Edition, Suzanne Keller Elaine Marieb (2017).
Additional:	Principles of Anatomy and Physiology (15th Ed. 2015), C. Auerman.
Additional:	Study Guide to Human Anatomy and Physiology I (2017) Michael Harrell M.S.

Course Description Form

• Course Name: Radiobiology					
• Course Code: 2104					
• Semester / Year: 2 nd Semester/ 1 st Year					
• Description Preparation Date: 1/2/2025					
• Available Attendance Forms: Classes and Laboratory					
• Number of Credit Hours (6) / Number of Units (4)					
• Course administrator's name (mention all, if more than one name)					
Name: Dr. Omer Natheer Email: omernatheer@uoturath.edu.iq					
• Course Objectives					
Course Objectives			Understand the Radiobiological basic concepts. Radiation Effects at the Molecular and Cellular Levels Applying the scientific methods. Examine Radiation Response of Different Tissues. Familiarize with Acute and Chronic Radiation Eff Demonstrate laboratory skills.		
• Teaching and Learning Strategies					
Strategy		Active learning techniques. Presenting the theoretical concepts of upper biology with active student participation. Visual aids and multimedia – using diagrams, 3D models, cellular images, and videos. Practical laboratory sessions using the microscope.			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	The student recognizes The Radiobiological concepts	Radiobiology introduction	Theoretical lecture Slide presentation	Short Concluding question at the end of the lecture
2	2	Using microscopes	Types of microscopes safety requirements	Using microscope	laboratory
3		Effect of radiation	Direct effect	Slides presentation	theoretical
4	2	Indirect effect	Radiation effects	Slides presentation	theoretical
5	2	Preparing cells on microscope	Eukaryotic cells	Using microscope	laboratory
6	2	Radiation and cells	Radiation and cells	Slides presentation	theoretical
7	2	Types of checkpoints	Check points	Slides presentation	theoretical

8	2	cognizing prokaryotic cells on microscope	Prokaryotic cells	Using microscope	laboratory
9	2	DNA damage	Radiation and DNA	Slides presentation	theoretical
10	2	DNA repair	The Repair of DNA	Using microscope	laboratory
11	2	Cell cycle	Cell cycle	Slides presentation	theoretical
12	2	Cell cycle levels	Levels of cellcycle	Using microscope	laboratory
13	2	Mitosis	Mitosis	Slides presentation	theoretical
14	2	Preparing mitosis	Mitosis under \microscope	Lab Work	laboratory

• Course Evaluation

- Regular class attendance. Active participation in discussions and practical sessions.
- Assignments / Quizzes – 10–15%
- Short quizzes to assess continuous learning and homework and imaging interpretation exercises.
- Midterm Examination – 20–25%
- Covers theoretical and practical components studied in the first half of the course.
- Practical / OSPE (Objective Structured Practical Exam) – 20–25%
- Identification of radiological anatomy on X-ray, CT, MRI, and ultrasound images.
- Application of anatomical knowledge to clinical cases.
- Final Examination (Comprehensive) – 30–35%
- Multiple-choice questions, short answer questions, and image-based questions.

Assesses both theoretical knowledge and applied interpretation skills.

• Learning and Teaching Resources

Required textbooks (curriculum books, if any)	Lectures
Main references (sources)	Abbas, O. N., Mhawesh, A. A., & Al-Shaibani, A. B. (2020). Molecular identification of pathogenic klebsiella pneumoniae strains producing biofilm. <i>Medico-legal Update</i>, 20(3), 5. Abbas, O. N., & Majeed, M. R. (2025). Antimicrobial and Antibiofilm Activity of Local Wheat Bran Extract and Bacteriocin Combination Against Gastrointestinal Pathogens. <i>Baghdad Science Journal</i>, 22(5), 1549-1559. Elizabeth o Grady, Jason Cashmore, Marsha,) Carol Wismer(2018). <i>Principles of Biology- An introduction to Biological Concepts</i> . second Edition.
Recommended books and references (scientific journals, reports...)	<i>Peter Raven (2016) Biology. Elven Edition.</i> <i>VJ. Bekish, Yu.T. Nikulin (2006) Practical Book on Medical Biology</i>

Course Description Form

• Course Name: Principles of Nursing					
• Course Code: 2105					
• Semester / Year:					
Courses system					
• Description Preparation Date:					
15.11.2025					
• Available Attendance Forms:					
In person lectures					
• Number of Credit Hours (Total) / Number of Units (4)					
6 hours per week (2 theory and 4 clinical)					
• Course administrator's name (mention all, if more than one name)					
Name: Sarab Mansur			Email: sarab.mansur@uoturath.edu.iq		
• Course Objectives					
Course Objectives			1. To introduce the students to the most important ways of dealing with patients. 2. To inform them how maintain the health of the patient and providing care for them. 3. To prepare the patients for different radiographic examinations, first aid methods and civil defense		
• Teaching and Learning Strategies					
Strategy		The course involves lectures supported by visual aids and smart boards, active student interaction, daily and monthly assessments and a final examination at the end of the course."			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	6hr/week	Nursing, its importance and development among societies, the qualifications of nurse	Nursing, its importance and development among societies, the qualifications of nurse	Lectures and video by smart screen	Oral exam
2	6hr/week	Temperature measurement routes, heart pulse characteristics measurement sits	Temperature measurement routes, heart pulse characteristics measurement sits	Lectures and video by smart screen	Oral exam
3	6hr/week	Respiratory rate and respiratory types, blood	Respiratory rate and respiratory types, blood	Lectures and video by smart screen	Oral exam

		pressure and blood pressure types	pressure and blood pressure types		
4	6hr/week	Body mechanism , Patient positions types (erect,supine, dorsal recumbent, fowler's, lateral, pron, sim's, lithotomy, knee-chest, semi-fowler's, trendelenberge and reverse trendelenberge positions)	Body mechanism , Patient positions types (erect,supine, dorsal recumbent, fowler's, lateral, pron, sim's, lithotomy, knee-chest, semi-fowler's, trendelenberge and reverse trendelenberge positions)	Lectures and video by smart screen	Oral exam
5	6hr/week	Drug administration routes (mouth, inhalation, rectum & vaginal injection) drugs storage, weights and measures	Drug administration routes (mouth, inhalation, rectum & vaginal injection) drugs storage, weights and measures	Lectures and video by smart screen	Oral exam
6	6hr/week	Basic principles of medical and surgical sterilization and disinfection	Basic principles of medical and surgical sterilization and disinfection	Lectures and video by smart screen	Oral exam
7	6hr/week	Urinary catheterization and enema types	Urinary catheterization and enema types	Lectures and video by smart screen	Oral exam
8	6hr/week	Gastric lavage and artificial feeding	Gastric lavage and artificial feeding	Lectures and video by smart screen	Oral exam
9	6hr/week	Role of nurse in patient preparation for general radiography and special and urinary system radiography	Role of nurse in patient preparation for general radiography and special and urinary system radiography	Lectures and video by smart screen	Oral exam
10	6hr/week	Fundamental and application of first aid, artificial respiration types and CPR	Fundamental and application of first aid, artificial respiration types and CPR	Lectures and video by smart screen	Oral exam
11	6hr/week	- Wounds and hemorrhage types, arterial pressure points - Dressing and bandage types and uses - surgical sutures types	- Wounds and hemorrhage types, arterial pressure points - Dressing and bandage types and uses - surgical sutures types	Lectures and video by smart screen	Oral exam
12	6hr/week	Poisoning , asphyxia and foreign bodies types - Fractures and burns types, electrical shock - War injuries types - principles of the defense	Poisoning , asphyxia and foreign bodies types - Fractures and burns types, electrical shock - War injuries types - principles of the defense	Lectures and video by smart screen	Oral exam
13	6hr/week	Introduction Biosecurity - Risks	Introduction Biosecurity - Risks	Lectures and video by smart screen	Oral exam

		Characterization biosecurity - Vulnerability assessment¹³ - Component of Laboratory Biosecurity¹⁵ • Biosafety level - Risk Assessment Strategy - Hazard groups, biosafety levels, practices and equipment Standard practices required in biological laboratories.	Characterization in biosecurity - Vulnerability assessment - Component of Laboratory Biosecurity¹⁵ • Biosafety level - Risk Assessment Strategy - Hazard groups, biosafety levels, practices and equipment Standard practices required in biological laboratories.		
14	6hr/week	Biorisk management system - Assess capability of laboratory staff control hazards - Relation of risk groups to biosafety levels, practices and equipment - Mitigation Control Measures - Sustainability of the biorisk management system Strengthening biorisk management	Biorisk management system - Assess capability of laboratory staff control hazards - Relation of risk groups to biosafety levels, practices and equipment - Mitigation Control Measures - Sustainability of the biorisk management system Strengthening biorisk management	Lectures and video by smart screen	Oral exam
15	6hr/week	Accident response - spill cleanup procedure - Investigation of an accident inside the laboratory. Biosafety training	• Accident response - spill cleanup procedure - Investigation of an accident inside the laboratory. Biosafety training	Lectures and video by smart screen	Oral exam
• Course Evaluation					
40 degree divided (20 mid exam and 20 daily exam and reports) 60 degree divided (35 for theoretical exam and 25 for clinical exam)					
• Learning and Teaching Resources					

Required textbooks (curricular books, any)	1. Mosby's Pocket Guide to Nursing Skills Procedures (2015). Eighth Edition. Anne Grif Perry & Patricia A. Potter. Mosby's Elsevier Inc. 2. Drug Guide for Nursing Students (2011). Eleventh Edition . Linda Skidmore-Roth. Mosby Elsevier Inc. 3. Study Guide for Fundamentals of Nursing to Art and Science of Nursing Care (2011). Seventh Edition . Carol R. Taylor, Carol Lillis, Priscilla LeMone, Pamela Lynn & Marilee LeBoer Wolters Kluwer Lippincott Williams Wilkins. 4. Fundamentals of Nursing Standards Practice (2010). Fourth Edition. Sue C. DeLaune Patricia K. Ladner. Delmar Cengage Learning Inc.
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Course Description Form

• Course Name: Medical Terminology.

• Course Code: 2106

• Semester / Year: Second Semester / 2025-2026

• Description Preparation Date: 14/9/2025

• Available Attendance Forms:

Attendance is mandatory and must take place on campus only. Remote attendance is not permitted.

• Number of Credit Hours (Total) / Number of Units (Total) : 1H./ 1Units

• Course administrator's name (mention all, if more than one name) :

Name: Ban Mousa

Email: ban.mousa@uoturath.edu.iq

• 8. Course Objectives:

- Identify the four word elements used to build medical words.
- Divide medical words into their component parts.
- Apply the basic rules to define and build medical words

9. Teaching and Learning Strategies :

- **Word Dissection:** Have students break down complex terms into components (prefix/root/suffix).
- **Matching Games & Flashcards:** Reinforce vocabulary through digital tools (e.g., Quizlet).
- **Interactive Quizzes:** Use formative assessments with immediate feedback

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
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1	2	1-Identify and define the four basic word elements used in medical terminology.	1: Structural Analysis – Basic Elements of a Medical Word	• Interactive lectures with multimedia presentations	• Weekly quizzes to assess understanding of terminology
2	2		2: Terms Concerning Body Structure		
3	2	2- Accurately divide and analyze medical terms into their component parts.	3: Integumentary System	• Vocabulary-building through flashcards and word analysis	• Midterm and final written exams (multiple choice, matching, short answer)
4	2		4: Digestive System		
5	2	3-Apply standard rules to construct and interpret medical terms.	5: Respiratory System	• Group discussions and peer teaching activities	• Class participation and attendance
6	2		6: Skin and Its Appendages		
7	2	4- Recognize pronunciation marks and use pronunciation guidelines effectively.	7: Cardiovascular System	• Case-based learning using real clinical scenarios	• Group or individual presentations on body systems or case studies
8	2		8: Blood, Lymphatic, and Immune Systems		
9	2	5-Pronounce common medical terms with clarity and accuracy.	10: Endocrine System	• Quizzes and games for reinforcement (e.g., Kahoot, Jeopardy)	• Assignments and worksheets
		6- Link word roots and combining forms to appropriate suffixes and prefixes	11: Special Senses	• Use of medical dictionaries and terminology apps	• Practical exercises such as interpreting medical records or SOAP notes
			12: Oncology Terminology	• Homework assignments and weekly vocabulary lists	

11. Course Evaluation

Class Attendance	5%
Class Engagement and Participation	5%
Quizzes (4 of 5% each)	20%
Midterm Exam	15%
Final Exam	25%
Assignments/Homework (6 of 5 % each)	30%
Total	100 %

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	None Used.
Main references (sources)	David Andersson, <i>Medical Terminology: The Best and Most Effective Way to Memorize, Pronounce and Understand Medical Terms</i> : Second Edition
Recommended books and references (scientific journals, reports...)	Barbara A. Gyls <i>Medical Terminology Systems: A Body Systems Approach</i> Eighth Edition.
Electronic References, Websites	None Used.

Course Description Form

• Course Name:	
Arabic Language	
• Course Code: 2107	
• Semester / Year:	
First Stage / Second Semester	
• Description Preparation Date:	
22/10/2025	
• Available Attendance Forms:	
In-class sessions	
• Number of Credit Hours (1) / Number of Units (1)	
• Course administrator's name (mention all, if more than one name)	
Name: Mohmed kasim Mohmed Email: : mustafmohmed2005@gmail.com	
• Course Objectives	
Course Objectives	– To develop the four basic language skills: listening, speaking, reading, and writing. – To deepen students' understanding of Arabic texts. – To instill pride in the Arabic language as the language of the Holy Qur'an. – To cultivate students' literary and aesthetic appreciation. – To enable learners to express their thoughts and opinions effectively. – To teach grammar, morphology, and spelling rules. – To enhance critical and analytical thinking. – To use the Arabic language confidently and competently in daily life, academic, and professional contexts.
• Teaching and Learning Strategies	
Strategy	This course aims to develop students' foundational Arabic language skills listening, speaking, reading, and writing, while strengthening their ability comprehend, analyze, and express ideas in a clear and correct manner. It also seeks to foster a genuine love for the Arabic language as a tool for thought, creativity, and as a vessel of Arab identity and culture.

● Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Identify common linguistic errors and their types	Introduction to linguistic errors – Tied and open and long T	Interactive lecture and discussion	Class participation and short quiz
2	2	Mastering the writing of Alif Maqsura and Mamduda, and the solar and lunar letters	Writing rules for Maqsura and Mamduda – Solar and lunar letters	Explanation and practical writing exercises	Short written task
3	2	Distinguishing between the letters “ض” (ḍād) and “ظ” (ẓā’)	Ḍād and Ẓā’	Applied reading and discussion	Pronunciation and dictation exercises
4	2	Mastery of hamza writing in different positions	Writing the Hamza	Lecture and examples exercises	Short dictation test
5	2	Correct use of punctuation marks	Punctuation marks	Practical activities using various texts	Correction of written texts
6	2	Differentiating between noun and verb	The noun and verb – how to distinguish between them	Discussion and practical exercises	Oral question and written exercises
7	2	Identifying the subject of Arabic sentences	The subject (fa‘il)	Sentence explanation and analysis	Short quiz
8	2	Identifying the object of a sentence	The object (maf‘ul bihi)	Examples and group exercises	Written task
9	2	Analyzing linguistic errors in written texts	Common linguistic errors and applications	Group activities, discussion, case study	practical evaluation and oral presentation
10	2	Understanding meanings of nunation and prepositions	Nunation and prepositions	Explanation and language representation	Descriptive short text
11	2	Understanding the fundamentals of	Formal aspects of administrative	Lecture and model	Applied assignment

		administrative correspondence	correspondence	presentation	
1	2	Drafting official administrative correspondence and analyzing samples	Language of administrative correspondence	Practical training and writing workshops; text analysis and discussion	Practical evaluation and written report
1	2	Comprehensive course review	Samples of administrative correspondence	Interactive discussion and review	Final exam

● Course Evaluation

- **Class attendance and participation in discussions and linguistic activities: 10–15%**
- **Assignments and short quizzes: 10–15%** Continuous assessment of students' language skills through weekly assignments in grammar, spelling, and text analysis.
- **Midterm exam: 20–25%** Covers theoretical and practical topics studied in the first half of the course such as linguistic errors, hamza writing, punctuation, noun and verb identification, and the subject.
- **Practical and applied activities: 20–25%** Evaluation of students' performance in exercises and classroom activities such as writing, error analysis, and drafting official letters.
- **Final comprehensive exam: 30–35%** Includes multiple-choice, short essay, and text analysis questions designed to assess theoretical knowledge and practical linguistic skills in writing, analysis, and expression.

● Learning and Teaching Resources

Required textbooks (curricular books any)

- **Fadel Al-Samarrai, *Meanings of Grammar*, Dar Al-Fikr Al-Arabi, Baghdad.**
- **Ali Jawad Al-Taher, *Arabic Grammar and Its Style*,**

	Dar Al-Ma‘arif, Cairo.
Main references (sources)	– Ahmad Al-Hashemi, <i>Jewels of Rhetoric in Meaning, Expression, and Elegance</i>. – Abd al-Salam Haroun, <i>Comprehensive Grammar</i>. – Linguistic articles from <i>Al-Lisan Al-Arabi Journal</i>, published by the Arabization Coordination Office, Rabat.
Recommended books and references (scientific journals, reports...)	– Ahmad Al-Hashemi, <i>Jewels of Rhetoric in Meaning, Expression, and Elegance</i>. – Abd al-Salam Haroun, <i>Comprehensive Grammar</i>. – Linguistic articles from <i>Al-Lisan Al-Arabi Journal</i>, published by the Arabization Coordination Office, Rabat.
Electronic References, Websites	– Arabic Language Academy website: www.arabacademy.gov.sa – <i>Rwaq</i> Educational Platform: www.rwaq.org – <i>Edraak</i> Online University Courses Platform: www.edraak.org – Arabic Wikipedia – Arabic Language Section: https://ar.wikipedia.org/wiki/اللغة_العربية

Course Description Form

• Course Name:					
computed Tomography Equipment Techniques					
• Course Code: 2001					
2					
• Semester / Year:					
2 – 2025					
• Description Preparation Date:					
15-9-2025					
• Available Attendance Forms:					
In presence					
• Number of Credit Hours (Total) / Number of Units (Total)					
7hours and 4 units					
• Course administrator's name (mention all, if more than one name)					
Name: Khaldun saadun Email: khaldunsaadun9090@gmail.com					
• Course Objectives					
Course Objectives		List and describe the various generations of computed tomography (CT) imaging systems. 2. Relate the CT imaging system components to their functions. Discuss image reconstruction via interpolation, back projection, and iteration. 3. Explain the helical imaging & multidetector-row CT. 4. Describe CT image characteristics of image matrix. 5. Determine the common CT image artefacts. 6. Discuss image quality as it relates to spatial resolution, contrast 7. Identify other technical applications of CT Imaging.			
• Teaching and Learning Strategies					
Strategy		Theoretical lectures and demonstrations are provided to help students understand the topics, followed by daily and weekly tests. In addition, students will receive practical lectures in specialized labs that teach instrumentation techniques. Students will also observe operation of radiological equipment.			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	6	Limitations of conventional radiography	History of Computed Tomography	Theoretical and Practical	Daily Exams
2	6	– First-generation – Second-generation – Third-generation – Fourth-generation – Fifth-generation CT, electron beam (EBCT)	Basic principles of Scanners : Generations of CT	Theoretical and Practical	Daily exams

3	6	☐ slip-ring technology ☐ dual source	Helical/spiral CT Scanning Requirements for Volumetric Scanning:	Theoretical and Practical	Daily exams
4	6	Interpolation Algorithms	Pitch	Theoretical and Practical	Daily exams
5	6	Multislice Computed Tomography (MSCT)	(multidetector-row) CT	Theoretical and Practical	Daily exams
6	6	X-Ray imaging system (gantry): – X-Ray Tube Ray tubes in MSCT (Structure of x-ray tube)	CT system design: (Spiral & MSCT)	Theoretical and Practical	Daily exams
7	6	Detector: Detector Characteristics & types	Collimation,	Theoretical and Practical	Daily exams
8	6	Computer system: input, display, recording, storage and communication system • Patient Table or Couch	Control Console	Theoretical and Practical	Daily exams
9	6	Windowing	CT image	Theoretical and Practical	Daily exams
10	6	Resolution – spatial & contrast resolution: – sensitivity	CT image quality:	Theoretical and Practical	Daily exams
11	6	Blur	Noise	Theoretical and Practical	Daily exams
12	6	Definition – types & Causes	CT image artefacts:	Theoretical and Practical	Daily exams
13	6	Common Artifacts	Correction techniques	Theoretical and Practical	Daily exams
14	6	CT quality control	CT quality Control	Theoretical and Practical	Daily exams
15	6	– Cardiac CT Imaging – Angiography – fluoroscopy	☐ Other technical applications of CT Imaging:	Theoretical and Practical	Daily exams

- 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

- Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Stewart Carlyle Bushong, "Radiologic Science for Technologists Physics, Biology, and Protection", Elsevier, Inc. , 7th edition, 2017. 2. Chris G. G. Dominic ffytche, "An Introduction to the 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.
Electronic References, Websites	www.radiationphysics.com

Course Description Form

• Course Name: Radiographic techniques for lower limbs					
• Course Code: 2002					
• Semester / Year: 2 nd year / 1st semester					
• Description Preparation Date: 10/9/2025					
• Available Attendance Forms: classes and laboratory					
• Number of Credit Hours (Total) / Number of Units (Total) 7hr/ 4 units					
• Course administrator's name (mention all, if more than one name)					
Name: Ban Mousa Nasif Email: ban.mousa@uoturath.edu.iq					
• Course Objectives					
Course Objectives		To teach the students how to direct the patient in Particular way to photograph to see diseases in the best way for lower limbs.			
• Teaching and Learning Strategies					
Strategy		- Interactive Lectures: Use multimedia presentations with labeled X-rays, - Flipped Classroom: Assign short pre-recorded videos on anatomy and positioning before class; use class time for problem-solving and image interpretation. - Concept Mapping: Have learners create diagrams linking anatomy, imaging views, and common pathologies (e.g., fractures, arthritis, tumors).			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Identify bony landmarks of the pelvis; perform standard AP projection; positioning; recognize pelvic fractures	Pelvis	Lecture with diagrams, positioning demo, and case examples.	Image interpretation question; OSCE on patient positioning.
2	2	Describe anatomy of the ilium on	Ilium	Anatomy review radiograph	Spot test anatomy; viva

		radiographs; perform oblique pelvis view if indicated.		labeling exercises	imaging techniques
3	2	Locate symphysis pubis on AP pelvis; identify common pathologies (diastasis, fracture)	Symphysis pubis	Case-based discussion; use real clinical images	Short written test; peer discussion summary.
4	2	Perform AP oblique (joint) radiograph; identify joint spacing and alignment	Sacro-iliac joints	Instructor demonstration guided student practice	Practical assessment positioning accuracy.
5	2	Demonstrate correct oblique positioning acetabular images; identify fractures	Acetabulum	Simulation practice with positioning phantom; label image study	OSCE station; radiographic critique exercise
6	2	AP and lateral femur views; recognize femoral shaft and neck fractures.	Femur	Step-by-step demonstration supervised practice	Image quality evaluation; written interpretation.
7	2	Select appropriate projection; perform correct positioning; interpret normal and abnormal hip images	hip joint, AP, Lateral, frog-leg infro-superior view, shown structure	Flipped classroom with pre-class video; hands-on lab; case review	Practical test; short-answer exam.
8	2	Demonstrate correct patient positioning; identify alignment, fractures, and joint involvement	Tibia & fibula, AP, Lateral	Pair-based positioning practice; review of sample radiographs.	OSCE; image labeling test
9	2	Perform all standard projections;)	Knee joint lateral, skyline patella, erect AP	Demonstration return demo; case-based learning.	Practical image acquisition check; report writing.
10	2	Perform skyline and lateral patella views; identify dislocation or fracture	Patella positions	Radiographic positioning workshop; image analysis	OSCE positioning; image interpretation question
11	2	Perform foot radiographs with correct CR centering and angulation; identify tarsal and metatarsal anatomy	Foot, AP, lateral, oblique, shown structure,	Small group practice; simulation with digital software	Positioning checklist; MCQ test
12	2	Demonstrate tangential projection sesamoids; identify pathology	Metatarsal-phalangeal sesamoid bones	Demonstration guided practice anatomy diagram review	Image critique; oral questioning.

		(sesamoiditis, fracture)			
13	2	Identify ankle joint spaces; perform proper projections for trauma and stress views.	Ankle joint , AP, lateral oblique ,oblique & AP with inversion	Clinical scenario based teaching supervised imaging practice	OSCE positioning; case interpretation.
14	2	Demonstrate subtalar joint visualization; identify alignment and coalition	Subtalar joints	Video demonstration group discussion	Viva voce; image interpretation exercise
15	2	perform axial (plantodorsal) and lateral calcaneal view identify fractures or spurs	Calcaneum positions	Demonstration practice with mannequin; image critique session.	OSCE; written test on anatomy and projections

• Course Evaluation

- Regular class attendance. Active participation in discussions and practical sessions.
- Assignments / Quizzes – 10–15%
- Short quizzes to assess continuous learning and homework and imaging interpretation exercises.
- Midterm Examination – 20–25%
- Covers theoretical and practical components studied in the first half of the course.
- Practical / OSPE (Objective Structured Practical Exam) – 20–25%
- Identification of radiological anatomy on X-ray, CT, MRI, and ultrasound images.
- Application of anatomical knowledge to clinical cases.
- Final Examination (Comprehensive) – 30–35%
- Combination of multiple-choice questions, short answer questions, and image-based questions.

Assesses both theoretical knowledge and applied interpretation skills.

• Learning and Teaching Resources

Required textbooks (curricular books, if any)	Clark's Positioning in Radiography 1
Main references (sources)	Bontrager's handbook of radiographic positioning techniques. Elsevier Health Sciences.
Recommended books and references (scientific journals, reports...)	Whitley, A. S., Jefferson, G., Holmes, K., Sloane, Anderson, C., & Hoadley, G. (2015).
Electronic References, Websites	Radiopaedia: https://radiopaedia.org

Course Description Form

Course Name: Special radiological procedures of GIT, bones.					
Course Code: 2003					
Semester / Year: 2024/2025 first course					
Description Preparation Date:					
To teach the students how to use the contrast media including adverse effects in addition to the management of complications, and perform the radiological examination of the gastrointestinal tract , bones,					
Available Attendance Forms:					
Data show projector Microsoft power point for lectures presentation Internet access and Email to present educational website Telegram Channel					
Number of Credit Hours (Total) / Number of Units (4)					
7 credits (Theory: 2units + Lab: 5 units).					
Course administrator's name (mention all, if more than one name)					
Name: Qais Lateef Atea Email: qais-latif@uoturath.edu.iq					
Course Objectives					
Course Objectives		- Explain the types of contrast media and their adverse effects.. - Demonstrating safe radiation practices. - Explain the methods of GIT, imaging musculoskeletal, reproductive systems. - Analyzing image quality.			
Teaching and Learning Strategies					
Strategy		Demonstration and practice Practice and assignment Quiz and exams.			
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-3	8	To learn how to use contrast media and manage complications	Adverse effect Intravenous (IV) water soluble contrast media on specific organs		Quiz
3-5	6	Side effects complications Gadolinium	Contrast Agents Magnetic Resonance Imaging		Quiz
6-9	7	Learning and practicing image modalities of GIT	Methods of imaging Gastrointestinal tract		

10-12	8	How to prepare patient and protocol of abdominal MR and MRCP	Magnetic Resonance Imaging of Gastrointestinal Tract	Exam
12-15	8	Indications, contraindications, modalities of bones & joints	Imaging modalities of bones & joints	Quiz
				Exam

• Course Evaluation

Class Attendance 5%
Class Engagement and Participation 5%
Quizzes 10%
Midterm Exam 20%
Final Exam 60%

• Learning and Teaching Resources

Watson, N. & Jones, H. Chapman & Nakielny's *"Guide to Radiological Procedures"*, 7th edition

Elsevier Health Sciences, 2017.

<https://radiopaedia.org/home>

Course Description Form

Course Name: Radiological anatomy of lower limbs					
Course Code: 2004					
Semester / Year: 2nd year / 2nd semester					
Description Preparation Date: 10/9/2025					
Available Attendance Forms: classes and laboratory					
Number of Credit Hours (Total) / Number of Units (Total): 6hr/ 4 units					
Course administrator's name (mention all, if more than one name)					
Name: Hind Mouafak		Email: hind.muafaq@uotureath.edu.iq			
Course Objectives					
Course Objectives	- The general anatomy and radiological features of the lower limbs. - The general anatomy and radiological features of the lower limbs joints. - The general anatomy and radiological features of the arterial blood supply of lower limbs as well as venous drainage.				
Teaching and Learning Strategies					
Strategy	- Presenting the theoretical concepts of upper limb anatomy with active student participation. - Visual aids and multimedia – using diagrams, 3D models, radiological images, and videos to illustrate anatomical structures. - Practical laboratory sessions – hands-on anatomy training, palpation exercises, and identification of anatomical landmarks. - Radiology-based learning – studying X-ray, CT, and MRI images to connect anatomical knowledge with radiological imaging.				
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	The student recognizes the normal anatomy and features of the hip bone in radiographic images and identifies its primary ossification centers	bony pelvis (pelvic girdle): (sacrum, coccyx & hip bones). - Pelvic inlet & pelvic outlet.	Theoretical lecture + Slide presentation with anatomical and radiographic images	Short Concluding questions at the end of the lecture.
2	2	The student describes	Bony pelvis:	Practical lecture	Open discussion

		the normal anatomy and analyzes its features in various radiographic views, identifying the locations of its ossification centers.	- Differences between male & female pelvis, - Radiological features of the pelvic bones.	+ Comparative display of various radiographic image types	on differences between radiographic images
3	2	The student analyzes the anatomical relationship between the hip and femur and evaluates the radiographic features of the femur	Normal anatomy of the femur, - radiological features of femur bone. -Ossification centers.	Demonstrative video of femur anatomy and its articular relationship	Student assignment to research normal radiographic images of femur and identify its landmarks.
4	2	The student identifies the distinguishing features of the tibia in radiographic images and compares the ossification process between the tibia and fibula	Normal anatomy of the tibia bone, radiological features of tibia bone. Ossification centers.	Radiographic case study to apply knowledge.	Peer assessment of the research assignment from the previous week.
5	2	The student explains the anatomical complexity of the hand bones and recognizes the sequence of appearance of ossification centers in radiographic images across different age groups.	- Normal anatomy of the fibula bone, radiological features of fibula bone. Ossification center of fibula. Normal anatomy of patella, - radiological features of patella & ossification center of patella	Use of anatomical models (if available), 3D images of the hand.	Analyze radiographic images of a child's and an adult's by identify differences
6	2	The student identifies the distinguishing features of the tibia in radiographic images and compares the ossification process between the tarsals and metatarsals	Normal anatomy of the foot: - components: tarsals, - metatarsals & phalanges.	Radiographic case study to apply knowledge.	Peer assessment of the research assignment from the previous week
7	2	The student recognizes the main bones of the foot and identifies normal anatomical landmarks in radiographic (X-ray) and computed tomography (CT) images.	Foot: Buhler's angle. Radiological features of the foot: tarsal, metatarsal & phalanges	Use of 3D foot models + Analysis of foot CT images	Short quiz (quiz) on identifying bones and major landmarks on a foot X-ray image
8	2	The student explains the complex structure of the hip joint and the function of each of its key components	Hip joint: - type of joint, - articular surfaces, - capsule & ligaments of hip joints.	Animated graphics illustrating joint movement.	Oral discussion on the importance of each joint component in its stability and movement.

		Midterm Exam			
9	2	The student relates the anatomical structure of the hip ligaments to their appearance in different imaging modalities (e.g., MRI).	Hip joint: - Radiological features of hip joint. - Dislocation of hip joint.	Presentation of MRI images of the hip joint, linked to anatomy.	Discussion forum on common hip injuries and their radiographic features.
10	2	The student recognizes the bony and ligamentous components of the knee and identifies them in routine radiographic images	Knee joint: - type of joint, articular surfaces, - capsule, ligaments of knee joint.	Analysis of knee joint X-ray images from different angles (AP, Lateral)	Short practical spot test requiring identification of landmarks on an knee X-ray image.
11	2	The student analyzes the articular components of the Internal structures of knee joint and interprets their specific radiographic images for diagnosing common injuries.	Knee joint: - Internal structures of knee joint. - Radiological features of knee joint.	Presentation of varied radiographic cases (normal and abnormal) of Internal structures of knee joint	Short written report summarizing the key radiographic features of the Internal structure knee joint
12	2	The student recognizes the main bones of the Ankle joint and identifies normal anatomical landmarks in radiographic (X-ray) and computed tomography (CT) images.	Ankle joint: type of joint, articular surfaces, capsule.	Use of 3D Ankle joint models + Analysis of Ankle joint CT images.	Short quiz (quiz) on identifying bones and major landmarks on a Ankle joint X-ray image
13	2	The student describes the anatomical structure and interprets radiographic images and CT scans for evaluating common conditions such as inflammations	Ankle joint: ligaments of the ankle joint. Radiological features of ankle joint	Display of specialized X-rays and coronal CT sections.	Discussion of radiographic case studies(Case Studies) of Ankle joint diseases and their imaging appearance.
14	2	The student identifies the main arterial pathways of the lower limb and recognizes the principles of angiography and the appearance of these arteries in such imaging	Blood supply of lower limbs: - arteries of the lower limb, Radiological features of the lower limb arteries.	Anatomical images + Angiogram images.	Case problems related to vascular injuries and their radiological diagnosis.
15	2	The student compares the venous and	• Veins of the lower limb,	Display of CT imaging slices	Oral discussion on the importance of

		arterial pathways in the lower limb and describes the features of veins in Computed Tomography (CT) and Magnetic Resonance Imaging (MRI).	• Radiological features of the lower limb veins.	illustrating contrast between arteries and veins.	venous imaging in diagnosing thromboses.
		Final Semester Examination			
• Section Course Evaluation					
• Regular class attendance. Active participation in discussions and practical sessions. • Assignments / Quizzes – 10–15% • Short quizzes to assess continuous learning and homework and imaging interpretation exercises. • Midterm Examination – 20–25% • Covers theoretical and practical components studied in the first half of the course. • Practical / OSPE (Objective Structured Practical Exam) – 20–25% • Identification of radiological anatomy on X-ray, CT, MRI, and ultrasound images. • Application of anatomical knowledge to clinical cases. • Final Examination (Comprehensive) – 30–35% • Combination of multiple-choice questions, short answer questions, and image-based questions. • Assesses both theoretical knowledge and applied interpretation skills.					
• Learning and Teaching Resources					
Required textbooks (curricular books, if any)			Lectures		
Main references (sources)			Ryan, S., McNicholas, M., & Eustace, S. (2011). Anatomy for diagnosis and imaging.		
Recommended books and references (scientific journals, reports...)			1. Standring, S. Gray's Anatomy: The Anatomical Basis of Clinical Practice. Latest Edition. Elsevier. 2. Moore, K. L., Dalley, A. F., & Agur, A. M. R. Clinically Oriented Anatomy. Wolters Kluwer. 3. Netter, F. H. Atlas of Human Anatomy. Elsevier.		
Electronic References, Websites			Radiopaedia: https://radiopaedia.org RSNA Radiology Education: https://www.rsna.org/education Anatomy Atlases: http://www.anatomyatlases.org IMAIOS e-Anatomy (subscription-based): https://www.imaios.com PubMed Database: https://pubmed.ncbi.nlm.nih.gov		

Course Description Form

• Course Name:					
fundamentals of radio physics					
• Course Code: 2005					
• Semester / Year:					
First/Second					
• Description Preparation Date:					
14/9/2025					
• Available Attendance Forms:					
Invidiously inside the classroom					
• Number of Credit Hours (Total) / Number of Units (Total)					
2theory+ 3 practical/3units					
• Course administrator's name (mention all, if more than one name)					
Name: Dr. Aysar S. Keiteb Email: draysaralnidawi@mtu.edu.iq					
Name: Rusul Hameed Email: rusul.h444@gmail.com					
• Course Objectives					
Course Objectives		1. Explain the method of production the tube voltage. 2. Define the effect of heating & cooling the x-ray tube. 3. Explain the methods of x-ray production. 4. State the interaction processes of x-rays. 5. Define factors affecting on electron beam.			
• Teaching and Learning Strategies					
Strategy	1. The student gains experience working in the field of radiography. 2. The student gains scientific experience in the field of scientific research. 3. The student acquires the ability to understand and deal with modern and advanced technologies and contribute to their development. 4. The student gains experience in the benefits of x-ray imaging and the methods used to protect against harmful radiation risks.				
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Exposure timing Falling load	Generating the tube voltage	In presence	Daily exams and midterm exam final of course exam
2	2	Rotation anode tube	Limitation of the x-ray tube	In presence	Daily exams and midterm exam

3	2	Heat production	Ray Tube Heating and Cooling	In presence	final of course exam
4	2	Characteristic radiation	X-Ray Production	In presence	Daily exams and midterm exam
5	2	Importance in Imaging and Dose	Characteristic Radiation	In presence	final of course exam
6	2	X-ray fluorescence X-ray phosphorescence	Incandescence phenomenon	In presence	Daily exams and midterm exam
7	2	Factors affecting electron emission spectrum mA	Tube energy	In presence	final of course exam
8	2	X-ray quantity	X-ray Emission: Factors Influencing x-ray spectra and output	In presence	Daily exams and midterm exam
9	2	Filtrations	Photon range	In presence	final of course exam
10	2	Photoelectric Absorption	The Linear X-ray Attenuation Coefficient Interaction of X-ray with matter processes	In presence	Daily exams and midterm exam
11	2	Soft Tissue Radiography	Factors affecting image contrast	In presence	final of course exam
12	2	Contrast media	Attenuation of X-ray	In presence	Daily exams and midterm exam
13	2	Dependence on Atomic Number	Differential absorption	In presence	final of course exam
14	2	exposure parameters	Quality assurance of	In presence	Daily exams and midterm exam
15	2	Iodine and Barium Contrast Media	Scatter Radiation and Contrast	In presence	final of course exam

• 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

• Learning and Teaching Resources

Required textbooks (curricular books, if any)	M. Radhi Al-Qurayshi and H. Qasim. AL-Mos "Radiation Physics and its applications in diagnostic radiological techniques", Middle Technical University (MTU), Iraq, (2015)
Main references (sources)	W. R. Hendee and E. R. Ritenour "Medical Imaging Physics", 4th Edition, Wiley-Liss, Inc., (2002).
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Perry Sprawls, "Physical principles of medical imaging" 2nd Edition 1996.

Course Description Form

• Course Name: Fundamentals of radiation protection					
• Course Code: 2006					
• Semester / Year: 2 nd year / 1 st semester					
• Description Preparation Date: 15/9/2025					
• Available Attendance Forms: classes and laboratory					
• Number of Credit Hours (Total) / Number of Units (Total): 5hr/ 3 units					
• Course administrator's name (mention all, if more than one name)					
Name: Gufran Sattar Jaber			Email: gufransattar@kus.edu.iq		
• Course Objectives					
		☐ Differentiate between ionizing and non-ionizing radiation. ☐ Measure and calculate radiation doses using appropriate instruments. ☐ Apply the ALARA principle (As Low As Reasonably Achievable) in radiation practices. ☐ Identify and use individual and collective protective devices. ☐ Understand shielding methods, time reduction, and distance increase as basic protection measures. ☐ Learn emergency procedures and how to respond to radiation contamination or leakage. ☐ Appreciate the importance of medical surveillance programs for radiation workers.			
• Teaching and Learning Strategies					
Strategy		Theoretical literatures as a power point (ppt) on smart board And experiments at a laboratory for the practical part			
• Course Structure					
Week	Hours	Required	Unit or subject	Learning	Evaluation

		Learning Outcomes	name	method	method
1	3	Classification of ionizing radiation	SNatural sources	ppt on smart board	Q s and discussion
2 & 3	3	Sources of ☐ ionization Radiation background) (radiation	Human-made (artificial) sources		
4 & 5	3	Radiation Measurement Units & Internation	Activiy Exposure Absorbed dose Kerma	ppt on smart board	Q s and discussion
6	2	al SI Units	The Principles Optimisation of Protection (ALARA principles)of Radiological Protection	ppt on smart board	Q s and discussion
7	3	Time ☐ Distance ☐ Shielding ☐	Dose limits		
8&9	3	Design of Protective Ray –Barriers in X Installations	Maximum Permissible Occupational Doses	ppt on smart board	Q s and discussion
10	3		Patient Radiation Dose Descriptions	ppt on smart Board	Q s and discussion
11&12	3	Occupational Medical Public	Dose and management principles in Special cases	ppt on smart board	Parodic motion and S.H.M
13&14	3	ray and –X pregnancy Pregnancy patient			
15	2	Pregnancy ☐ technologist	Design of Protective Barriers in X-Ray Installations	ppt on smart board	Q s and discussion
		Leakage Radiation Scattered ☐ Radiation	Scintillation detectory		
		Personnel Dosimeter			
		Final exam			

● Stion 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	
• Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	M. Radhi Al-Qurayshi and H. Qasim. AL-Mosawi " <i>Radiation Physics and its applications in diagnostic radiological techniques</i> ", MSc Thesis, Al-Mosawi Technical University (MTU), Iraq, (2015)
Recommended books and references (scientific journals, reports...)	W. R. Hendee and E. R. Ritenour " <i>Medical Imaging Physics</i> ", 4th Edition, Wiley-Liss, Inc., (2002)
Electronic References, Websites	All the web site that discussed this subjects

Course Description Form

• Course Name: Computer Application					
• Course Code: 2007					
• Semester / Year: Second Year / First Course					
• Description Preparation Date: 2025 - 2026					
• Available Attendance Forms: Smart Attendance & Lab.					
• Number of Credit Hours (3) / Number of Units (2):					
• Course administrator's name (mention all, if more than one name)					
Name: Ass. Prof. Nathier Abas Ibrahim Email: nazir.abass@uoturath.edu.iq					
• Course Objectives					
Course Objectives		Providing the student with the skills of dealing with basic office applications and creating Office files and documents, The use of the operating system as well as the basics of working within the digital environment.			
• Teaching and Learning Strategies					
Strategy		Providing the student with knowledge in the management and use of various computer applications			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Writing many texts and training the student has to conduct the events	Running a program	Lab.	Quiz
2	3	Training the student on the use of Texts of various formats drag them onto the printer.	Microsoft Word software interface	Lab.	Quiz
3	3	- Practical exercises on texts within the document.	File tab, home page tab		

		- Give names to companies of students and train the student to search for a specific name and replace it.		Lab.	Quiz
4	3	Training the student on planning Page, tab view text writing training	Page Layout tab, view tab	Lab.	Quiz
5	3	Give practical examples at the inclusion of objects training on writing texts in a more professional way	Inserting objects in Microsoft Word	Lab.	Quiz
6	3	Give practical examples at the group of pages of the Insert tab	Insert tab	Lab.	Quiz
7	3	Give a set practical examples Tables	Group tables	Lab.	Quiz
8	3	Give a set practical examples Tables	Group tables	Lab.	Quiz
9	3	The student is building on a collection of illustrations	Collection of illustrations	Lab.	Quiz
10	3	Drag a certain image and assign the student to conduct those events. - Training the student to write texts	Link Group, header and footer group	Lab.	Quiz
11	3	Includes currency symbols, special characters, scientific symbols and others. - Train the student to write equations that include addition, multiplication and raise formulas	Collection of texts and symbols	Lab.	Quiz
12	3	For bases and matrices of various shapes. - Training the student to create different tables with data entry - Training on opening and storing a new file	Additional tasks for Microsoft Word	Lab.	Quiz
13	3	Add and edit slides) title slide, title with content, subtitle, two contents, comparison, title on a blank slide, content with comment, image with comment - Add and edit the types of content slide (table, graphs, shapes and diagrams, photos, images from the internet, video files).	Microsoft Excel	Lab.	Quiz
14	3	Train to delete, move and rearrange slides.	PowerPoint presentation	Lab.	Quiz
15	3	Training the student on artificial intelligence applications	Applications of artificial intelligence on Excel and PowerPoint in the medical field	Lab.	Quiz

• 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

• Learning and Teaching Resources

Required textbooks (curricular books, if any)	Hilal Al-qabati (2019): computer and internet basics, Al-Arabiya for printing and publishing, Sana'a.
Main references (sources)	Computer literacy BASICS 2012, LeBlanc, Brandon."A close look at the, windows 7. 2009
Recommended books and references (scientific journals, reports...)	Computing Fundamentals, Innovative training works USA Inc, 2006
Electronic References, Websites	https://www.agitraining.com/books/microsoft-officebooks/word-2010-digital-classroom-book

نموذج وصف المقرر

• اسم المقرر جرائم حزب البعث البائد					
• رمز المقرر 2008					
• الفصل / السنة: نظام كورسات / الكورس الاول					
• تاريخ إعداد هذا الوصف 15/ايلول/2025					
• أشكال الحضور المتاحة حضور صفي					
• عدد الساعات الدراسية (2)/ عدد الوحدات (2)					
• اسم مسؤول المقرر الدراسي (اذا اكثر من اسم يذكر)					
الاسم: حذام فرج عبدالعزيز الایمیل : tham.faraj@uoturath.edu.iq					
• اهداف المقرر					
اهداف المادة الدراسية			يهدف هذا الكورس الى تعريف طلبة الجامعة و بالأخص الذين ولدوا بعد تغيير النظام البائد على مهمة في تاريخ العراق المعاصر بعد خضوعه الى حكم حزب قاد البلاد و المجتمع العراقي الى ك بسبب فكره الشوفيني و تشويهه لقيم الدين والعقيدة و جر البلاد الى اتون الحروب و تعريض ب الى شتى انواع المهالك ابتداءً من مصادرة الحريات و انتهاءً بتصفية كل من يخالف عقيدته المنحرفة		
• استراتيجيات التعليم والتعلم					
الاستراتيجية			تطلب هذه المادة سترراتيجية معينة ولكن المهم استيقان الطلبة لأهمية دراسة فترة ة من تاريخ العراق المعاصر و الولايات التي رافقتها باعطاء امثلة حية من واقع الشعب		
• بنية المقرر					
الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة او الموضوع	طريقة التعلم	طريقة التقييم
الاسبوع الاول	2ساعة/الاسبوع	1- تعريف الطالب ببداية تأسيس الدولة العراقية 2- تعريف مفهوم الحرية و توضيح كيفية انتهاك البعث البائد لحريات الشعب العراقي	نبذة وصفية عن الانظمة السياسية في العراق (1921-2003) شرح مفهوم الحريات و التعريف بانتهاكات النظام البعثي للحريات و الحقوق	محاضرة	5 درجات للحضور هلى مدى محاضرات الكورس
الاسبوع 2	ساعتان	الاستفادة من اخطاء النظام البائد	أثر سلوكيات النظام البعثي في المجتمع و تسلطه على الدولة	محاضرة	
الاسبوع 3	=	رفع وعي الطلبة	سلطات الحكم في ظل النظام البائد فهم مبدا الفصل بين السلطات و انتهاك	=	

		النظام الابداعي له			
الاسبوع 4	=	رفع وعي الطلبة	أثر المرحلة الانتقالية في محاربة السياسة الاستبدادية	=	
الاسبوع 5	=	الاستفادة من اخطاء النظام البائد	الاليات النفسية و الاجتماعية التي استعملها النظام البائد يحق الشعب العراقي	=	
الاسبوع 6	=	رفض السلوكيات المنحرفة	سلوكيات النظام البائد في الميدان الاجتماعي وفرض الولاء المطلق لشخصية الحاكم	=	
الاسبوع 7	=	تصحيح المفاهيم	الدين و الدولة بحسب المفهوم البعثي	=	
الاسبوع 8	=	تقدير اهمية الحرية المنضبطة	الثقافة و الاعلام و عسكرة المجتمع	=	
الاسبوع 9	=		مناقشة البحوث المطلوبة من الطلبة	م و 5 درجات للبحوث	
الاسبوع 10	=	دحض مسوغات النظام لممارسة القمع	اثر القمع الذي مارسه النظام وكذلك الحروب التي شنت على البيئة والسكان	=	
الاسبوع 11	=	رفع الوعي	سياسة الارض المحروقة التي اتبعتها النظام البائد	=	
الاسبوع 12	=	الاعتزاز بالهوية الوطنية	تجفيف الاهوار و الهجرة القسرية و دور النظام البائد في قضية تجفيف الاهوار و اثار ذلك على البيئة و الناس	=	
الاسبوع 13	=		امتحان منتصف الكورس		
الاسبوع 14	=	الاستفادة من الاخطاء التاريخية	المقابر الجماعية و قصف دور العبادة	=	
الاسبوع 15	--	الوعي باهمية احترام القوانين الدولية	الحروب التي شنها النظام البائد على دول الجوار و انتهاك القوانين الدولية و اثار ذلك على نفسية الفرد العراقي	=	
			ألامتحان النهائي		

• تقييم المقرر

توزيع الدرجة من 100 على وفق المهام المكلف بها الطالب مثل التحضير اليومي والامتحانات اليومية والشفوية والشهرية والتحريرية والتقارير الخ

الحضور	5%
مشاركة الطالب في الصف	5%
التقارير والواجبات	5%
امتحان منتصف الكورس	15%
الامتحان النهائي	70%
المجموع	100 %

• مصادر التعلم والتدريس

ب المقررة المطلوبة (المنهجية أن) هاج جرائم حزب البعث البائد 2023" الصادر
وزارة التعليم العالي والبحث العلمي العراقية/
وجدت (دائرة الدراسات و التخطيط والمتابعة في 2023

المراجع الرئيسة (المصادر)	نفس المصدر السابق
الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)	-
المراجع الإلكترونية ، مواقع الانترنت	-

Course Description Form

• Course Name: Arabic Language					
• Course Code: 2009					
• Semester / Year:					
Second Stage / first Semester					
• Description Preparation Date:					
22/10/2025					
• Available Attendance Forms: In-person					
• Number of Credit Hours (1) Number of Units (1) Hours: 1 Units: 1					
• Course administrator's name (mention all, if more than one name)					
Name: Huda Ali Hashim Email: huda.ali@uoturath.edu.iq					
• Course Objectives					
Course Objectives		- Introducing the student to the Arabic language and understanding its linguistic styles and structures. - Utilizing the Arabic language curriculum to evaluate speech, comprehend its content, and master its grammatical and literary formulation.			
• Teaching and Learning Strategies					
Strategy		The educational material includes lectures, seminars, discussion, preparation, and key reports.			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1 Theoretical		From Surat Al-Isra (Verses 23-29) & Prophetic Hadith (‘Indeed, Allah loves that when one of you does a job..’)	Theoretical	General questions, discussion, and daily quizzes
2	1 Theoretical		Verses from Al-Sharif Al-Radi's poem in elegy of his mother	Theoretical	General questions and discussion

3	1 Theoretic		Abu Al-Ala Al-Maarris Dāliyya poem &ar Selected verses by Al-Jawahiri and Al-Sayyab	Theoretical	General questions and discussion
4	1 Theoretic		Prose Arts (Funoon Al-Nathr)	Theoretical	Instant quiz and Discussion
5	1 Theoretic		Present Tense Verb: Subjunctive and Jussive Moods (Accusative and Jussive cases)	Theoretical	Exam
6	1 Theoretic		Genitive Nouns and Accusative Nouns (Al-Majroorat & Al-Mansoobat)	Theoretical	General questions and discussion
7	1 Theoretic		The Objects (Al-Mafaeel)	Theoretical	General questions, instant quiz, and practical applicatio
8	1 Theoretic		Rules of writing Taa Maftuha and Taa Marbuta	Theoretical	Group assignments
9	1 Theoretic		Rules of writing Alif Mamduda and Alif Maqsura	Theoretical	General questions and discussion
10	1 Theoretic		Rules of writing Dhad (ض) and Zha (ظ)	Theoretical	Exam
11	1 Theoretic		Stages of Language Compilation / Collection	Theoretical	General questions, discussion, and student seminars
12	1 Theoretic		Vocabulary Dictionaries and Semantics	Theoretical	General questions, discussion, and student seminars
13	1 Theoretic		Common Linguistic Errors	Theoretical	General questions and instant quiz
14	1 Theoretic		-	Theoretical	Group assignments student seminars, and practical application
15	1 Theoretic		-	Theoretical	Exam questions

• 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

• Learning and Teaching Resources

Required textbooks (curricular books, if any)	1.The Holy Quran
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Main references (sources)	• The Holy Qur'an • Sharh Ibn 'Aqil on Alfiyyah Ibn Malik • Diwans of Poets (Al-Sharif Al-Radi, Al-Ma'arri, Al-Jawahiri, Al-Sayyab)
Recommended books and references (scientific journals, reports...)	• Ibrahim, A. (1998). <i>Dictation and Punctuation in Arabic Writing</i>. Gharib Library, Cairo. • Al-Adnani, M. (1999). <i>A Dictionary of Common Linguistic Errors</i>. Librairie du Liban Publishers
Electronic References, Websites	

Course Description Form

• Course Name:					
Conventional Radiological Equipment techniques					
• Course Code: 21001					
• Semester / Year:					
First 2025-2026					
• Description Preparation Date:					
15-9-2025					
• Available Attendance Forms:					
In person study					
• Number of Credit Hours (Total) / Number of Units (Total)					
7hours and 4 units					
• Course administrator's name (mention all, if more than one name)					
Name: Ali Hatif Hadi Email: alihatif159@gmail.com					
• Course Objectives					
Course Objectives		1. Identify the components of the x-ray imaging system operating console. 2. Explain the operation of the high-voltage generator. 3. Define the essential components of X-ray tube. 4. Explain the important techniques types used in radiographic imaging. 5. Determine the methods of scatter control in x-ray imaging system.			
• Teaching and Learning Strategies					
Strategy		Theoretical lectures and demonstrations are provided to help students understand basic topics, followed by daily and weekly tests. In addition, students will receive practical lectures in specialized labs that teach instrumentation techniques. Students will also observe the operation of radiological equipment.			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

2	6	X-Ray machine system: • Operating cons – line compensation, – autotransformer KVp adjustment, – mA control – Expo timer	ay machine system:	Theoretical And practical	Daily Exams
	6	transformers, – voltage rectification, – pl power types, – x-ray circuits – Effect waveform on radiation output & im quality	Highvoltage generators:	Theoretical And Practical	Daily Exams
	6	Basic design – Line focus principle – E effect	X-ray tube:	Theoretical And Practical	Daily Exams
	6				
	6	Causes of X-ray Tube Failure – Result Remedy	X-ray tube failure:	Theoretical And Practical	Daily Exams
	6	Processing the latent image:	Manually – Automatica	Theoretical And Practical	Daily Exams
	6	Control of scatter radiation: – B restrictors, – The grid (Characteristics of construction, grid ratio, grid frequency)	Filters	Theoretical And Practical	Daily Exams
	6	linear, crossed, focused, moving grids	Grid types:	Theoretical And Practical	Daily Exams
	6	System apparatus, – mechanism of wor Image processing			
	6	Flat Panel Detectors (DR): • Indi conversion detector (a-Si) • Direct conversion detector (a-Se)	Digital radiograph Computed Radiogra (CR):	Theoretical And Practical	Daily Exams
	6		Direct to dig radiography (DDR): Flat Panel Detectors (I • Indirect conver detector (a-Si) • Di conversion detector (a-S	Theoretical And Practical	Daily Exams
	6	Imaging system equipments, – Types of mammography systems. Film-screen system	Image quality	Theoretical And Practical	Daily Exams
	6	Contrast – Resolution – Noise Magnification – Distortion – Artefacts	Mammography:	Theoretical And Practical	Daily Exams

14	6	Imaging system apparatus – Mechanism Orthopantomogram (OPG): – Types Mechanism		Theoretical And Practical	Daily Exams
15	6		Digital mammography (FFDM) – CEDM Bone density scan (DEXA)	Theoretical And practical	Daily exams

- 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

- Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Stewart Carlyle Bushong, “Radiologic Science for Technologists Physics, Biology, and Protection” Elsevier, Inc. , 7th edition, 2017. 2. Chris Guy & Dominic ffytche, “An Introduction to The Principles Medical Imaging” , Imperial College Press, 2005.
Recommended books and references (scientific journals, reports...)	Perry Sprawls, “Physical principles of medical imaging”, 2nd Edition 1996.
Electronic References, Websites	www.radiationphysics.com

Course Description Form

• Course Name: Radiographic techniques for upper limbs					
• Course Code: 21002					
• Semester / Year: 2 nd year / 2nd semester					
• Description Preparation Date: 10/9/2025					
• Available Attendance Forms: classes and laboratory					
• Number of Credit Hours (Total) / Number of Units (Total) 7hr/ 4 units					
• Course administrator's name (mention all, if more than one name)					
Name: Ban Mousa Nasif Email: ban.mousa@uoturath.edu.iq					
• Course Objectives					
Course Objectives		To teach the students how to direct the patient in particular way to photograph to see diseases in the best way for upper limbs			
• Teaching and Learning Strategies					
Strategy		- Interactive Lectures: Use multimedia presentations with labeled X-ray, CT, - Flipped Classroom: Assign short pre-recorded videos on anatomy and positioning before class; use class time for problem-solving and image interpretation. - Concept Mapping: Have learners create diagrams linking anatomy, imaging views, and common pathologies (e.g., fractures, arthritis, tumors).			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Demonstrate correct positioning and identify anatomical landmark	Terminology, - body planes, section - lines, body position - special projections	Lectures, Image Analysis workshops	Written test, image analysis
2	2	Understand factors affecting image clarity and diagnostic value	Image quality - exposure factor, - brightness - contrast ,	Lectures, Image Analysis workshops	Written test, image analysis

			- resolution , - distortion , noise		
3	2	Demonstrate correct positioning and identify anatomical landmark	Shoulder joint, AP, lateral , supero- inferior & oblique	Lectures, Image Analysis workshops	Written test, image analysis
4	2	Identify joint space rotation effects on imaging	Glenohumeral joint positions	Lectures, Image Analysis workshops	Written test, image analysis
5	2	Perform stress views assess joint separation	Acromioclavicular joints	Lectures, Image Analysis workshops	Written test, image analysis
6	2	Apply AP and axial techniques for full clavicle visualization	Clavicle Positions	Lectures, Image Analysis workshops	Written test, image analysis
7	2	Visualize SC joint with and oblique views	Sternoclavicular joints	Lectures, Image Analysis workshops	Written test, image analysis
8	2	Differentiate scapular views and locate coracoid	Scapula & Coracoid positions	Lectures, Image Analysis workshops	Written test, image analysis
9	2	Recognize fracture types apply trauma protocols	Humerus Fractures (Proximal & Distal)	Lectures, Image Analysis workshops	Written test, image analysis
10	2	Position for AP/lateral view and identify fracture pattern	Forearm , radius and ulna, type of fracture	Lectures, Image Analysis Workshops	Written test, image analysis
11	2	Identify key structures assess joint alignment	Elbow joint , AP, Lateral oblique , shown structure	Lectures, Image Analysis workshops	Written test, image analysis
12	2	Master PA, oblique, lateral views and identify bones/joint	Hand positions, shown structures	Lectures, Image Analysis workshops	Written test, image analysis
13	2	Position each digit correctly and identify pathology	Thumb& fingers positions	Lectures, Image Analysis workshops	Written test, image analysis
14	2	Perform specialized Views (e.g., ulnar deviation)	Scaphoid Bone	Lectures, Image Analysis workshops	Written test, image analysis
15	2	Apply PA, lateral, oblique views and identify carpal bones	Wrist positions, shown structures	Lectures, Image Analysis workshops	Written test, image analysis

- **Course Evaluation**

- Regular class attendance. Active participation in discussions and practical sessions.
- Assignments / Quizzes – 10–15%
- Short quizzes to assess continuous learning and homework and imaging interpretation exercises.
- Midterm Examination – 20–25%
- Covers theoretical and practical components studied in the first half of the course.
- Practical / OSPE (Objective Structured Practical Exam) – 20–25%
- Identification of radiological anatomy on X-ray, CT, MRI, and ultrasound images.
- Application of anatomical knowledge to clinical cases.
- Final Examination (Comprehensive) – 30–35%
- Combination of multiple-choice questions, short answer questions, and image-based questions.

Assesses both theoretical knowledge and applied interpretation skills.

- **Learning and Teaching Resources**

Required textbooks (curricular books, if any)	Clark's Positioning in Radiography
Main references (sources)	Clark's Positioning in Radiography
Recommended books and references (scientific journals, reports...)	Bontrager's handbook of radiographic position and techniques. Elsevier Health Sciences
Electronic References, Websites	Radiopaedia: https://radiopaedia.org

Course Description Form

• Course Name:					
Special radiological procedures of Hepato-biliary, Urinary and reproductive systems.					
• Course Code: 21003					
• Semester / Year: 2025/2026 second course					
• Description Preparation Date:					
To teach the students modalities of the Biliary system, urinary and reproductive system with the indications the management of the complications, and perform the radiological examination.					
• Available Attendance Forms:					
Data show projector Microsoft power point for lectures presentation Internet access and Email to present educational website Telegram Channel					
• Number of Credit Hours (Total) / Number of Units (4)					
7 credits (Theory: 2units + Lab: 5 units).					
• Course administrator's name (mention all, if more than one name)					
Name: Qais Lateef Atea Email: qais-latif@uoturath.edu.iq					
• Course Objectives					
Course Objectives	- Explain the methods of imaging h biliary system and urinary - Prepare patients before examinations - Performing procedures of urinary systems. - Analyzing image quality.				
• Teaching and Learning Strategies					
Strategy	Demonstration and practice Practice and assignment Quiz and exams.				
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-3	8	Indications and contraindications methods of imaging Biliary system	Methods of imaging Heptobiliary system		Quiz
		Performing CT and MRI	CT and MRI of Biliary system		Quiz

3-5	6	of the Biliary system and MRCP			
6-9	7	Learning and practical image modalities of GI	Methods of imaging urinary system		Exam
10-12	8	How to prepare patient and protocol of urinary system	CT and MRI of urinary systems		Quiz
12-15	8	Indications and contraindications modalities Reproductive system	Methods of imaging Reproductive system		Exam

• Course Evaluation

Class Attendance	5%
Class Engagement and Participation	5%
Quizzes	10%
Midterm Exam	20%
Final Exam	60%

• Learning and Teaching Resources

Watson, N. & Jones, H. chapman & Nakielny's **"Guide Radiological procedures"**, 7th edition
Elsevier Health Sciences, 2017.

<https://radiopaedia.org/home>

Course Description Form

Course Name: Radiological anatomy of head and upper limbs					
Course Code: 21004					
Semester / Year: 2nd year / 2nd semester					
Description Preparation Date: 10/10/2025					
Available Attendance Forms: classes and laboratory					
Number of Credit Hours (Total) / Number of Units (Total): 6hr/ 4 units					
Course administrator's name (mention all, if more than one name)					
Name: Hind Mouafaq Email: hind.muafaq@uoturath.edu.iq					
Course Objectives					
Course Objectives	- To recognize and describe the normal radiological anatomy of the head and upper limbs using different imaging modalities. - To identify and localize major anatomical structures in radiographs, CT, MRI, and ultrasound of the head and upper limbs. - To correlate radiological anatomy with clinical and pathological conditions relevant to the head and upper limbs. - To differentiate between normal anatomical variations and abnormal findings in diagnostic imaging. - To apply radiological anatomy knowledge in clinical practice for accurate interpretation and patient care.				
Teaching and Learning Strategies					
Strategy	- Presenting the theoretical concepts of upper limb anatomy with active student participation. - Visual aids and multimedia – using diagrams, 3D models, radiological images, and videos to illustrate anatomical structures. - Practical laboratory sessions – hands-on anatomy training, palpation exercises, and identification of anatomical landmarks. - Radiology-based learning – studying X-ray, CT, and MRI images to connect anatomical knowledge with radiological imaging.				
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	The student recognizes the normal anatomy and features of the scapula bone in radiographic images	Bones of the upper limb: shoulder girdle (scapula bone). Radiological features of the scapula bone.	Theoretical lecture + Slide presentation with anatomical and radiographic images	Short Concluding questions at the end of the lecture.

		and identifies its primary ossification centers	Ossification center.		
2	2	The student describes the normal anatomy of the clavicle and analyzes its features in various radiographic views, identifying the locations of its ossification centers.	Shoulder girdle (clavicle bone). Radiological features of the clavicle bone. Ossification center.	Practical lecture + Comparative display of various radiographic image types	Open discussion on differences between radiographic images of the clavicle and scapula.
3	2	The student distinguishes between the different anatomical parts of the humerus and compares their appearance in different radiographic views	Normal anatomy of the humerus, radiological features of the humerus. Ossification center.	Virtual lab session For Analyzing radiographic images of the humerus	Short quiz
4	2	The student analyzes the anatomical relationship between the radius and ulna and evaluates the radiographic features of the radius	Normal anatomy of the radius bone, radiological features of the radius bone. Ossification center.	Demonstrative video of radius anatomy and its articular relationship	Student assignment to research normal radiographic images of radius and identify its landmarks.
5	2	The student identifies the distinguishing features of the ulna in radiographic images and compares the ossification process between the radius and ulna	Normal anatomy of the ulna bone, radiological features of the ulna bone. - Ossification center.	Radiographic case study to apply knowledge.	Peer assessment of the research assignment from the previous week.
6	2	The student explains the anatomical complexity of the hand bones and recognizes the sequence of appearance of ossification centers in radiographic images across different age groups.	Normal anatomy of the hand, radiological features of the hand. - Ossification centers.	Use of anatomical models (if available) 3D images of the hand.	Analyze radiographic images of a child's and an adult's hand and identify differences
7	2	The student explains the complex structure of the shoulder joint and the function of each of its key components	Shoulder joint: - components, - type of joint, - articulating surfaces, - joint capsule & labrum.	Animated graphics illustrating joint movement.	Oral discussion on the importance of each joint component in its stability and movement.
8	2	The student relates the anatomical	Shoulder joint: - ligaments of	Presentation of MRI images of the	Discussion forum on common shoulder

		structure of the shoulder ligaments to their appearance in different imaging modalities (e.g., MRI).	shoulder joint, - radiological features of shoulder joint.	shoulder joint, linked to anatomy.	injuries and their radiographic features.
		Midterm Exam			
9	2	The student recognizes the bony and ligamentous components of the elbow and identifies them in routine radiographic images	Elbow joint: - components, articulating surfaces, - ligaments & radiological feature of the elbow joint.	Analysis of elbow joint X-ray images from different angles (AP, Lateral)	Short practical spot test requiring identification of landmarks on an elbow X-ray image.
10	2	The student analyzes the articular components of the wrist and hand and interprets their specific radiographic images for diagnosing common injuries.	Wrist joint: - components, articulating surfaces, ligaments & radiological features of the wrist joint.	Presentation of varied radiographic cases (normal and abnormal) of the wrist.	Short written report summarizing the key radiographic features of the wrist joint.
11	2	The student identifies the main arterial pathways of the upper limb and recognizes the principles of angiography and the appearance of these arteries in such imaging	Blood supply of upper limbs: - arteries of the upper limb, Radiological features of the upper limb arteries.	Anatomical images + Angiogram images.	Case problems related to vascular injuries and their radiological diagnosis.
12	2	The student compares the venous and arterial pathways in the upper limb and describes the features of veins in Computed Tomography (CT) and Magnetic Resonance Imaging (MRI).	• Veins of the upper limb, • Radiological features of the upper limb veins.	Display of CT imaging slices illustrating contrast between arteries and veins.	Oral discussion on the importance of venous imaging in diagnosing thromboses.
13	2	The student recognizes the main bones of the cranium (skull) and identifies normal anatomical landmarks in radiographic (X-ray) and computed tomography (CT) images.	The bones of the skulls, radiological features of the skull.	Use of 3D skull models + Analysis of head CT images.	Short quiz (quiz) on identifying bones and major landmarks on a skull X-ray image
14	2	The student distinguishes between cranial bones and facial bones and analyzes the features	The facial bones, radiological features of the facial bones.	Display of panoramic dental X-rays and facial CT images.	Group project: Comparative analysis of a plain skull X-ray and a 3D CT image of the facial bones.

		of facial bones (e.g., mandible, zygomatic) in radiographic and CT images.			
15	2	The student describes the anatomical structure of the paranasal sinuses and interprets radiographic images (e.g., Waters view) and CT scans for evaluating common conditions such as inflammations	Normal anatomy of nasal cavity & paranasal sinuses. - Radiology of the nasal cavity and paranasal sinuses.	Display of specialized sinus X-rays (e.g., Waters view) and coronal CT sections.	Discussion of radiographic case studies(Case Studies) of sinus diseases and their imaging appearance.
		Final Semester Examination			
• Section Course Evaluation					
- Regular class attendance. Active participation in discussions and practical sessions. - Assignments / Quizzes – 10–15% - Short quizzes to assess continuous learning and homework and imaging interpretation exercises. - Midterm Examination – 20–25% - Covers theoretical and practical components studied in the first half of the course. - Practical / OSPE (Objective Structured Practical Exam) – 20–25% - Identification of radiological anatomy on X-ray, CT, MRI, and ultrasound images. - Application of anatomical knowledge to clinical cases. - Final Examination (Comprehensive) – 30–35% - Combination of multiple-choice questions, short answer questions, and image-based questions. - Assesses both theoretical knowledge and applied interpretation skills.					
• Learning and Teaching Resources					
Required textbooks (curricular books, if any)			Lectures		
Main references (sources)			Ryan, S., McNicholas, M., & Eustace, S. (2011). Anatomy for diagnosis and imaging.		
Recommended books and references (scientific journals, reports...)			4. Standring, S. Gray’s Anatomy: The Anatomical Basis of Clinical Practice. Latest Edition. Elsevier. 5. Moore, K. L., Dalley, A. F., & Agur, A. M. R. Clinically Oriented Anatomy. Wolters Kluwer. 6. Netter, F. H. Atlas of Human Anatomy. Elsevier		
Electronic References, Websites			Radiopaedia: https://radiopaedia.org RSNA Radiology Education: https://www.rsna.org/education Anatomy Atlases: http://www.anatomyatlases.org IMAIOS e-Anatomy (subscription-based): https://www.imaios.com PubMed Database: https://pubmed.ncbi.nlm.nih.gov		

Course Description Form

• Course Name:	
physics of computed tomography	
• Course Code: 21005	
• Semester / Year:	
Second/Second	
• Description Preparation Date:	
14/9/2025	
• Available Attendance Forms:	
Invidiously inside the classroom	
• Number of Credit Hours (Total) / Number of Units (Total)	
2theory+ 3 practical/3units	
• Course administrator's name (mention all, if more than one name)	
Name: Gufran Sattar Jaber Email: gufransattar@kus.edu.iq	
Name: Rusul Hameed Email: rusul.h444@gmail.com	
• Course Objectives	
Course Objectives	- Describe and illustrate the basic physics of the ray projection. - Describe the scan-and step slice acquisition method and the general characteristics of the data sets it produces. - Describe the helical/spiral volume acquisition method and the general characteristics of the data set it produces. - Describe and illustrate the general concept of the back-project method of image reconstruction. - Explain the reconstruction methods.
• Teaching and Learning Strategies	
Strategy	1.The student gains experience working in the field of radiography. 2. The student gains scientific experience in the field of scientific research. 3. The student acquires the ability to understand and deal with modern and advanced technologies and contribute to their development. 4. The student gains experience in the benefits of CT imaging and the methods used to protect against harmful radiation risks.

● Course Structure					
Week	Hou rs	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Introduction and overview	Describe and illustrate the general range of CT numbers for tissue and materials in a human body.	In presence	Daily exams and midterm exam final of course exam
2	2	Basic Physics	Ray projection	In presence	Daily exams and midterm exam
3	2	CT numbers	Accuracy & uniformity	In presence	final of course exam
4	2	Data Acquisition	basic concepts for data acquisition	In presence	Daily exams and midterm exam
5	2	Data Acquisition Geometries:	first generation Scanners	In presence	final of course exam
6	2	-Spiral-Helical Geometry	Dual source CT Scanner	In presence	Daily exams and midterm exam
7	2	Multislice Computed Tomography (MSCT)	Multislice Computed Tomography (MSCT)	In presence	final of course exam
8	2	Data Processing:	Image reconstruction Views	In presence	Daily exams and midterm exam
9	2	Reconstruction methods	Back projection reconstruction	In presence	final of course exam
10	2	Filtered Backprojection	Filtered Backprojection	In presence	Daily exams and midterm exam
11	2	Iterative reconstruction	reconstruction	In presence	final of course exam
12	2	Measurement & samples	Measurement & samples	In presence	Daily exams and midterm exam
13	2	Image format:	size of, - Image matrix - Pixel -Voxel	In presence	final of course exam
14	2	Field Of View (FOV) in CT	Display field of view (DFOV) scan field of view (SFOV)	In presence	Daily exams and midterm exam
15	2	CT numbers	Energy Dependence	In presence	final of course exam

- 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

- Learning and Teaching Resources

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

Course Description Form

• Course Name: Arabic Language					
• Course Code: 21006					
• Semester / Year:					
Second Stage / Second Semester					
• Description Preparation Date:					
22/10/2025					
• Available Attendance Forms: In-Person					
• Number of Credit Hours (Total) / Number of Units (Total) Hours: 1, Units: 1					
• Course administrator's name (mention all, if more than one name)					
Name: Huda Ali Hashim Email: huda.ali@uoturath.edu.iq					
• Course Objectives					
Course Objectives		- Introducing students to the Arabic language and fostering understanding of its methods and linguistic structures. - Utilizing the Arabic language curriculum to refine speech, understand its content, and master its grammatical and literary composition.			
• Teaching and Learning Strategies					
Strategy		The educational material includes lectures, seminars, data preparation, and key reports.			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	Theoretical (hr)	Required Learning Outcomes	- Verses from Surah Yusuf (1-7) - Prophetic Hadith: ("Do not envy one another, do not inflate prices..")	Theoretical	General questions, discussion, and daily quizzes
Week 2	Theoretical (hr)	Required Learning Outcomes	Verses from Al-Mutanabbi's Meemiyyah poem	Theoretical	General questions and discussion
Week 3	Theoretical (hr)	Required Learning	Verses from Ibn al-Farids Jeemiyyah	Theoretical	General questions

		Outcomes	Poem		and discussion
Week 4	Theoretical (hr)	Required Learning Outcomes	verses from: a) Mustafa Jamal al-Din("Baghdad..." b) Muhammad Mahdi Jawahiri(Peace upon the palm trees)	Theoretical	Immediate q and Assessment
Week 5	Theoretical (hr)	Required Learning Outcomes	Noun Morphology: a) Masculine and Feminine nouns b) Bare and Augmented nouns c) Singular, Dual, and Plural nouns	Theoretical	Exam
Week 6	Theoretical (hr)	Required Learning Outcomes	Numbers and their grammatical rules	Theoretical	General questions and discussion
Week 7	Theoretical (hr)	Required Learning Outcomes	Appositives /Subordinates (At Tawabi)	Theoretical	General questions, immediate qu and practical application
Week 8	Theoretical (hr)	Required Learning Outcomes	The methodology of the traditional dictionary schools: Al-Maqay and Al-Sihah, with practical training on extracting word meanings	Theoretical	Group assignments
Week 9	Theoretical (hr)	Required Learning Outcomes	The Science of Rhetorical Embellishment (Ilm al-Badi) and its impact on eloquence	Theoretical	General questions and discussion
Week 1	Theoretical (hr)	Required Learning Outcomes	Semantic Embellishments (Tawriyah, Tibaq, Muqabala, Husn al-Taleel, Affirmation praise resembling dispraise)	Theoretical	Exam
Week 1	Theoretical (hr)	Required Learning Outcomes	Verbal Embellishments (Jinas and Saja)	Theoretical	General questions, discussion, and student seminars
Week 1	Theoretical (hr)	Required Learning Outcomes	Quotation (Iqtibas) and Incorporation (Tadmeen)	Theoretical	General questions, discussion, and student seminars
Week 1	Theoretical (hr)	Required Learning Outcomes	Common Linguistic Errors	Theoretical	General questions and immediate quiz
Week 1	Theoretical (hr)	Required Learning	Review and Applied Practice Selected Topics	Theoretical	General questions

		Outcomes			and immedi quiz
Week 1	Theoretical hr)	Required Learning Outcomes	Final Review /Assessments	Theoretical	Exam question
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					
Learning and Teaching Resources					
Required textbooks (curricular books if any)			None		
Main references (sources)			- The Holy Quran - Sharh Ibn Aqil - Diwans of Poets		
Recommended books and references (scientific journals, reports...)			Jami' al-Durus al-'Arabiyyah – Sheikh Mustafa al-Ghalayini. Al-Balaghah al-Wadihah – Ali al-Jarim & Mustafa Amin. Mu'jam Maqayis al-Lughah – Ibn Faris. Al-Sihah (Taj al-Lughah wa Sihah al-'Arabiyyah) – Al-Jawhari. A Dictionary of Common Mistakes – Muhammad al-Adnani / Qul wa La Taqul (Say and Do Not Say) – Dr. Mustafa Jawad.		
Electronic References, Websites			Al-Shamela Digital Library (shamela.ws). Academy of the Arabic Language in Cairo Website. Al-Faseeh Network for Arabic Language Sciences.		

Course Description Form

• Course Name: Ultrasound Equipment Techniques	
• Course Code: 3001	
• Semester / Year: First Semester / 2025–2026	
• Description Preparation Date: 18/10/2025	
• Available Attendance Forms: Classroom and Laboratory	
• Number of Credit Hours (Total) / Number of Units (Total): 6 hrs / 4 units	
• Course administrator's name (mention all, if more than one name)	
Name: Ali Hatif Hadi Email: alihatif159@gmail.com	
• Course Objectives	
Course Objectives	- To introduce students to the fundamental physical principles of ultrasound waves, including generation, propagation, reflection, and refraction in biological tissues. - To distinguish between different types of ultrasound transducers and understand the relationship between crystal thickness, frequency, and spatial resolution. - To explain the basic components of the ultrasound machine (transmitter, receiver, processor, display monitor, and control unit) and the function of each part. - To develop students' practical skills in operating ultrasound equipment, adjusting settings (Gain, Depth, Frequency), and optimizing image quality for diagnostic purposes.
• Teaching and Learning Strategies	
Strategy	- Interactive Theoretical Lectures: Presenting physical and technical concepts related to the generation and reception of ultrasound waves while encouraging student participation and questioning. - Demonstrations: Using real or virtual ultrasound systems to explain internal components, transducer operation, and various imaging modes. - Image-Based Learning: Analyzing real diagnostic ultrasound images to illustrate the effects of equipment settings, wave characteristics, and physical phenomena. - Group Projects and Class Discussions: Encouraging students to prepare and present findings.

		short presentations on advanced applications such as Doppler or 3D/ Ultrasound and discuss them in class.			
● Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Identify the concept and medical applications of ultrasound waves	Introduction to Ultrasound Techniques	Lecture + Class Discussion	Short Questions
2	2	Explain the wave nature of sound and distinguish between audible and ultrasonic waves	Physical Properties of Ultrasound Waves	Lecture + Video Presentation	Oral Quiz
3	2	Describe the piezoelectric effect and its role in wave generation and reception	Transducer Operating Principle	Lecture + Demonstration	Homework
4	2	Recognize the relationship between crystal thickness, wave frequency, and image resolution	Piezoelectric Crystal Characteristics	Lecture + Diagram Illustration	Short Quiz
5	2	Classify transducer types (Linear, Curved, Sector) and identify their clinical uses	Transducer Types	Image and Video Demonstrations + Discussion	Group Evaluation
6	2	Explain the electronic system of the ultrasound machine	Components of the Ultrasound System	Lecture + Practical Display	Practical Test

7	2	Describe the signal flow from generation to display	Signal Processing Chain	Lecture + Diagram Presentation	Analytical Assignment
8	2	Apply device setting principles to enhance image quality	Equipment Settings (Gain, Depth, Focus)	Laboratory Training	Performance Observation
9	2	Explain the different ultrasound imaging modes	Imaging Modes (A-mode, B-mode, M-mode)	Lecture + Comparative Demonstration	Short Test
10	2	Understand Doppler principles and its diagnostic applications	Doppler Ultrasound	Lecture + Video Demonstration	Report Assignment
11	2	Analyze physical factors affecting image quality	Image Quality and Influencing Factors	Lecture + Case Study	Group Discussion
12	2	Interpret causes of artifacts and propose correction methods	Artifacts in Ultrasound Imaging	Presentation of Real Cases	Short Quiz
13	2	Identify technological advancements in ultrasound systems	Modern Ultrasound Systems (3D, 4D, Portable)	Lecture + Video Presentation	Research Assignment
14	2	Discuss safety standards in the use of ultrasound	Ultrasound Safety	Lecture + Class Discussion	Oral Quiz
15	2	Integrate theoretical and practical concepts in a comprehensive clinical application	Final Review and Practical Exam	Practical Training + Discussion	Final Exam

- 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

Assessment Type	Percentage	Description
Attendance and Participation	10%	Evaluating student interaction during lectures and discussions.
Assignments and Short Reports	10%	Practical assignments or reports on topics such as transducer types or artifacts.
Short Quizzes	10%	Regular quizzes to assess ongoing comprehension.
Midterm Exam	25%	Covers theoretical and applied concepts from the first half of the course.
Practical / Laboratory Evaluation	20%	Includes equipment operation, image analysis, and parameter adjustment.
Final Exam	25%	Comprehensive assessment covering both theoretical and practical aspects.
Total: 100%		

• Learning and Teaching Resources

Required textbooks (curricular books any)	
Main references (sources)	1. M. Radhi Al-Qurayshi and H. Qasim Al-Mosawi, Radiation Physics and Its Applications in Diagnostic Radiological Techniques, Middle Technical University (MTU), Iraq, 2015. 2. Hoskins, P. R., Martin, K., & Thrush, A. (Eds.). Diagnostic Ultrasound: Physics and Equipment. CRC Press, 2019.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

• Course Name: Radiographic techniques for head and spinal cord					
• Course Code: 3002					
• Semester / Year: 3 rd year/ 1 st Semester					
• Description Preparation Date: 18/10/2025					
• Available Attendance Forms: classes and laboratory					
• Number of Credit Hours (Total) / Number of Units (Total): 6hr/4					
• Course administrator's name (mention all, if more than one name)					
Name: Raad Owaid Jasim Email: raadowaid768@gmail.com					
• Course Objectives					
Course Objectives		1. To teach the students how to direct the patient in particular way to photograph to diseases in the best way for head and spine			
• Teaching and Learning Strategies					
Strategy		1. To teach the students how to direct the patient in particular way to photograph to see diseases in best way for head and spine			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	6+4	The student recognizes the Lines & planes and landmark with radiography terminology	Lines & planes of projection of the skull	Theoretical lecture and slide presentation	Discussion and MCQ at end of lecture
2	6+4	The student Recognizes the position of patient and IR with essentials imaging characteristic and common fault	Skull AP , Lateral , townes and basal view	Theoretical lecture and slide presentation	Discussion and MCQ at end of lecture
3	6+4	The student Recognizes the position of patient and IR with essentials imaging characteristic and common fault	Sella turcica & Optic foramen and jugular foramina	Theoretical lecture and slide presentation	Discussion and MCQ at end of lecture

4	6+4	The student Recognizes the position of patient and IR with essentials ima characteristic and common fault	Petrous & temporal bones	Theoretical lecture and slide presentat	Discussion and MCQ at end of lecture
5	6+4	The student Recognizes the position of patient and IR with essentials ima characteristic and common fault	Mastoid positions	Theoretical lecture and slide presentat	Discussion and MCQ at end of lecture
6	6+4	The student Recognizes the position of patient and IR with essentials ima characteristic and common fault	Face & sinuses , and nose PA and lateral projection , shown structure	Theoretical lecture and slide presentat	Discussion and MCQ at end of lecture
7	6+4	The student Recognizes the position of patient and IR with essentials ima characteristic and common fault	Mandible PA and obl projection, shown structure, finding	Theoretical lecture and slide presentat	Discussion and MCQ at end of lecture
8	6+4	The student Recognizes the position of patient and IR with essentials ima characteristic and common fault	TMJ view, maxillary bone	Theoretical lecture and slide presentat	Discussion and MCQ at end of lecture
9	6+4	The student Recognizes the position of patient and IR with essentials ima characteristic and common fault	Paranasal sinuses, waters view & lateral view, shown structure main finding	Theoretical lecture and slide presentat	Discussion and MCQ at end of lecture
10	6+4	The student Recognizes the position of patient and IR with essentials ima characteristic and common fault	Vertebral level & Cervical spine ,AP , lateral , AP for C1-C3 ,	Theoretical lecture and slide presentat	Discussion and MCQ at end of lecture
11	6+4	The student Recognizes the position of patient and IR with essentials ima characteristic and common fault	cervical spine for C3- C7, shown structure	Theoretical lecture and slide presentat	Discussion and MCQ at end of lecture
12	6+4	The student Recognizes the position of patient and IR with essentials ima characteristic and common fault	Cervico-thoracic region position	Theoretical lecture and slide presentat	Discussion and MCQ at end of lecture

13	6+4	The student Recognizes the position of patient and IR with essentials im characteristic and common fault	Thoracic spine , AP , Lateral, lateral decubitus , shown structure	Theoretical lecture and slide presentat	Discussion and MCQ at end of lecture
14	6+4	The student Recognizes the position of patient and IR with essentials im characteristic and common fault	Lumber spine , AP , Lateral ,oblique projection, shown structure	Theoretical lecture and slide presentat	Discussion and MCQ at end of lecture
15	6+4	The student Recognizes the position of patient and IR with essentials im characteristic and common fault	Lumbo-sacral junction& Sacrum and Coccyx projections	Theoretical lecture and slide presentat	Discussion and MCQ at end of lecture

● Course Evaluation

- Regular class attendance. Active participation in discussions and practical sessions.
- Assignments / Quizzes – 10–15%
- Short quizzes to assess continuous learning and homework and imaging interpretation exercises.
- Midterm Examination – 20–25%
- Covers theoretical and practical components studied in the first half of the course.
- Practical / OSPE (Objective Structured Practical Exam) – 20–25%
- Identification of radiological techniques on X-ray, images.
- Application of radiological techniques to clinical cases.
- Final Examination (Comprehensive) – 30–35%
- Combination of multiple-choice questions, short answer questions, and image-based questions.

Assesses both theoretical knowledge and applied interpretation skills.

● Learning and Teaching Resources

Required textbooks (curricular books, if any)	lectures
Main references (sources)	1. Whitley, A. S., Jefferson, G., Holmes, K., Sloane, Anderson, C., & Hoadley, G. (2015). Clark's Positioning Radiography 13E. crc Press. 2. Bontrager, K. L., & Lampignano, J. (2013). Bontrag handbook of radiographic positioning and techniques. Else Health Sciences.
Recommended books and references (scientific journals, reports...)	1. Bontrager, K. L., & Lampignano, J. (2013). Bontrag handbook of radiographic positioning and techniques. Else Health Sciences.
Electronic References, Websites	Radiopaedia: https://radiopaedia.org

Course Description Form

Course Name: Special radiological procedures of the head, breast and respiratory system					
Course Code: 3003					
Semester / Year: First semester 2025/2026					
Description Preparation Date: 18/9/2025					
Available Attendance Forms: Classroom and Laboratory attendance					
Number of Credit Hours (Total) / Number of Units (Total) 6 hr/4 credits					
Course administrator's name (mention all, if more than one name)					
Name: Dr. Shahad Abdul Wahhab Email: shahad.abdulwahab@uoturath.edu.iq					
Course Objectives					
Course Objectives	- Understand fundamental principles of major brain imaging techniques, including CT, MRI, PET, fMRI, EEG, MEG, and ultrasound. - Explain the physics and biological basis underlying structural and functional imaging methods. - Compare and contrast imaging modalities in terms of resolution, invasiveness, safety, cost, and clinical/research applications. - Interpret basic imaging outputs to identify normal and pathological brain structures and functions. - Evaluate the advantages and limitations of each imaging technique for clinical diagnosis, neuroscience research, and cognitive studies. - Apply knowledge of imaging methods to case studies involving neurological and psychiatric disorders. - Discuss ethical, safety, and regulatory considerations in the use of brain imaging technologies.				
Teaching and Learning Strategies					
Strategy	Pdf and word sheets on smart screens with intellectual discussions Along with lab experimental demonstration				
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Introduction to Method imaging the brain	Method of imaging the brain	Paper sheet	Brian storm questioning
2	2	Behavior	Method of imaging the brain	Paper sheet	Brian storm questioning
3	2	Explain the principles and A critical reasoning	Cerebral angiography	Paper sheet	Brian storm questioning
4	2	Describe patient preparation safety protocols	Methodes of imaging the spine	Paper sheet	Brian storm questioning
5	2	Demonstrate knowledge of procedural step	Methodes of imaging the spine	Paper sheet	Brian storm questioning

6	2	Explain the principles and Apply critical reasoning	Cervical & lumbar myelography	Paper sheet	Brian storm questioning
7	2	Introduction and Explain the principles	Methodes of imaging salivary thyroid glands	Paper sheet	Brian storm questioning
8	2	Demonstrate knowledge of the procedural step	Methodes of imaging salivary thyroid glands	Paper sheet	Brian storm questioning
9	2	Introduction and Explain the principles	Methods of imaging breast	Paper sheet	Brian storm questioning
10	2	Demonstrate knowledge of the procedural step	Methods of imaging breast	Paper sheet	Brian storm questioning
11	2	Differentiate between normal anatomical variants pathological findings	Respiratory system	Paper sheet	Brian storm questioning
12	2	Demonstrate knowledge of the procedural step	Respiratory system	Paper sheet	Brian storm questioning

• **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

• **Learning and Teaching Resources**

Required textbooks (curricular books, if any)	Edited pdf, word, and ppt from original references
Main references (sources)	1. Nick_Watson,_Hefin_Jones_Chapman_&_Nakielny's_Guide_to_Radiological.
Recommended books and references (scientific journals, reports...)	
Electronic References Websites	https://books.google.iq/books/about/Chapman_Nakielny's_Guide_to_Radiological.html?id=rRDREAAAQBAJ&red_esc=y

Course Description Form

• Course Name:					
Radiological anatomy of brain and spinal column					
• Course Code:3004					
• Semester / Year:					
Semester					
• Description Preparation Date:					
• Available Attendance Forms:					
Attendance					
• Number of Credit Hours (Total) / Number of Units (Total)					
4 Credit Hours 3 units					
• Course administrator's name (mention all, if more than one name)					
Name: Sahar Mahdi Email: sahar.mahdi@uoturath.edu.iq					
Name: Hala Hussen Email: hala.hussen@uoturath.edu.iq					
• Course Objectives					
Course Objectives		❖ The student will be able to know The general anatomy and radiological features of cerebrum, cerebellum, brainstem, basal ganglia, ventricular system and spinal cord. The general anatomy and radiological features of the vertebral column. The arterial blood supply of brain and vertebral column as well as venous drainage.			
1 Teaching and Learning Strategies					
Strategy		Lectures and discussions Brainstorming strategy Community work strategy Strategy for dialogue and exchange of opinions In addition to the quizzes and practical application			
2 Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	Theoretical 2 Practical 4		Normal anatomy of brain: - Cerebrum, cerebral cortex and lobes of brain. - Radiological	Theoretical and Practical	

			features of the cerebrum.		
2	Theoretical 2 Practical 4		Normal anatomy of corpus callosum, - Radiological features of corpus callosum.	Theoretical and Practical	Home work Group sessions, in ad b seminars on the top discussion Between students a practical applicati
3	Theoretical 2 Practical 4		Normal anatomy of basal ganglia, - Radiological features of the basal ganglia.	Theoretical and Practical	Home work Group sessions, in ad b seminars on the top discussion Between students a practical applicati
4	Theoretical 2 Practical 4		Normal anatomy of thalamus, hypothalamus, pituitary and pineal glands, - Radiological features of the thalamus, hypothalamus, pituitary and pineal gland.	Theoretical and Practical	Home work Group sessions, in ad b seminars on the top discussion Between students a practical applicati
5	Theoretical 2 Practical 4		Normal anatomy of brainstem, - Radiological features of the brainstem.	Theoretical and Practical	Home work Group sessions, in ad b seminars on the top discussion Between students a practical applicati
6	Theoretical 2 Practical 4		Normal anatomy of cerebellum, - Radiological features of the cerebellum.	Theoretical and Practical	Home work Group sessions, in ad b seminars on the top discussion Between students a practical applicati
7	Theoretical 2 Practical 4		Normal anatomy of ventricles, cisterns, CSF production and	Theoretical and Practical	Home work Group sessions, in ad b seminars on the top discussion

			flow ventricles, - Radiological features of the ventricular system.		Between students and practical applications
8	Theoretical 2 Practical 4		Blood vessels of the brain.		Home work Group sessions, in addition to seminars on the topic discussion Between students and practical applications
9	Theoretical 2 Practical 4		Normal anatomy of the vertebral column: - Cervical vertebrae, - Thoracic vertebrae, - Lumbar vertebrae, - Sacrum and coccyx.	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic discussion Between students and practical applications
10	Theoretical 2 Practical 4		Radiological features of vertebral column.		Home work Group sessions, in addition to seminars on the topic discussion Between students and practical applications
11	Theoretical 2 Practical 4		Normal anatomy of joints and ligaments of the vertebral column, - Radiological features of the joints and ligaments of the vertebral column, myelography.	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic discussion Between students and practical applications
12	Theoretical 2 Practical 4		The intervertebral discs, radiological features of the intervertebral discs.	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic discussion Between students and practical applications

13	Theoretical 2 Practical 4		Normal anatomy of spinal cord, cross section of the spinal cord, spinal meninges.	Theoretical and Practical	Home work Group sessions, in addition seminars on the topic discussion Between students and practical applications
14	Theoretical 2 Practical 4		Radiological features of the spinal cord.	Theoretical and Practical	Home work Group sessions, in addition seminars on the topic discussion Between students and practical applications
15	Theoretical 2 Practical 4		Blood vessels of the vertebral column and spinal cord.	Theoretical and Practical	Exam

Course Description Form

• Course Name:				
General pathology				
• Course Code: 3005				
Unavailable				
• Semester / Year:				
2025				
• Description Preparation Date:				
28.10.2025				
• Available Attendance Forms:				
Lectures , scientific laboratory, smart board.emerged scientificla educational au dian				
• Number of Credit Hours (Total) / Number of Units (Total)				
4 hours , 3 units				
• Course administrator's name (mention all, if more than one name)				
Name: dr,maitham katran Email: maitham134@gmail.com				
• Course Objectives				
Course Objectives	• • – Use basic scientific knowledge to understand practical app cation • • To obtain scientific analyses and studies to develop critical thinking • • . To train students in laboratory or applied work skills in a structur • • To enable students to analyze scientific data and draw conclusions • • To promote the spirit of scientific research, academic discipline, and			
• Teaching and Learning Strategies				
Strategy	The program relies on various types of planning to develop education to following: Short-term planning: Work to update the vocabulary and cu advances in science and technology, in coordination with the corre addition of new vocabulary not exceeding 20% of the content of the corresponding curricula. Medium-term plan corresponding departments in other colleges and universities to exo methods, host professors, and exchange scientific visits to enhance acad Long-term planning: Develop an integrated educational environme scientific research, and collaborate with international universities and s assessment methods in line with international standards.			
• Course Structure				
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method

30	150	pathology	pathology	Theory and practical
Course Evaluation				
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation etc The course is evaluated according to a precise system that ensures a fair and balanced assessment follows: Semester grade (40), including: Theoretical - 25% through quizzes, assignments, and class participation. Final grade (60%), including: Practical - 15% through continuous assessment of laboratory or practical performance. Theoretical - 35% through a final written exam to measure general understanding. Practical - 25% through applied proficiency. This system is applied to both courses (semesters) to ensure consistency in assessment between theoretical and practical components.				
Learning and Teaching Resources				
Required textbooks (curricular books, if any)			Hutchinson and Cotran for surgical histology and pathology	
Main references (sources)			For all sources related	
Recommended books and references (scientific journals, reports...)			Robbins for general pathology	
Electronic References, Websites			All references connected to general pathology	

Course Description Form

• Course Name: **Physics of Ultrasound Imaging**

• Course Code: 3006

• Semester / Year: **Second semester 2025/2026**

• Description Preparation Date: **14/10/2025**

• Available Attendance Forms: **Classroom and Laboratory attendance**

• Number of Credit Hours (Total) / Number of Units (Total) **4 hr/2 credits**

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

Name: **Dr. Aysar S. Keiteb**

Email: draysaralnidawi@mtu.edu.iq

Name: **Anwar Khalid**

Email: anwar.khalid@uoturath.edu.iq

• Course Objectives

Course Objectives

1. **Define ultrasound** and **describe** the fundamental properties of sound waves, including frequency, wavelength, velocity, and how they relate to one another.
2. **Explain** how ultrasound waves interact with tissues through the key processes of reflection, attenuation, and acoustic impedance.
3. **Describe** the function of an ultrasound transducer, including the piezoelectric effect for generating and receiving sound waves.
4. **State** the pulse-echo principle and how it is used to determine the location of structures and create an image.
5. **Identify** common image artifacts and basic Doppler principles used to assess blood flow.

• Teaching and Learning Strategies

Strategy

Pdf and word sheets on smart screens with intellectual discussions
Along with lab experimental demonstration

• Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1	Introduction to Sound Waves	Definition	Paper sheet	Brian storm questioning
2	1	Interaction with Matter (Reflection/Refraction)	Wave properties	Paper sheet	Brian storm questioning
3	1	Attenuation and Its Implications	Definitions	Paper sheet	Brian storm questioning

4	1	The Transducer	Types of transducers	Paper sheet	Brian storm questioning
5	1	Pulsed Waves & Beam Shape	Wave patterns	Paper sheet	Brian storm questioning
6	1	Mid-Term Assessment / Review	Paper passed exam	Paper sheet	Brian storm questioning
7	1	Forming the Image (Pulse-Echo, Instrumentation)	Image forms and processing	Paper sheet	Brian storm questioning
8	1	Understanding Image Artifacts	Types of artifacts	Paper sheet	Brian storm questioning
9	1	Doppler Physics (The Effect & Equation)	Principle and definition	Paper sheet	Brian storm questioning
10	1	Doppler Modalities (CW, PW, Color, Alias)	Types of modalities	Paper sheet	Brian storm questioning
11	1	Safety (Bioeffects, TI, MI, ALARA)	Safety measures	Paper sheet	Brian storm questioning
12	1	Practical Applications and Case Studies	Types of ultrasounds	Paper sheet	Brian storm questioning
13	1	Quality Assurance & Advanced Topics	Quality and ethics	Paper sheet	Brian storm questioning
14	1	Comprehensive Review	Full revision of the modules	Paper sheet	Brian storm questioning
15	1	Final Examination	Paper based full semester exam	Paper sheet	Brian storm questioning

- **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

- **Learning and Teaching Resources**

Required textbooks (curricular books, if any)	Edited pdf, word, and ppt from original references
Main references (sources)	1.Magnetic Resonance Imaging: Physical Principles and Sequence Design. 2.MRI: The Basics 3.Principles of Magnetic Resonance Imaging: A Signal Processing Perspective.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Khan Academy - Physics Link: https://www.khanacademy.org/science/physics Physics Classroom Link: https://www.physicsclassroom.com/ Hyper Physics Link: http://hyperphysics.phy-astr.gsu.edu/hphy/hbase/hph.html The Feynman Lectures on Physics (Caltech)Li https://www.feynmanlectures.caltech.edu/

Course Description Form

• Course Name: Biological of Radiation Hazard	
• Course Code: 3007	
• Semester / Year: 3 rd year / 1 st semester	
• Description Preparation Date: 15/9/2025	
• Available Attendance Forms: classes and laboratory	
• Number of Credit Hours (Total) / Number of Units (Total): 5hr/ 3 units	
• Course administrator's name (mention all, if more than one name)	
Name: Huda Ali Hashim Email: huda.ali@uoturath.edu.iq	
• Course Objectives	
	• Describe mechanisms of DNA and chromosomal damage caused by ionizing radiation. • Differentiate between somatic and genetic effects of radiation exposure. • Identify radiation syndromes resulting from high-dose exposure. • Understand the role of dose, dose rate, and radiation quality in biological response. • Analyze the relationship between radiation exposure and cancer induction. • Explain the effects of prenatal and developmental radiation exposure. • Discuss epidemiological evidence from radiation accidents and medical exposures. • Relate biological effects to radiation protection standards and occupational dose limits.
• Teaching and Learning Strategies	
Strategy	Theoretical literatures as a power point (ppt) on smart board And experiments at a laboratory for the practical part

● Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Law of Bergonie and Tribondeau	Relative Biological Effectiveness (RBE)	ppt on smart board	Q s and discussion
2 & 3	3	Physical factors that affect radiosensitivity	Linear energy transfer (LET) Protraction and Fractionation		
4 & 5	3	Radiation Measurement Units & Internation	Biological factors that affect radiosensitivity	ppt on smart board	Q s and discussion
6	2	Oxygen Effect Age Recovery Chemical Agents Hormesis	Radiation Dose Response Relationships Dose limits	ppt on smart board	Q s and discussion
7	3	Linear linear-Non Constructing a	The Biological Effects of Radiation Patient Radiation Dose Descriptions	ppt on smart board	Q s and discussion
8&9	3	Response -Dose relationship		ppt on smart Board	Q s and discussion
10	3	Stage 1 : The Atomic Level Stage 2 : Chemical Interactions Stage 3 : Cellular and Whole Animal Changes	Deterministic Effects of ionizing radiation Effects of radiation on Central Nervous System Scintillation detectors	ppt on smart board	Parodic motion and S.H.M
11&12	3	Acute Radiation Lethality Local Tissue Damage Occupational Medical Public	Effects of Radiation on the Embryo and Fetus Effects of radiation on Central Nervous System	ppt on smart board	Q s and discussion

13&14	3	Nature of tissue irradiated Irradiated area ☐	Hereditary effects of ionizing radiatio		
15	2	Rate of dose ☐ Age of the patient ☐ Lethal effects Malformations (Teratogenic effects) Growth ☐ disturbances			
Final exam					

• Stion 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

• Learning and Teaching Resources

Required textbooks (curricular books, if a	
Main references (sources)	M. Radhi Al-Qurayshi and H. Qasim. AL-Mosawi " <i>Radiation Phy and its applications in diagnostic radiological techniques</i> ", Mi Technical University (MTU), Iraq, (2015)
Recommended books and references (scientific journals, reports...)	W. R. Hendee and E. R. Ritenour " <i>Medical Imaging Physics</i> ", Edition, Wiley-Liss, Inc., (2002
Electronic References, Websites	All the web site that discussed this subjects

Course Description Form

• Course Name: Equipment Techniques of Magnetic Resonance Imaging					
• Course Code: 3101					
• Semester / Year: First Semester / 2025–2026					
• Description Preparation Date:					
• Available Attendance Forms:					
• Number of Credit Hours (Total) / Number of Units (Total): 6 hrs / 4 units					
• Course administrator's name (mention all, if more than one name)					
Name: khadun saadun Email: khadunsaadun9090@gmail.com					
• Course Objectives					
Course Objectives		- Introduce students to the basic components of the MRI system and magnet types. - Understand the operation of gradient and radiofrequency (RF) systems. - Explain data acquisition and image reconstruction processes. - Identify factors affecting image quality and methods for artifact reduction. - Develop practical skills in MRI equipment operation and image interpretation.			
• Teaching and Learning Strategies					
Strategy		- Interactive theoretical lectures - Equipment demonstrations - Image-based learning using MRI cases - Short projects and class discussions			
• Course Structure					
Week	Hours	Expected Learning	Unit / Topic	Learning Method	Evaluation Method

		Outcomes			
1	2	Identify the main MRI system components and their functions.	Introduction to MRI System	Lecture + Class Discussion	Short Questions
2	2	Differentiate between types of magnets and their clinical use.	Magnet Types	Lecture + Image Presentation	Oral Quiz
3	2	Explain the role of gradient coils in spatial localization.	Gradient Coils	Lecture + Demonstration	Homework
4	2	Describe the RF system function in signal transmission and reception.	RF System	Lecture + Video Presentation	Short Quiz
5	2	Explain the concept of shimming and magnetic field homogeneity.	Shimming and Field Homogeneity	Lecture + Demonstration	Report Assignment
6	2	Identify computer system components and their roles in MRI.	MRI Computer System	Lecture + Practical Display	Practical Test
7	2	Describe supporting electronics and their functions in the MRI system.	MRI Supporting Electronics	Lecture + Class Discussion	Group Evaluation
8	2	Explain spatial, frequency, and phase encoding processes.	Data Acquisition	Lecture + Diagram Illustration	Analytical Assignment
9	2	Apply slice selection and thickness principles in imaging.	Slice Selection	Lecture + Laboratory Training	Performance Observation
10	2	Interpret the image reconstruction process using K-space and FT.	Image Reconstruction	Lecture + Diagram Presentation	Short Test
11	2	Analyze factors affecting image quality and SNR.	Image Quality	Lecture + Case Study	Report Assignment
12	2	Identify and explain types of MRI artifacts and their causes.	Artifacts	Presentation of Real Cases	Short Quiz
13	2	Explain imaging sequences such as Spin Echo and Gradient Echo.	Imaging Sequences	Lecture + Video Presentation	Research Assignment
14	2	Describe fast imaging and	Fast Imaging & DWI	Lecture + Discussion	Oral Quiz

		diffusion-weighted imaging techniques.			
15	2	Integrate theoretical and practical knowledge in clinical applications.	Final Review and Practical Exam	Practical Training + Discussion	Final Exam

• 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

Assessment Type	Percentage
Attendance & Participation	10%
Assignments & Reports	10%
Short Quizzes	10%
Midterm Exam	25%
Practical Evaluation	20%
Final Exam	25%

• Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	1. Stewart Carlyle Bushong, Geoffrey Clarke, "Magnetic Resonance Imaging: Physical and Biological Principles", Mosby, 4th Edition, 2015. 2. Perry Sprawls, "Magnetic Resonance Imaging: Principles, Methods, and Techniques", Medical Physics Publishing, 2000. 3. Perry Sprawls, "Physical Principles of Medical Imaging", Medical Physics Publishing, 2nd Edition, 1995.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

• Course Name: Radiographic techniques for thorax and abdomen					
• Course Code: 3102					
• Semester / Year: 3 rd year/ 2 st Semester					
• Description Preparation Date: 18/10/2025					
• Available Attendance Forms: classes and laboratory					
• Number of Credit Hours (Total) / Number of Units (Total): 6hr/4					
• Course administrator's name (mention all, if more than one name)					
Name: Raad Owaid Jasim Email: raadowaid768@gmail.com					
• Course Objectives					
Course Objectives		1. To teach the students how to direct the patient in particular way to photograph to diseases in the best way for thorax and abdomen			
• Teaching and Learning Strategies					
Strategy		1. To teach the students how to direct the patient in particular way to photograph to see diseases in best way for thorax and abdomen			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	6+4	The student recognizes the anatomy and radiological features of the : pharynx and larynx	Thorax: pharynx and larynx	Theoretical lecture and slide presentation	Discussion and MCQ at end of lecture
2	6+4	The student Recognizes the position of patient and IR with essentials im characteristic and common fault	Trachea (including thoracic inlet)	Theoretical lecture and slide presentation	Discussion and MCQ at end of lecture
3	6+4	The student Recognizes the position of patient and IR with essentials im characteristic and common fault	Lungs , AP ,lateral , apical view , shown structure, interpretation system	Theoretical lecture and slide presentation	Discussion and MCQ at end of lecture

4	6+4	The student Recognizes the position of patient and IR with essentials im characteristic and common fault	lordotic position	Theoretical lecture and slide presentat	Discussion and MCQ at end of lecture
5	6+4	The student Recognizes the position of patient and IR with essentials im characteristic and common fault	Heart and aorta, main branches	Theoretical lecture and slide presentat	Discussion and MCQ at end of lecture
6	6+4	The student Recognizes the position of patient and IR with essentials im characteristic and common fault	Bones of the thorax (upper ribs)	Theoretical lecture and slide presentat	Discussion and MCQ at end of lecture
7	6+4	The student Recognizes the position of patient and IR with essentials im characteristic and common fault	Bones of the thorax (lower ribs)	Theoretical lecture and slide presentat	Discussion and MCQ at end of lecture
8	6+4	The student Recognizes the position of patient and IR with essentials im characteristic and common fault	Sternum	Theoretical lecture and slide presentat	Discussion and MCQ at end of lecture
9	6+4	The student Recognizes the position of patient and IR with essentials im characteristic and common fault	Abdomen Planes & regions and Image parameters	Theoretical lecture and slide presentat	Discussion and MCQ at end of lecture
10	6+4	The student Recognizes the position of patient and IR with essentials im characteristic and common fault	Abdomen , AP supine, PA erect , lateral view positions	Theoretical lecture and slide presentat	Discussion and MCQ at end of lecture
11	6+4	The student Recognizes the position of patient and IR with essentials im characteristic and common fault	Urinary tract – kidneys– ureters–bladder positions	Theoretical lecture and slide presentat	Discussion and MCQ at end of lecture
12	6+4	The student Recognizes the position of patient and IR with essentials im characteristic and common fault	Urinary bladder	Theoretical lecture and slide presentat	Discussion and MCQ at end of lecture
13	6+4	The student Recognizes the position of patient and IR with essentials im characteristic	Mammography Positioning terminology	Theoretical lecture and slide presentat	Discussion and MCQ at end of lecture

		and common fault			
14	6+4	The student Recognizes the position of patient and IR with essentials im characteristic and common fault	Radiological considerations of mammography	Theoretical lecture and slide presentat	Discussion and MCQ at end of lecture
15	6+4	The student Recognizes the position of patient and IR with essentials im characteristic and common fault	Mammography main position, finding, image interpretation	Theoretical lecture and slide presentat	Discussion and MCQ at end of lecture

• Course Evaluation

- Regular class attendance. Active participation in discussions and practical sessions.
- Assignments / Quizzes – 10–15%
- Short quizzes to assess continuous learning and homework and imaging interpretation exercises.
- Midterm Examination – 20–25%
- Covers theoretical and practical components studied in the first half of the course.
- Practical / OSPE (Objective Structured Practical Exam) – 20–25%
- Identification of radiological techniques on X-ray, images.
- Application of radiological techniques to clinical cases.
- Final Examination (Comprehensive) – 30–35%
- Combination of multiple-choice questions, short answer questions, and image-based questions.

Assesses both theoretical knowledge and applied interpretation skills.

• Learning and Teaching Resources

Required textbooks (curricular books, if any)	lectures
Main references (sources)	1. Whitley, A. S., Jefferson, G., Holmes, K., Sloane, Anderson, C., & Hoadley, G. (2015). Clark's Positioning Radiography 13E. crc Press. 2. Bontrager, K. L., & Lampignano, J. (2013). Bontrag handbook of radiographic positioning and techniques. Else Health Sciences.
Recommended books and references (scientific journals, reports...)	1. Bontrager, K. L., & Lampignano, J. (2013). Bontrag handbook of radiographic positioning and techniques. Else Health Sciences.
Electronic References, Websites	Radiopaedia: https://radiopaedia.org

Course Description Form

Course Name: Special radiological procedures of the cardiovascular and central nervous system					
Course Code: 31003					
Semester / Year: second semester 2025/2026					
Description Preparation Date: 18/9/2025					
Available Attendance Forms: Classroom and Laboratory attendance					
Number of Credit Hours (Total) / Number of Units (Total) 6 hr/4 credits					
Course administrator's name (mention all, if more than one name)					
Name: Dr. Shahad Abdul Wahhab Email: shahad.abdulwahab@uoturath.edu.iq					
Course Objectives					
Course Objective	8. Understand fundamental principles of cardiac imaging techniques, including X-ray, echocardiography, CT, MRI, nuclear imaging, and angiocardiology. 9. Explain the anatomy and physiology of the heart relevant to imaging and interpretation. 10. Describe the technical principles and procedural steps of angiocardiology, including patient preparation, contrast media use, and radiation safety. 11. Compare and contrast cardiac imaging modalities in terms of diagnostic accuracy, invasiveness, risks, and clinical indications. 12. Interpret basic imaging findings to distinguish between normal cardiac structures and common pathologies (e.g., congenital anomalies, ischemic heart disease, valvular disorders). 13. Evaluate the role of angiocardiology in diagnosis, treatment planning, and interventional cardiology.				
Teaching and Learning Strategies					
Strategy	Pdf and word sheets on smart screens with intellectual discussions Along with lab experimental demonstration				
Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Introduction to Method of imaging brain	Heart imaging and angiocardiology	Paper sheet	Brian storm questioning
2	2	Behavior	Heart imaging and angiocardiology	Paper sheet	Brian storm questioning
3	2	Explain the principles and Apply critical reasoning	Coronary arteriography	Paper sheet	Brian storm questioning
4	2	Describe patient preparation and	Coronary arteriography	Paper sheet	Brian storm

		safety protocols			questioning
5	2	Demonstrate knowledge of the procedural	CARDIAC CT	Paper sheet	Brian storm questioning
6	2	Explain the principle and Apply critical reasoning	CARDIAC MRI	Paper sheet	Brian storm questioning
7	2	Introduction and Explain the principle	femoral and axillary arteries puncture	Paper sheet	Brian storm questioning
8	2	Demonstrate knowledge of the procedural	ascending aortography and lower arteriography	Paper sheet	Brian storm questioning
9	2	Introduction Explain the principle	VASCULAR EMBOLIZATION	Paper sheet	Brian storm questioning
10	2	Demonstrate knowledge of procedural step	central venography	Paper sheet	Brian storm questioning
11	2	Differentiate between normal anatomical variants pathological findings	portal venography	Paper sheet	Brian storm questioning
12	2	Demonstrate knowledge of the procedural	images modalities of bones and joints	Paper sheet	Brian storm questioning

• 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

• Learning and Teaching Resources

Required textbooks (curricular books, if any)	Edited pdf, word, and ppt from original references
Main references (sources)	1. Nick_Watson,_Hefin_Jones_Chapman_&_Nakielny's_Guide_to_Radiological.
Recommended books and references (scientific journals, reports...)	
Electronic Reference Websites	https://books.google.iq/books/about/Chapman_Nakielny's_Guide_to_Radiological.html?id=rRDREAAQBAI&redir_esc=y

Course Description Form

• Course Name:					
Radiological anatomy of thorax and abdomen					
• Course Code:31004					
• Semester / Year:					
Semester					
• Description Preparation Date:					
• Available Attendance Forms:					
• Number of Credit Hours (Total) / Number of Units (Total)					
4/3					
• Course administrator's name (mention all, if more than one name)					
Name: Sahar Mahdi		Email: sahar.mahdi@uoturath.edu.iq			
Name: Hala Hussien		Email: hala.hussen@uoturath.edu.iq			
• Course Objectives					
Course Objectives		1. The general anatomy and radiological features of thoracic cage, trachea, bronchi, lungs, heart and the breast. 2. The arterial blood supply of trachea, bronchi and lungs. 3. The general anatomy and radiological features of the abdominal organs. 4. The general anatomy and radiological features of the pelvic organs. 5. Aorta branches and arterial blood supply of the each organ as well as venous drainage.			
• Teaching and Learning Strategies					
Strategy		Lectures and discussions Brainstorming strategy Community work strategy Strategy for dialogue and exchange of opinions In addition to the quizzes and practical application			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	Theoretical 2 Practical 2		Normal anatomy of thoracic cage and sternum, radiological features of the thoracic cage and sternum.	Theoretical and Practical	
2	Theoretical 2 Practical 2		Normal anatomy of trachea, lungs, bronchial tree and pulmonary vessels, bronchial vessels, radiological features of the lung, trachea and bronchial tree.	Theoretical and Practical	Home work group sessions, in addition seminars on the topic for discussion Between students and practical application
3	Theoretical 2 Practical 2		Normal anatomy of heart, radiological features of the heart.	Theoretical and Practical	Home work group sessions, in addition seminars on the topic for discussion Between students and practical application
4	Theoretical 2 Practical 2		Normal anatomy of the breast and radiological features of the breast.	Theoretical and Practical	Home work group sessions, in addition seminars on the topic for discussion Between students and practical application
5	Theoretical 2 Practical 2		Normal anatomy of esophagus, peritoneal covering, anatomical relations of the esophagus, blood supply of esophagus, radiological features of esophagus.	Theoretical and Practical	Home work group sessions, in addition seminars on the topic for discussion Between students and practical application
6	Theoretical 2 Practical 2		Normal anatomy of stomach, peritoneal covering, anatomical relations of the stomach, blood supply and venous drainage of the stomach, Radiological features of the stomach.	Theoretical and Practical	Home work group sessions, in addition seminars on the topic for discussion Between students and practical application
7	Theoretical 2 Practical 2		Normal anatomy of small intestine, peritoneal covering, anatomical relations of the small intestine, blood supply, venous	Theoretical and Practical	Home work group sessions, in addition seminars on the topic for discussion Between students and practical application

			drainage and lymphatic drainage of the small intestine, radiological features of small intestine.		
8	Theoretical 2 Practical 2		Normal anatomy of large intestine, peritoneal covering, anatomical relations of the large intestine, blood supply, venous drainage and lymphatic drainage of the large intestine, radiological features of large intestine.		Home work group sessions, in addition seminars on the topic for discussion Between students and practical application
9	Theoretical 2 Practical 2		Normal anatomy of the liver and biliary system, peritoneal covering, anatomical relations of the liver, lobes and segments of the liver, hepatic ducts and blood supply of the liver.	Theoretical and Practical	Home work group sessions, in addition seminars on the topic for discussion Between students and practical application
10	Theoretical 2 Practical 2		Radiological features of the liver and biliary system.		Home work group sessions, in addition seminars on the topic for discussion Between students and practical application
11	Theoretical 2 Practical 2		Normal anatomy of pancreas, peritoneal covering, anatomical relations of the pancreas, blood supply of pancreas, Radiological features of the pancreas.	Theoretical and Practical	Home work group sessions, in addition seminars on the topic for discussion Between students and practical application
12	Theoretical 2 Practical 2		Normal anatomy of spleen, peritoneal covering, anatomical relations of the pancreas, blood supply of spleen, radiological features of the spleen.	Theoretical and Practical	Home work group sessions, in addition seminars on the topic for discussion Between students and practical application
13	Theoretical 2 Practical 2		Normal anatomy of kidney, site, peritoneal covering and anatomical	Theoretical and Practical	Home work group sessions, in addition seminars on the topic for discussion

			relations of the kidneys, fascial spaces around the kidneys, Internal structures, arterial supply and venous drainage of the kidney, Radiological features of kidneys.		Between students and practical application
14	Theoretical 2 Practical 2		Normal anatomy of the female pelvic: uterus, ovarian, fallopian tubes, vagina, bladder, urethra, blood supply, radiological features of the female pelvic.	Theoretical and Practical	Home work group sessions, in addition seminars on the topic for discussion Between students and practical application
15	Theoretical 2 Practical 2		Normal anatomy of the male pelvic: prostate, testes, bladder, urethra, blood supply, radiological features of the male pelvic.	Theoretical and Practical	Exam

Course Description Form

• Course Name:					
Systemic Pathology					
• Course Code:31005					
• Semester / Year:					
Semester					
• Description Preparation Date:					
• Available Attendance Forms:					
• Number of Credit Hours (Total) / Number of Units (Total)					
4/3					
• Course administrator's name (mention all, if more than one name)					
Name: younis abd alsattar Email: younisalqubaisi@gmail.com					
Name: Qais Lateef Atea Email: qais-latif@uoturath.edu.iq					
• Course Objectives					
Course Objectives		1. Understand the etiology and risk factors, pathogenesis, morphology and clinical features of systemic diseases. 2. Understand the functional alterations and outcomes of systemic diseases.			
• Teaching and Learning Strategies					
Strategy		Lectures and discussions Brainstorming strategy Community work strategy Strategy for dialogue and exchange of opinions In addition to the quizzes and practical application			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	Theoretical and Practical 2		Bone and cartilage Tumors .Osteoma .Osteoid Osteoma .Osteoblastoma .Osteochondroma .Chondroma .Chondroblastoma	Theoretical and Practical	
2	Theoretical and Practical 2		Joint Diseases .Degenerative Arthritis	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion

			.Goat and Pseudogoat Disease .Infectious Arthritis		Between students and application	
3	Theoretical Practical		Liver Disease .Hepatic Injury patterns .Cirrhosis .Liver Failure .Jaundice .Types of Neonatal Jaundice	Theoretical and Practical	Home work Group sessions, in addition seminars on the topic for disc Between students and application	
4	Theoretical Practical		Liver Disease .Cholestasis .Viral Hepatitis and Nonviral Hepatitis .Metabolic liver Disease .Hepatic, Bile Duct and Gall Bladder Disease .Stones .Pharyngian Cap .Cholelithiasis	Theoretical and Practical	Home work Group sessions, in addition seminars on the topic for disc Between students and application	
5	Theoretical Practical		Kidney Disease .Diseases of Glomerulus .Diseases of Tubules .Disease of Blood Vessels .Obstruction	Theoretical and Practical	Home work Group sessions, in addition seminars on the topic for disc Between students and application	
6	Theoretical Practical		Heart Disease .Heart Failure .Congenital Heart Disease .Ischemic Heart Disease .Hypertensive Heart Disease .Valvular Heart Disease .Cardiomyopathy Heart Disease .Pericardium Heart Disease	Theoretical and Practical	Home work Group sessions, in addition seminars on the topic for disc Between students and application	
7	Theoretical Practical		Gastrointestinal Diseases -Diseases of Esophagus -Diseases of Stomach -Diseases of small/ large Bowel	Theoretical and Practical	Home work Group sessions, in addition seminars on the topic for disc Between students and application	

			-Appendex		
8	Theoretical Practical 2		Pancreas Diseases .Congenital .Inflammatory(Acute, Chronic, Cyst) .Neoplasms		Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
9	Theoretical Practical 2		Lung Diseases .Congenital .Atelectasis .Acute Pulmonary Injury .Obstructive Pulmonary Disease .Vascular Pulmonary Diseases	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
10	Theoretical Practical 2		Lower urinary tract diseases . Ureters Anomalies . Bladder Anomalies . Urethra Anomalies		Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
11	Theoretical Practical 2		Female Reproductive System Diseases .Vulva Disease .Vagina Disease .Cervix Disease .Uterus Disease .Tubes Disease .Ovaries and placenta	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
12	Theoretical Practical 2		Endocrine Diseases .pituitary Disorders Thyroid Disorders .Parathyroid Disorders	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
13	Theoretical Practical 2		Diseases of Lymphatic System .lymph nodes .lymphadenitis .lymphomas .Follicular lymphoma	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
14	Theoretical Practical 2		Brain and Central Nervous System Diseases .Acute Neuronal Injury .Cerebral edema .Hydrocephalus .CNS malformation (spina bifida, Polymicrogyria, Holoprosencephaly)	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application

15	Theoretical and Practical 2		Breast Diseases .Glands Atrophy .Intraductal Inflammatory Cells (Acute Mastitis) .Ductesia .Neoplasia (Benign and Malignant) of epithelial and stromal .Gynecomastia	Theoretical and Practical	Exam
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Course Description Form

• Course Name: Physics of Magnetic Resonance Imaging					
• Course Code: 31006					
• Semester / Year: First semester 2025/2026					
• Description Preparation Date: 14/9/2025					
• Available Attendance Forms: Classroom and Laboratory attendance					
• Number of Credit Hours (Total) / Number of Units (Total) 4 hr/ 2credits					
• Course administrator's name (mention all, if more than one name)					
Name: Dr. Aysar S. Keiteb			Email: draysaralnidawi@mtu.edu.iq		
Name: Anwar Khalid			Email: anwar.khalid@uoturath.edu.iq		
• Course Objectives					
Course Objectives		14. Explain the behavior of hydrogen nuclei in a strong magnetic field and how this leads to the creation of a net magnetic signal. 15. Describe how radio waves are used to manipulate this signal and how the tissue's properties (T1 & T2) affect its return to equilibrium. 16. Identify how magnetic field gradients are used to spatially encode the signal and locate where it comes from within the body. 17. Differentiate how basic scanner settings (TR, TE) are manipulated to create images with different tissue contrasts (T1-weighted, T2-weighted). 18. Recognize the major safety considerations associated with the MRI environment, including the static magnetic field, radio waves, and changing gradients.			
• Teaching and Learning Strategies					
Strategy		Pdf and word sheets on smart screens with intellectual discussions Along with lab experimental demonstration			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1	Introduction to NMR & B	Atomic structure, nuclear	Paper shee	Brian storm

		Nuclear Physics	spin, magnetic moment.		questioning
2	1	Behavior in a Static Magnetic Field (B_0)	Net magnetization vector (NMV), Larmor frequency, energy states.	Paper sheet	Brian storm questioning
3	1	RF Pulses and Excitation	Resonance, flip angle, transverse magnetization.	Paper sheet	Brian storm questioning
4	1	Relaxation Mechanisms I - Recovery	Longitudinal relaxation, time constant.	Paper sheet	Brian storm questioning
5	1	Relaxation Mechanisms II - T2 & T2*	Transverse relaxation, spin-spin interactions, T2, T2*.	Paper sheet	Brian storm questioning
6	1	Mid-Term Review & The Spin Echo	Mid-Term Exam (Weeks 1-6), FID, 90° and 180° pulses.	Paper sheet	Brian storm questioning
7	1	Spatial Encoding, I - Slice Selection	Magnetic field gradients, slice select gradient, RF bandwidth.	Paper sheet	Brian storm questioning
8	1	Spatial Encoding II - Frequency Encoding	Readout gradient, dwell time, bandwidth.	Paper sheet	Brian storm questioning
9	1	Spatial Encoding III - Phase Encoding & k-Space	Phase-encode gradient, k-space fundamentals.	Paper sheet	Brian storm questioning
10	1	Image Formation & Pulse Sequence I	Fourier Transform, basic Spin Echo (SE) sequence.	Paper sheet	Brian storm questioning
11	1	Image Contrast & Pulse Sequence II	T1-weighting, T2-weighting, Proton Density (PD), Gradient Echo (GRE).	Paper sheet	Brian storm questioning
12	1	Advanced Sequences & Applications I	Inversion Recovery (IR), STIR, FLAIR.	Paper sheet	Brian storm questioning
13	1	Advanced Sequences & Applications II	MR Angiography (MRA), Diffusion-Weighted Imaging (DWI).	Paper sheet	Brian storm questioning
14	1	System Hardware & Safety	Magnet types, gradient coils, RF coils, MRI safety.	Paper sheet	Brian storm questioning
15	1	Final Review & Emerging Technologies	Comprehensive review, fMRI/spectroscopy overview, Final Exam.	Paper sheet	Brian storm questioning

• 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

• Learning and Teaching Resources

Required textbooks (curricular books if any)	Edited pdf, word, and ppt from original references
Main references (sources)	1.Magnetic Resonance Imaging: Physical Principles and Sequence Design. 2.MRI: The Basics 3.Principles of Magnetic Resonance Imaging: A Signal

	Processing Perspective.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Khan Academy - Physics Link: https://www.khanacademy.org/science/physics Physics Classroom Link: https://www.physicsclassroom.com/ Hyper Physics Link: http://hyperphysics.phy-astr.gsu.edu/hphy/hbase/hph.html The Feynman Lectures on Physics (Caltech)Li Link: https://www.feynmanlectures.caltech.edu/

Course Description Form

• Course Name:					
Computed tomography imaging of head and spinal cord					
• Course Code:40011					
• Semester / Year:					
first Semester, Fourth stage.					
• Description Preparation Date:					
• Available Attendance Forms:					
• Number of Credit Hours (Total) / Number of Units (Total)					
4/7					
• Course administrator's name (mention all, if more than one name)					
Name: DR.Nibras Jassam Homadi (consultant radiologist) Email: nibrasjassam@yahoo.co.uk					
• Course Objectives					
Course Objectives	- Describe the basic principles and concepts of computed tomography. - Incorporate scanning techniques learned to best demonstrate anatomy and pathology. - Explain the CT scanning protocols and patient preparation for many head and spine tests. - Describe techniques in manipulating CT parameters to optimize image quality.				
• Teaching and Learning Strategies					
Strategy	Lectures and discussions Brainstorming strategy Community work strategy Strategy for dialogue and exchange of opinions In addition to the quizzes and practical application				
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	Theoretical Practical 5		1: Review of CT Machines Internal and External structures	Theoretical and Practical	
2	Theoretical Practical 5		Role of the CT Technologist Patient management in CT	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application

			- unit • Patient screening (history, contraindications) • Patient safety principles • Radiation protection (ALARA, shielding, justification)		
3	Theoretical Practical 5		CT Radiographic Technique & Windowing ♦ Acquisition Parameters: • mA • kVp • Helical pitch • Rotation time • Slice thickness ♦ Window Setting: • Window width & level	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
4	Theoretical Practical 5		Contrast Media & Injectors • Types of contrast media (iodinated) • Clinical uses of contrast • Adverse reactions (mild, moderate, severe) • CT injectors: ◦ Preparation	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
5	Theoretical Practical 5		• CT Brain & Contrast Administration • Content: • Administration of contrast agents • CT venography • CT in stroke imaging (non-contrast vs contrast role)	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
6	Theoretical Practical 5		CT Petrous Bone • Indications • Patient positioning • Technical considerations	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application

			Scanning protocols		
7	Theoretical Practical 5		- CT Orbit - Technique and positioning - Scanning protocols - Image optimization	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
8	Theoretical Practical 5		CT Paranasal Sinuses - Indications - Patient positioning - Technical considerations - Scanning protocols		Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
9	Theoretical Practical 5		CT Skull & Facial Bones - Patient preparation - Positioning - Scanning protocols - Bone window emphasis	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
10	Theoretical Practical 5		CT Neck - Patient preparation - Positioning - Contrast considerations - Scanning protocols		Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
11	Theoretical Practical 5		CT Pituitary Gland - Patient preparation - High-resolution imaging protocols - Contrast timing considerations	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
12	Theoretical Practical 5		CT Spine (Part 1) - Cervical spine imaging - Thoracic (dorsal) spine imaging	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
13	Theoretical Practical 5		CT Spine (Part 2) - Lumbar spine imaging - Whole spine CT - CT myelography	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
14	Theoretical Practical 5		CT Artefacts	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion

			• Types of artefacts: ○ Motion artefact ○ Beam hardening ○ Metal artefact • Detection methods • Correction techniques		Between students and practical application
15	Theoretical Practical 5		Role of CT vs Other Modalities • Comparison with: ○ X-ray ○ MRI ○ Ultrasound	Theoretical and Practical	Exam

Course Description Form

- Course Name:

Magnetic resonance imaging principles and head exam

- Course Code:40022

- Semester / Year:

first Semester, Fourth stage.

- Description Preparation Date:

- Available Attendance Forms:

- Number of Credit Hours (Total) / Number of Units (Total)

4/7

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

Name: DR.Nibras Jassam Homadi (consultant radiologist)

Email: nibrasjassam@yahoo.co.uk

- Course Objectives

Course Objectives تعريف الطالب على معظم فمباده الرنين المغناطيسي وفحوصات الرأس.

- Teaching and Learning Strategies

Strategy Lectures and discussions
Brainstorming strategy
Community work strategy
Strategy for dialogue and exchange of opinions
In addition to the quizzes and practical application

- Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	Theoretical 2 Practical 5		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	Theoretical and Practical	
2	Theoretical 2 Practical 5		Review about MRI pulse sequences - Types - Choosing the appropriate sequence for the required examination -Overview of imaging protocol	Theoretical and Practical	Home work group sessions, in addition seminars on the topic discussion Between students and practical application
3	Theoretical 2 Practical 5		Tissue characterization: - Role of MRI in diseases - Intensities of normal anatomical structures Pathological changes and effect of relation time	Theoretical and Practical	Home work group sessions, in addition seminars on the topic discussion Between students and practical application

4	Theoretical 2 Practical 5		MRI artifact during the exam : Types, Remedies	Theoretical and Practical	Home work Group sessions, in addition seminars on the topic discussion Between students and practical application
5	Theoretical 2 Practical 5		Technical Factors Influencing MRI Image quality	Theoretical and Practical	Home work Group sessions, in addition seminars on the topic discussion Between students and practical application
6	Theoretical 2 Practical 5		MRI Contrast Media: - Positive and Negative contrast media - Administration of Contrast Agent Magnetization transfer contrast (MTC) - Clinical Applications of MRI Contrast Media	Theoretical and Practical	Home work Group sessions, in addition seminars on the topic discussion Between students and practical application
7	Theoretical 2 Practical 5		MRI of the Brain (pediatrics and adults): - patient position - coil selection - indications - the suitable protocols (series of sequences) for each indication - Planning	Theoretical and Practical	Home work Group sessions, in addition seminars on the topic discussion Between students and practical application
8	Theoretical 2 Practical 5		MRI of the Temporal Lobes: - patient position - coil selection - indications - the suitable protocols (series of sequences) for each indication - Planning		Home work Group sessions, in addition seminars on the topic discussion Between students and practical application
9	Theoretical 2 Practical 5		MRI of the Internal Auditory Meatus : - patient position - coil selection - indications - the suitable protocols (series of sequences) for each indication - Planning	Theoretical and Practical	Home work Group sessions, in addition seminars on the topic discussion Between students and practical application
10	Theoretical 2 Practical 5		MRI of the Pituitary: - patient position - coil selection - indications - the suitable protocols (series of sequences) for each indication - Planning		Home work Group sessions, in addition seminars on the topic discussion Between students and practical application
11	Theoretical 2 Practical 5		MRI of the Orbits: - patient position - coil selection - indications , the suitable protocols (series of sequences) for each indication - Planning	Theoretical and Practical	Home work Group sessions, in addition seminars on the topic discussion Between students and practical application
12	Theoretical 2 Practical 5		MR Angiography and MR Venography:	Theoretical and Practical	Home work Group sessions, in addition

			- patient position - coil selection - indications , the suitable protocols (series of sequences) for each indication - Planning		seminars on the topic discussion Between students and practical application
13	Theoretical 2 Practical 5		MRI of the Chest: - patient position - coil selection - indications - the suitable protocols (series of sequences)for each indication - Planning	Theoretical and Practical	Home work group sessions, in addition seminars on the topic discussion Between students and practical application
14	Theoretical 2 Practical 5		MRI of the Breast: - patient position - coil selection - indications - the suitable protocols (series of sequences)for each indication - Planning	Theoretical and Practical	Home work group sessions, in addition seminars on the topic discussion Between students and practical application
15	Theoretical 2 Practical 5		Recent Advances in Pulse Sequences and protocols Some applications on the MRI - Diffusion weighted imaging sequence - Perfusion sequence - Magnetic Resonance Spectroscopy	Theoretical and Practical	Exam

Course Description Form

• Course Name:					
Abdominal ultrasound imaging					
• Course Code:40033					
• Semester / Year:					
first Semester, Fourth stage.					
• Description Preparation Date:					
2025/9/14					
• Available Attendance Forms:					
Physically attending					
• Number of Credit Hours (Total) / Number of Units (Total)					
7/4					
• Course administrator's name (mention all, if more than one name)					
Name: Asst. Prof. Dr. Abdul Sattar Arif Khammas Email: abdulsattar.arif@gmail.com					
• Course Objectives					
Course Objectives		- To teach students the fundamentals and techniques of ultrasound imaging - To teach students how to perform examinations of abdominal organs. - To teach students how to interpret images in relation to normal and pathological conditions.			
• Teaching and Learning Strategies					
Strategy		- Theoretical lectures and discussions - Practical application - Brainstorming strategy - Use of modern teaching methods such as displaying images on smart screens using presentation software like PowerPoint			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	Principle of ultrasound and its terms	Theoretical and Practical	Questions and Discussion
2	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	Normal liver	Theoretical and Practical	Questions and Discussion
3	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	Abnormal liver: Enlarged liver/hepatomegaly: homogeneous	Theoretical and Practical	Questions and Discussion

			pattern, Enlarged liver: non-homogeneous pattern, Small liver/shrunken liver		
4	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	Cystic lesions in normal or large liver	Theoretical and Practical	Questions and Discussion
5	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	Differential diagnosis of liver masses, Trauma of the liver	Theoretical and Practical	Questions and Discussion
6	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	Normal gallbladder and biliary tract	Theoretical and Practical	Questions and Discussion
7	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	abnormal gallbladder and biliary tract: distended gallbladder, Acute cholecystitis, Echoes within the gallbladder	Theoretical and Practical	Questions and Discussion
8	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	Thick gallbladder walls, Small gallbladder, Gallbladder in jaundice	Theoretical and Practical	Questions and Discussion
9	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	Normal and abnormal pancreas	Theoretical and Practical	Questions and Discussion
10	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	Normal and abnormal spleen	Theoretical and Practical	Questions and Discussion
11	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	Normal kidney and ureters, absent kidney, abnormal kidney: large kidney	Theoretical and Practical	Questions and Discussion
12	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	Renal cysts, Renal masses	Theoretical and Practical	Questions and Discussion
13	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	Small kidney, Renal calculi, Trauma, Perirenal fluid	Theoretical and Practical	Questions and Discussion
14	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	Normal and abnormal Urinary bladder	Theoretical and Practical	Questions and Discussion
15	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	Normal and abnormal thyroid gland	Theoretical and Practical	Questions and Discussion

- **Course evaluation**

The grade out of 100 is given based on the tasks assigned to the student, such as daily preparation, daily and monthly written exams, etc.

- **Sources**

Required textbooks (methodology, if applicable)	Manual of diagnostic ultrasound by P.E.S. Palmer, 2000
Main sources	Manual of diagnostic ultrasound by P.E.S. Palmer, 2000
Recommended supporting books and references (scientific journals, reports(...	Paul L. Allan, Grant M. Baxter, Michael J. Weston. Clinical Ultrasound. Volume one rd Edition, 2011.
Electronic sources, websites	1. Radiology assistant 2. Radioaedia

Course Description Form

• Course Name: principles of medicine					
• Course Code: 40044					
• Semester / Year: 4th year / 1 st semester					
• Description Preparation Date: 10/9/2025					
• Available Attendance Forms: classes and laboratory					
• Number of Credit Hours (Total) / Number of Units (Total) 5 credits (Theory: 2units + 3Lab: 3 units).					
• Course administrator's name (dr. Alaa Kereem Resheed)					
Name: Dr. dr. Alaa Kereem Resheed Email: alaa.karim@uoturath.edu.iq					
• Course Objectives					
Course Objectives		1. Acquire basic knowledge of the fundamentals of internal medicine. 2. Classify the parts and components of internal medicine. 3. Predict the clinical significance of internal medicine. 4. Describe the fundamentals of internal medicine. 5. Establish knowledge of internal medicine.			
• Teaching and Learning Strategies					
Strategy		1. Demonstrate understanding of the principles internal medicine. 2. Demonstrate a working knowledge of basic internal medicine a related applications.			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	principles of medicine and surgery	Respiratory tract infections	Theoretical lectures and practical session	Theoretical exams Seminars and reports
2	4	principles of medicine and surgery	Paranasal sinuses: imaging in	Theoretical lectures and	Theoretical exams

			paranasal sinuses diseases	practical session	Seminars and reports
3	4	principles of medicine and surgery	The orbit: imaging in orbital diseases	Theoretical lectures and practical session	Theoretical exams Seminars and reports
4	4	principles of medicine and surgery	The spine : imaging of spinal lesions	Theoretical lectures and practical session	exams Seminars and reports
5	4	principles of medicine and surgery	The neck : role of imaging in neck masses	Theoretical lectures and practical session	Theoretical exams Seminars and reports
6	4	principles of medicine and surgery	headache	Theoretical lectures and practical session	Theoretical exams Seminars and reports
7		principles of medicine and surgery	MID-TERM EXAM		
8	4	principles of medicine and surgery	Urinary tract obstruction: - causes, - clinical features - prostate	Theoretical lectures and practical session	Theoretical exams Seminars and reports
9	4	principles of medicine and surgery	Renal & vesical tumors: types, features, imaging.	Theoretical lectures and practical session	Theoretical exams Seminars and reports
10	4	principles of medicine and surgery	Gastrointestinal diseases	Theoretical lectures and practical session	Theoretical exams Seminars and reports
11	4	principles of medicine and surgery	Hepatic masses: role of imaging	Theoretical lectures and practical session	Theoretical l exams Seminars and reports
12	4	principles of medicine and surgery	Breast masses: benign & malignant	Theoretical lectures and practical session	Theoretical exams Seminars and reports
13	4	principles of medicine and surgery	Vascular imaging	Theoretical lectures and practical session	Theoretical exams Seminars and reports

14	4	principles of medicine and surgery	Tumors of uterus & ovaries	Theoretical lectures and practical session	Theoretical l exams Seminars and reports
15	4	principles of medicine and surgery	Male reproductive system: infertility, causes & role of imaging	Theoretical lectures and practical session	Theoretical exams Seminars and reports

• Course Evaluation

Overall Course Grading	
Class Attendance	5%
Quizzes (4 of 5% each)	5%
Midterm practical Exam	10%
Midterm theory exam	20%
Final Exam -theory	35%
Final Exam- practical	25%
Total	100 %

• Learning and Teaching Resources

Required Resources	• O. James Garden & Rowan W Park "Principles and Practice of Surge 7th Edition, Elsevier; 2017.
	• Sarah McWilliams: principles medicine and surgery. © 2011 Taylor & Francis Group, LLC
	- Stuart H. Ralston, "Davids Principles & Practice of Medicine 23rd edition, Elsevier 2018.
	Additional Resources • McMinn & Abrahams's medicine a surgery (CD) • Weir J & Abrahams P: principles medicine and surgery (CD)

Course Description Form

• Course Name: Biostatistics & Computer Applications					
• Course Code: 40055					
• Semester / Year: Fourth Year / First Course					
• Description Preparation Date: 2025 – 2026					
• Available Attendance Forms: Smart Attendance & Lab.					
• Number of Credit Hours (6) / Number of Units (4):					
• Course administrator's name (mention all, if more than one name)					
Name: Ass. Prof. Nathier Abas Ibrahim Email: nazir.abass@uoturath.edu.iq					
• Course Objectives					
Course Objectives		- The student learns how to use statistical scales and graphs - The student will be able to analyze the data and extract the results - The student learns the methods of decision-making in the light of results obtained from the analysis of data			
• Teaching and Learning Strategies					
Strategy		The student will be able to learn and understand statistical methods and how to apply them in practical life, with the applications of the statistical program SPSS and Microsoft Excel			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	General	General Lecture	Lab.	Quiz
2	4	How to collect data	Data Sources	Lab.	Quiz
3	4	How can construct F.D	Frequency Distribution	Lab.	Quiz
4	4	The usefulness of charts	Charts & Figures	Lab.	Quiz
5	4	Calculating mean	Mean	Lab.	Quiz
6	4	Calculating Median	Median	Lab.	Quiz
7	4	Calculating mode	Mode	Lab.	Quiz

8	4	The useful of measurements	Dispersion measures	Lab.	Quiz
9	4	Biostatistics applications	Fertility & Mortality Measures	Lab.	Quiz
10	4	Useful of testing	Hypothesis testing	Lab.	Quiz
11	4	Useful of testing	Hypothesis testing	Lab.	Quiz
12	4	The relation of variables	Correlations	Lab.	Quiz
13	4	Simple regression	Regression	Lab.	Quiz
14	4	F – statistics	ANOVA, Determination Coefficient	Lab.	Quiz
15	4	Useful of distributions	Probability Distributions	Lab.	Quiz

- 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

- Learning and Teaching Resources

Required textbooks (curricular books, if any)	Nathier Abas Ibrahim, "Biostatistics", Al- Jazeer Bureau and Publishing Baghdad. Iraq, 2019.
Main references (sources)	Nathier Abas Ibrahim, Statistics, with SPSS Applications, Al – Jazzera Beirut Baghdad.2021.
Recommended books and references (scientific journals, reports...)	Nathier Abas Ibrahim, Data Analysis (SPSS Applications, Al – Jazzera Beirut Baghdad.2022.
Electronic References, Websites	

Course Description Form

• Course Name:					
Computed tomography imaging of chest , abdomen and pelvis					
• Course Code:41011					
• Semester / Year:					
Second Semester, Fourth stage.					
• Description Preparation Date:					
• Available Attendance Forms:					
• Number of Credit Hours (Total) / Number of Units (Total)					
4/7					
• Course administrator's name (mention all, if more than one name)					
Name: DR.Nibras Jassam Homadi (consultant radiologist)					
Email: nibrasjassam@yahoo.co.uk					
• Course Objectives					
Course Objective:	1. Describe the basic principles and concepts of computed tomography (CT). 2. Apply scanning techniques to optimally demonstrate anatomical structures and pathological conditions. 3. Explain CT scanning protocols and patient preparation for examinations of the chest, abdomen, and pelvis. 4. Describe methods of manipulating CT parameters to optimize image quality.				
• Teaching and Learning Strategies					
Strategy	Lectures and discussions Brainstorming strategy Community work strategy Strategy for dialogue and exchange of opinions In addition to the quizzes and practical application				
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	Theoretical 2 Practical 5		CT of the Chest: • Cardiac CT • High Resolution CT (HRCT)	Theoretical and Practical	Home work group sessions, in addition seminars on the topic discussion Between students and practical application

2	Theoretical 2 Practical 5		CT Angiography: • Indications • Patient Positioning and Preparation • Technical Considerations • Scanning Protocols	Theoretical and Practical	Home work group sessions, in addition seminars on the topic discussion Between students and practical application
3	Theoretical 2 Practical 5		CT of the Esophagus and Stomach: • CT in Esophageal • CT of the stomach	Theoretical and Practical	Home work group sessions, in addition seminars on the topic discussion Between students and practical application
4	Theoretical 2 Practical 5			Theoretical and Practical	Home work group sessions, in addition seminars on the topic discussion Between students and practical application
5	Theoretical 2 Practical 5		CT of the Small and Large Intestine: • CT of the small intestine • CT of the large bowel	Theoretical and Practical	Home work group sessions, in addition seminars on the topic discussion Between students and practical application
6	Theoretical 2 Practical 5		Computed Tomography of the Liver: • Intravenous and native studies • Early phase	Theoretical and Practical	Home work group sessions, in addition seminars on the topic discussion Between students and practical application
7	Theoretical 2 Practical 5		• Late phase • Delay phase	Theoretical and Practical	Home work group sessions, in addition seminars on the topic discussion Between students and practical application
8	Theoretical 2 Practical 5		Computed Tomography of the Pancreas and spleen		Home work group sessions, in addition seminars on the topic discussion Between students and

					practical application
9	Theoretical 2 Practical 5		CT Scan of the Urinary System: • Native scan • CT urography	Theoretical and Practical	Home work group sessions, in addition seminars on the topic discussion Between students and practical application
10	Theoretical 2 Practical 5		CT Scan of Pelvis		Home work group sessions, in addition seminars on the topic discussion Between students and practical application
11	Theoretical 2 Practical 5		• CT scan of trauma • Clinical consideration	Theoretical and Practical	Home work group sessions, in addition seminars on the topic discussion Between students and practical application
12	Theoretical 2 Practical 5		Role of CT in Interventional Applications: • Abscess drainage • Biopsy	Theoretical and Practical	Home work group sessions, in addition seminars on the topic discussion Between students and practical application
13	Theoretical 2 Practical 5		CT Scan of Musculoskeletal System	Theoretical and Practical	Home work group sessions, in addition seminars on the topic discussion Between students and practical application
14	Theoretical 2 Practical 5		CT Artefacts: • Detection • Remedies	Theoretical and Practical	Home work group sessions, in addition seminars on the topic discussion Between students and practical application
15	Theoretical 2 Practical 5		• Cone Beam CT: ◦ Technique and position • Role of CT compared with other imaging modalities	Theoretical and Practical	Exam

Course Description Form

• Course Name:					
Magnetic resonance imaging of musculoskeletal system, abdomen and pelvis					
• Course Code:41022					
• Semester / Year:					
Second Semester, Fourth stage.					
• Description Preparation Date:					
• Available Attendance Forms:					
• Number of Credit Hours (Total) / Number of Units (Total)					
4/7					
• Course administrator's name (mention all, if more than one name)					
Name: DR.Nibras Jassam Homadi (consultant radiologist)					
Email: nibrasjassam@yahoo.co.uk					
• Course Objectives					
Course Objectives					
• Teaching and Learning Strategies					
Strategy		Lectures and discussions Brainstorming strategy Community work strategy Strategy for dialogue and exchange of opinions In addition to the quizzes and practical application			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	Theoretical Practical 5		MRI of the Cervical Spine and Brachial Plexus: . patient position . coil selection . Indications, the suitable protocols (series of sequences) for each indication. .Planning	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
2	Theoretical Practical 5		MRI of the Dorsal Spine: . patient position . coil selection . Indications, the suitable protocols (series of sequences) for each indication. . Planning	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
3	Theoretical		MRI of the Lumbar Spine:	Theoretical and	Home work

	Practical 5		. patient position . coil selection . Indications, the suitable protocols (series of sequences) for each indication. . Planning	Practical	Group sessions, in addition to seminars on the topic for discussion Between students and practical application
4	Theoretical Practical 5		Total spin for moving table or large field of view (FOV): . patient position . Indications, the suitable protocols (series of sequences) for each indication. . Planning	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
5	Theoretical Practical 5		MRI of the female Pelvis: . patient position . coil selection . Indications, the suitable protocols (series of sequences) for each indication. . Planning	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
6	Theoretical Practical 5		MRI of the Prostate: . patient position . coil selection . Planning	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
7	Theoretical Practical 5		MRI of the Endorectal: . patient position . coil selection . Indications, the suitable protocols (series of sequences) for each indication. . Planning	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
8	Theoretical Practical 5		MRI of the Shoulder: . patient position . coil selection . Indications, the suitable protocols (series of sequences) for each indication. . Planning		Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
9	Theoretical Practical 5		MRI of the Wrist and Hand: . patient position . coil selection . Indications, the suitable protocols (series of sequences) for each indication. . Planning	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
10	Theoretical Practical 5		MRI of the Hips: . patient position . coil selection		Home work Group sessions, in addition to seminars on the topic for

			. Indications, the suitable protocols (series of sequences) for each indication. . Planning		discussion Between students and practical application
11	Theoretical Practical 5		MRI of the neck: . patient position . coil selection . Indications, the suitable protocols (series of sequences) for each indication. . Planning	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
12	Theoretical Practical 5		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	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
13	Theoretical Practical 5		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	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
14	Theoretical Practical 5		MRI of the Kidney and MRU: . patient position . coil selection . Indications, the suitable protocols (series of sequences) for each indication. - Planning	Theoretical and Practical	Home work Group sessions, in addition to seminars on the topic for discussion Between students and practical application
15	Theoretical Practical 5		MRI of adrenal gland: . patient position . coil selection . Indications, the suitable protocols (series of sequences) for each indication. - Planning	Theoretical and Practical	Exam

Course Description Form

• Course Name:					
Obstetrics and gynecologic ultrasound imaging					
• Course Code:41033					
• Semester / Year:					
Second Semester, Fourth stage.					
• Description Preparation Date:					
2025/9/14					
• Available Attendance Forms:					
Physically attending					
• Number of Credit Hours (Total) / Number of Units (Total)					
7/4					
• Course administrator's name (mention all, if more than one name)					
Name: Asst. Prof. Dr. Abdul Sattar Arif Khammas Email: abdulsattar.arif@gmail.com					
• Course Objectives					
Course Objectives		- To teach students how to perform examinations of female pelvic organs including uterus and ovaries examination as well as the pregnancy. - To teach students how to interpret images in relation to normal and pathological conditions regarding the obstetrics and gynecological conditions			
• Teaching and Learning Strategies					
Strategy		- Theoretical lectures and discussions - Practical application - Brainstorming strategy - Use of modern teaching methods such as displaying images on smart screens using presentation software like PowerPoint			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	Gynaecology (non-pregnant female pelvis): normal uterus	Theoretical and Practical	Questions and Discussion
2	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	Intrauterine contraceptive device, Fluid in the posterior cul-de-sac	Theoretical and Practical	Questions and Discussion
3	7	The student	The	Theoretical and	Questions and

	(Theoretical 2+ Practical 5)	will be able to understand the topic	endometrium, Position of the uterus, Ovaries, normal ovary	Practical	Discussion
4	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	Ovaries: normal ovary, Ovarian follicles	Theoretical and Practical	Questions and Discussion
5	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	Abnormal uterus: Myomas, Malignant disease	Theoretical and Practical	Questions and Discussion
6	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	Uterine endometriosis	Theoretical and Practical	Questions and Discussion
7	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	Abnormal ovary: Ovarian cysts, Pelvic hydatid cysts, Solid ovarian masses	Theoretical and Practical	Questions and Discussion
8	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	Pelvic inflammatory disease, Pelvic abscess, Pelvic varices, Fallopian tubes	Theoretical and Practical	Questions and Discussion
9	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	Obstetrics: Introduction to Obstetrics	Theoretical and Practical	Questions and Discussion
10	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	Early pregnancy, Ectopic pregnancy	Theoretical and Practical	Questions and Discussion
11	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	The embryo, The yolk sac, multiple pregnancy	Theoretical and Practical	Questions and Discussion
12	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	Abnormalities in the first three months of pregnancy	Theoretical and Practical	Questions and Discussion
13	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	Estimation of fetal size and age (fetal biometry)	Theoretical and Practical	Questions and Discussion
14	7	The student	Normal testis,	Theoretical and	Questions and

	(Theoretical 2+ Practical 5)	will be able to understand the topic	Abnormal scrotum: Unilateral swelling, Small or absent testis	Practical	Discussion
15	7 (Theoretical 2+ Practical 5)	The student will be able to understand the topic	The epididymis, Trauma, Torsion of the testis, Hernia, Varicocele	Theoretical and Practical	Questions and Discussion

- Course evaluation

The grade out of 100 is given based on the tasks assigned to the student, such as daily preparation, daily and monthly written exams, etc.

- Sources

Required textbooks (methodology, if applicable)	Manual of diagnostic ultrasound b P.E.S. Palmer, 2000
Main sources	Manual of diagnostic ultrasound b P.E.S. Palmer, 2000
Recommended supporting books and references (scientific journals, reports(...	Paul L. Allan, Grant M. Baxter, Michael J. Weston. Clinical Ultrasound. Volume one, 3 rd Edition, 2011.
Electronic sources, websites	3. Radiology assistant 4. Radioaedia

Course Description Form

• Course Name: principles of medicine					
• Course Code: 41044					
• Semester / Year: 4th year / second semester					
• Description Preparation Date: 10/9/2025					
• Available Attendance Forms: classes and laboratory					
• Number of Credit Hours (Total) / Number of Units (Total) 5 credits (Theory: 2units +3 Lab: 3 units).					
• Course administrator's name (dr. Alaa Kereem Resheed)					
Name: dr. Alaa Kereem Resheed			Email: alaa.karim@uoturath.edu.iq		
• Course Objectives					
Course Objectives		1. Acquire basic knowledge of the fundamentals of general surgery. 2. Classify the parts and components of surgical diseases. 3. Predict the clinical significance of surgery. 4. Describe the fundamentals of general surgery. 5. Establish knowledge of surgical diseases.			
• Teaching and Learning Strategies					
Strategy		1. Demonstrate understanding of the principles of general surgery. 2. Demonstrate a working knowledge of basic surgery and related applications.			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	principles of medicine and surgery	Gastrointestinal diseases	Theoretical lectures and practical session	Theoretical exams Seminars and reports
2	4	principles of medicine and surgery	Hepatic masses: role of imaging	Theoretical lectures and	Theoretical exams

				practical session	Seminars and reports
3	4	principles of medicine and surgery	Breast masses: benign & malignant	Theoretical lectures and practical session	Theoretical exams Seminars and reports
4	4	principles of medicine and surgery	Female reproductive system: - infertility - causes & role of imaging	Theoretical lectures and practical session	exams Seminars and reports
5	4	principles of medicine and surgery	Tumors of uterus & ovaries	Theoretical lectures and practical session	Theoretical exams Seminars and reports
6	4	principles of medicine and surgery	Male reproductive system: infertility, causes & role of imaging	Theoretical lectures and practical session	Theoretical exams Seminars and reports
7		principles of medicine and surgery	MID-TERM EXAM		
8	4	principles of medicine and surgery	Urinary tract obstruction: - causes, - clinical features - prostate	Theoretical lectures and practical session	Theoretical exams Seminars and reports
9	4	principles of medicine and surgery	Renal & vesical tumors: types, features, imaging.	Theoretical lectures and practical session	Theoretical exams Seminars and reports
10	4	principles of medicine and surgery	☐ Cystic diseases of kidney, ☐ congenital anomalies of urinary tract.	Theoretical lectures and practical session	Theoretical exams Seminars and reports
11	4	principles of medicine and surgery	Hepatic masses: role of imaging	Theoretical lectures and practical session	Theoretical l exams Seminars and reports
12	4	principles of medicine and surgery	Breast masses: benign & malignant	Theoretical lectures and practical session	Theoretical exams Seminars and reports
13	4	principles of medicine and surgery	Female reproductive	Theoretical lectures and	Theoretical exams

			system: - infertility - causes & role of imaging	practical session	Seminars and reports
14	4	principles of medicine and surgery	Tumors of uterus & ovaries	Theoretical lectures and practical session	Theoretical l exams Seminars and reports
15	4	principles of medicine and surgery	Male reproductive system: infertility, causes & role of imaging	Theoretical lectures and practical session	Theoretical exams Seminars and reports

• Course Evaluation

Overall Course Grading	
Class Attendance	5%
Quizzes (4 of 5% each)	5%
Midterm practical Exam	10%
Midterm theory exam	20%
Final Exam -theory	35%
Final Exam- practical	25%
Total	100 %

• Learning and Teaching Resources

Required Resources	• O. James Garden & Rowan W Park “Principles and Practice of Surge 7th Edition, Elsevier; 2017.
	• Sarah McWilliams: principles medicine and surgery. © 2011 Taylor & Francis Group, LLC
	- Stuart H. Ralston, “Davids Principles & Practice of Medicin 23rd edition, Elsevier 2018.

Course Description Form

• Course Name: Professional ethics					
• Course Code: 41055					
• Semester / Year: 4 th year\ 2 nd semester					
• Description Preparation Date: 2025\10\19					
• Available Attendance Forms:					
• Number of Credit Hours (Total) / Number of Units (Total) 2 credits (Theory: 2 units)					
• Course administrator's name (mention all, if more than one name)					
Name: Sarab Mansur			Email: sarab.mansur@uoturath.edu.iq		
• Course Objectives					
Course Objectives			Physicians and technicians must be patient and calm when dealing with patients. Physicians and technicians must perform their duties to the best of their ability.		
• Teaching and Learning Strategies					
Strategy		This course description provides a concise summary of the main features of the course and the learning outcomes expected of the student, demonstrating whether the student has made the most of the available learning opportunities. It must be linked to the program description.			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

Week	Hours	Intended Learning Outcomes	Unit / Topic Title	Teaching Method	Assessment Method
1	2	The student understands the concept of	Work Ethics and Professional Conduct.	Lecture + Discussion.	Short quiz.

2	2	work ethics and professional behavior. The student identifies the principles of professional ethics.	Professional Ethics.	Lecture + Case examples.	Participation.
3	2	The student explains the etiquette of health professions.	Etiquette of Health Professions.	Lecture + Role-play.	Observation and feedback.
4	2	The student lists the duties of health and medical professions.	Duties of Health and Medical Professions.	Lecture + Group discussion.	Written report.
5	2	The student recognizes medical ethics in the light of Islam.	Medical Ethics in the Light of Islam.	Lecture + Religious context discussion.	Quiz.
6	2	The student describes the development stages of medical ethics.	Development Stages of Medical Ethics.	Lecture + Timeline analysis.	Short essay.
7	2	The student demonstrates proper patient interaction etiquette.	Etiquette of Dealing with Patients.	Lecture + Practical examples.	Peer evaluation.
8	2	The student identifies the concept and components of personality.	Personality: Concept and Components.	Lecture + Psychological assessment activity.	Written report.
9	2	The student applies professional ethics in radiology departments.	Professional Conduct in Radiology Departments.	Lecture + Case simulation.	Final project.

● 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

● Learning and Teaching Resources

Required textbooks (curricular books, if any)

Main references (sources)

1. [Internet Archive](#) , [QID:Q461](#)
2. ["Medical Ethics; or a Code of Institutes and Precepts adapted to the Professional Conduct of Physicians and Surgeons". Provincial Medical and Surgical Journal. ج. 13 ع. 26 : 711-712. ديسمبر 26](#)

	1849. PMC:2488117. 3. Sokol, Daniel K. (14 مايو 2009). "Medical Ethics or, a Code of Institutes and Precepts Adapted to the Professional Conduct of Physicians and Surgeons". <i>The BMJ</i>. 338. ج: b1936. DOI:10.1136/bmj.b1936. PMC:2488117
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	