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

Academic Program Description Form

University Name: Alkafeel

Faculty/Institute: College of Health & Medical Technology

Scientific Department: radiology Techniques

Academic or Professional Program Name: B.Sc.

Final Certificate Name: B.sc. of radiology Techniques

Academic System:

Description Preparation Date:

File Completion Date: \ \2024

Signature:

Head of Department Name: Lec. Dr. Ahmed A. Ameen Date:



20

Signature: Scientific Associate Name: Assist. Prof. Dr. Sddiq Ghani Joda Al-Mohanna Date:

The file is checked by:

Department of Quality Assurance and University Performance Director of the Quality Assurance and University Performance Department: Zaman Abdulhusain Ibadi

Date:

Signature:

facthil

Approval of the Dean

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:

<u>Academic Program Description</u>: 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:

Program Mission: Briefly outlines

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

Curriculum Structure: 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.

<u>Teaching and learning strategies</u>: 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 extracurricular activities to achieve the learning outcomes of the program.

Academic Program Description Form

University name: Al-Kafeel University......
College/Institute: College of Health and Medical Technologies......
Scientific Department: Department ofradiology Techniques......
Name of the academic or professional program: Bachelor's degree.....
Name of final degree: Bachelor of radiologyTechnology...
Academic system: semester
Description preparation date:15/3/2024
File filling date:15/3/2024

Signature: Head of Department Name: Ahmed Abdulridha Ameen Date: Signature: Scientific Associate Name:

Date:

The file is checked by: Department of Quality Assurance and University Performance Director of the Quality Assurance and University Performance Department: Date: Signature:

1. Program Vision

The Radiological Techniques Department is dedicated to being among the top academic departments known for its integrity and commitment to global standards in education and scientific research, while serving and developing the community with the spirit of our Islamic values. We are committed to graduating qualified technical professionals capable of engaging with modern technologies in the field of radiology to achieve scientific progress and community service efficiently and effectively.

2. Program Mission

The program's message for the Radiological Techniques Department focuses on enhancing community development through creating a distinctive scientific environment that contributes to the knowledge development of the new generation across various fields, thereby promoting scientific excellence and intellectual creativity. The department also aims to offer a diverse range of scientific courses in a work environment that fosters a culture of creativity and enhances professional and cognitive capabilities for students. By instilling ethical values, the program aims to empower students to acquire fundamental knowledge and skills in the field of radiological techniques and advanced technology, fostering self–confidence and collaborative spirit, in addition to raising awareness of humanitarian and ethical responsibilities in the medical field.

3. Program Objectives

- Providing outstanding educational programs in the field of radiological techniques that align with international quality standards and meet the evolving needs of the job market.
- 2. Equipping students with the scientific concepts and ethical principles in the field of radiological techniques, enabling them to efficiently integrate into both public and private sectors.
- 3. Training students on humane interaction and delivering healthcare services effectively to all patient demographics within their specialties in healthcare institutions.
- Knowledge transfer and capacity building through continuous training and development programs for student staff in the field of radiological techniques.
- 5. Establishing effective partnerships with companies, research centers, medical, and scientific institutions to enhance the quality of education and research in the field of radiological techniques.

4. Program Accreditation Minestary

Does the program have program accreditation? And from which agency? No

5. Other external influences Chief of collage

Is there a sponsor for the program?

Ministry of Higher Education – Private Education Department

Higher Education Authority- Attabah Abbasia

6. Program Structure							
Program Structure	Number of	Credit hours	Percentage	Reviews*			
	Courses						
Institution	1	1	6%	Guidance			
Requirements				optional			
College	1	5	7%				
Requirements							
Department							
Requirements							
Summer Training							
Other							

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

7. Progr	7. Program Description						
Year/Level	Course Code/Course Name	Theoretical	Practical	Semester	Stage		
		Hours	Hours				
1	Skeletal Anatomy	2 hours	2 hours	1	First		
1	General Physics	2 hours	2 hours	1			
1	General Physiology	2 hours	2 hours	1			
1	Biology	2 hours	2 hours	1			
1	General Chemistry	2 hours	2 hours	1			
1	Computer Principles 1	1 hour	2 hours	1			
1	Human Rights and Democracy	2 hours	-	1			
1	English Language	2 hours	-	1			

1	Body Systems Anatomy	2 hours	2 hours	2	
-		2	2	2	
1	Atomic Physics	2 hours	2 hours	2	
1	Functional Physiology	2 hours	2 hours	2	
1	Radiobiology	2 hours	2 hours	2	
1	Nursing Principles	2 hours	2 hours	2	
1	Computer Principles 2	1 hour	2 hours	2	
1	Medical Terminology	2 hours	_	2	
1	Arabic Language	2 hours	_	2	
2	Conventional Radiography Techniques	2 hours	2 hours	1	Second
2	Upper Extremities Radiographic Imaging Techniques	2 hours	2 hours	1	
2	Special Radiographic Examinations for Digestive and Skeletal Systems	2 hours	2 hours	1	
2	Radiographic Anatomy of the Head and Upper Extremities	2 hours	2 hours	1	
2	RadiographicPhysicsFundamentals	2 hours	2 hours	1	
2	Radiation Protection Fundamentals	2 hours	2 hours	1	
2	Crimes of the Ba'ath Regime in Iraq	2 hours	2 hours	1	
2	Computed Tomography Imaging Techniques	2 hours	2 hours	2	
2	Lower Extremities Radiographic Imaging Techniques	2 hours	2 hours	2	

2	Special Radiographic Examinations for Hepatobiliary and Reproductive Systems	2 hours	2 hours	2	
2	Radiographic Anatomy of the Lower Extremities	2 hours	2 hours	2	
2	Computed Tomography Physics	2 hours	2 hours	2	

	knowledge			
Anatomy /	The aim of this course is to deepen students' understanding			
Physiology /	of the structure and function of the human body at the			
Histology	cellular, tissue, organ, and system levels. Through studying			
	it, students acquire comprehensive knowledge of the			
	detailed structure of the human body and how cells,			
	tissues, and organs interact with each other. The materials			
	are covered in a detailed manner including cellular			
	structure, different tissues, organ functions, as well as			
	interactions of different systems in the human body.			
Skills				
Chemistry /	The aim of this course is to enable students to understand			
Physics	the chemical processes that occur inside and outside the			
	human body, including biochemical reactions, digestion,			
	and metabolism. The course also includes the study of			
	human body physics through understanding the natural			
	structure and functions of the body, the main organ			
	systems, and the physical laws that govern and affect these			
	biological and physiological processes.			
Radiographic	It is expected that students will acquire comprehensive			
Equipment	technical skills and knowledge in using and applying			

Techniques /	traditional radiographic techniques in the field of healthcare,
Special	including understanding the principles and uses of
Radiographic	radiography, analyzing radiographic images, delivering
Examinations	healthcare with high quality and safety, and interacting with
for Digestive	medical teams to achieve the best outcomes for patients.
and Skeletal	
Systems	

	Values
Radiation	It is expected that students will gain a comprehensive
Protection	understanding of radiation concepts and their effects on
Fundamentals	humans and the environment. Students will learn principles
	of radiation protection and safety, including using
	appropriate protective measures to minimize exposure to
	radiation and potential risks. They will also acquire skills in
	assessing radiation-related risks, implementing suitable
	preventive measures, and understanding regulations and
	legislation related to radiation safety.
Medical	Excellence in retaining medical terminologies for accurately
Terminology	documenting and discussing patient cases.
and	
Professional	
Behavior	
Human	Ethics, emphasizing patient confidentiality, informed
Rights	consent, and professional integrity, to develop fundamental
	clinical skills aligned with overall objectives.

8. Teaching and Learning Strategies

Objective: Provide an outstanding learning experience for students.
Strategies: Utilize diverse educational techniques and modern learning
environments.
Technologies Used: Interactive smart boards and other modern technologies.
Training Opportunities: Offer practical training opportunities in government
hospitals.
Training Objective: Apply theoretical concepts in the field of healthcare and
translate them into practical skills.
Student Guidance: Guide students through training to ensure effective
application of theoretical concepts.
Integration of Technology and Practical Experiences: Provide a
comprehensive learning experience that combines modern technology and
practical experiences in healthcare.
Ultimate Goal: Enable students to develop their skills and prepare for a career
in healthcare with efficiency and confidence.

9. Assessment Methods

Daily Quizzes: Continuous assessment of students' performance during daily lessons, involving short exercises or quick questions to gauge students' understanding of the material and their progress.

Oral Examinations: Assessment conducted through direct dialogue between the teacher and students, where questions and inquiries are posed and students' understanding and comprehension of the material are evaluated immediately and directly.

Study Circles (Seminars): Opportunities for students to present specific topics or detailed research and discuss them with their peers and lecturers, allowing them to apply research, presentation, and discussion skills.

Midterm Exam: Comprehensive test usually conducted halfway through the semester, aiming to assess students' understanding of the material studied up to that point and their general grasp of the curriculum.

End-of-Semester Exam: Final exam held at the end of the semester, covering the semester's material comprehensively and assessing students' understanding and application of the concepts and knowledge acquired during the study period.

10. Evaluation methods Day Examin Coues Examin, Final examin

Implemented at all stages of the program in general.

- 1. Homework and individual and group reports
- 2. Daily quizzes
- 3. Practical skills assessment
- 4. Midterm and end of term exams
- 5. Graduation projects

11. Faculty

Faculty Members

			1
Academic Rank	Specialization	Special	Number of the
		Requirements/	teaching staff
Professor	Pathology	Skills (if	
		applicable)	0NE THERORY
			ONE PRACTIC
		HISTOPSTHOL	
		OGY	

	General	Special	Staff	Lec
				tur
				er
Prof. Dr. Abdul Amir Aboudi Mohammed	Radiology	Radiology and Sonar Board		~
Prof. Dr. Mortada Shakir Aswad	Physics	Radiological Physics		√
Prof. Dr. Anis Ali Hassan	Physics	Radiological Physics		~
M.Sc. Ali Hani Kareem Hassan	Radiology Techniques	Radiology Techniques		~
M.Sc. Hussein Ayed Hussein Jasim	Radiology Techniques	Radiology Techniques		~
Assoc. Prof. Dr. Wissam Kazem Abbas Ahmed	Radiology	Radiology and Sonar Board		~
Assoc. Prof. Dr. Mohammed Hamza Khudair Alawi	Physics	Physics		~
Dr. Ayad Mohammed Jaber Awad	Biological Sciences	Microbial Biology		✓
Assoc. Prof. Jasim Mohammed Abdul Hussein	Chemistry	Chemistry	✓	
M.Sc. Nabil Basim Nasser	Nursing	Nursing	√	
M.Sc. Banin Abdul Hussein Rashid	Biological Sciences	Physiology	✓	
M.Sc. Muatasim Rabee Hussein	Arabic Language	Arabic Language	\checkmark	
M.Sc. Mohammed Abdul Hassan Mohsen	English Language	English Language	\checkmark	
M.Sc. Huda Noman Obeid	Computer Science	Computer Science	~	
M.Sc. Amir Haider Razzaq	Biological Technologies	Biological Technologies	~	

Professional Development

Mentoring new faculty members= write lactuer and visin lacter .

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

Professional Development

Mentoring new faculty members

Subjecting new teachers to courses on teaching methods and taking a teaching competency test, and only by passing it are they allowed to teach, while following up on their teaching methods and giving them feedback.

Professional development of faculty members

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

Follow up on teaching methods for all teachers by the Office of the Associate Dean, prepare seminars and workshops to develop teaching and speaking skills, and ensure the preparation and presentation of lectures in the continuing medical education curriculum.

12. Acceptance Criterion = rat of average marke

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

The academic average for the student's graduation from preparatory school, physical and mental health according to the standards established and approved by the Ministry of Higher Education and Scientific Research

13. The most important sources of information about the program

State briefly the sources of information about the program. =book and journal 1. Approved and authenticated documents for the general curriculum of the college and the courses, vision, mission, and goals of the university and college in both Arabic and English.

2. The website of the Ministry of Higher Education and Scientific Research.

3. The official website of AI-Kafeel University and its College of Health and

Medical Technologies, Department of Radiology Techniques

4. Billboards installed in the college corridors.

14. Program Development Plan

By practice and theory lecture

1) Systematic and recurring self–evaluation studies of the program are based on evaluating the learning and teaching outcomes of students and obtaining feedback from students about the components of the program.

2) Holding regular meetings with faculty members in local and foreign health and medical technology colleges to learn about new curricula and teaching methods.

3) Holding workshops on developing curricula and teaching methods in the college or attending those held in neighboring universities.

	Program Skills Outline														
						R	equi	ired p	rogra	m Lo	earnin	g outco	mes		
Year/Leve	Course	Course Name	Basic or	Kno	wledg	е		Skill	S			Ethics			
I	Code		optional	A1	A2	A3	Α	B1	B2	В	B4	C1	C 2	C3	C4
							4			3					
		Anatomy of skeleton	Assistance	/	/	/		/	/	/		/	/	/	
		General physics	Assistance	/	/	/		/	/	/		/	/	/	l
		General physiology	Assistance	/	/	/		/	/	/		/	/	/	
Year One		Biology	Assistance		/				/					/	
		General chemistry	General	/	/	/		/	/	/		/	/	/	
		Computer principles1	General			/				/					/
		Human rights and democracy	General				/				/				/
		English language	Assistance				/				/				/

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

First Stage / First Course

Course Description Form

1. Course Name: first course

General physics

2. Course Code:

3. Semester / Year: one /2024

1st /2023-2024

4. Description Preparation Date:15/3/2024

5. Available Attendance Forms:

- 6. Number of Credit Hours (Total) / Number of Units (Total) Theory= 3 practical=3 unit=2
- 7. Course administrator's name (mention all, if more than one name) Name: Dr.Mohammed Hamza AL-Mamoori Email: wsci.mohamedhamza@uobabylon.edu.iq

8. Course Objectiv	es
Course Objectives	 Understand the fundamental concepts of standard units of measurements and their importance in physics. Describe and apply the principles of length, mass, and time measurements in various physical contexts. Explain the laws of electrostatics, including Coulomb's law and the principles of electric fields. Define electric potential and describe its relationship to electric fields and work. Describe the principles of electrodynamics, including the behavior of moving charges in electric and magnetic fields. Analyze simple electric circuits and calculate electric power and energy consumption.

	 Explain the principles of electromagnetism, including the relationship between electric currents and magnetic fields. Describe electromagnetic induction and its applications in generating electric currents. Explain the operation of electro-mechanical devices, including transformers. Define velocity and acceleration and describe their relationship to motion. Apply Newton's laws of motion to analyze the motion of objects. Describe the gravitational field and calculate the weight of objects in gravitational fields. Analyze the forces involved in friction and calculate the force required to overcome friction. Apply the principles of force and acceleration to analyze the motion of objects. Define momentum and impulse and describe their relationship to force and acceleration. Apply the impulse-momentum relation to analyze collisions. Describe the law of conservation of momentum and apply it to analyze collisions. Define work and energy and describe their relationship. Identify different types of energy (e.g., kinetic, potential, thermal) and describe energy conservation principles. Apply the work-energy relation to analyze the motion of objects. Define power and calculate the power of mechanical systems. Differentiate between conservative and nonconservative forces and describe their effects on energy. Calculate gravitational potential energy in various physical situations. Describe simple harmonic motion and analyze spring-mass systems and simple pendulums.
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Week	Ho urs	Required Learning Outcomes	Unit or subject name	Learning method	Eval uatio n meth
					od
The first week The Second week The third week		•	Standardunitsofmeasurements,Length,Mass,Time,ElectrostaticElectricPotential,Electrodynamics,ElectricCircuits,ElectricPower,	The method giving lecture a the method	
The fourth wee			Electromagnetic Induction, Electromechanical Devices , (transformer), Velocity, Acceleration, Newton's Laws of Motion, Gravitational field Weight Eriction force and	direct question	
The fifth week			acceleration, Momentum , Impulse, Impulse and Collisions, Impulse- momentum relation , Law of		
The seven week			conservation of momentum, Work , Energy , Types of energy , Energy Conservation, Work-energy		
The eight week			relation, Power, Conservative and neoconservative forces, Gravitational potential		
The nine week			energy, Simple harmonic motion: spring mass , system, simple pendulum, physical,		
i ne ten week			pendulum, Dynamics of Rotational Motion, Moment of inertia, Angular position,		
Theeleventh Wee			angular velocity, angular acceleration, Torque, Torque-angular acceleration		
Week			relation, Static equilibrium, Rotational kinematics, Work		
The thirteer week			done by a torque, Rotational kinetic energy , Angular		

Thofourtoonth		momentum Static	
wood		equilibrium experiments,	
WEEK		Damped and Driven	
		oscillation. Periodic Motion	
		experiment. Gravitational	
		notential energy Specific	
		Heat Methods of heat	
		transferring Pressure &	
		volume laws of prossure	
		volume, laws of pressure.	
		FYAM	
		LAM.	
I ne fifteenth we			
	dec		
11. Course Evaluat	on		
Distributing the score ou	t of 100 accord	ling to the tasks assigned to	the student such as daily
preparation, daily oral, r	nonthly, or wri	tten exams, reports etc	
12. Learning and T	eaching Resc	ources	

Required textbooks (curricular books, if any)	
Main references (sources)	PDF
	1).pdf ابىتك RadiationPhysics
Recommended books and references (scientific	
journals, reports)	
Electronic References, Websites	

Course Description Form

1.	Course Name:
Comp	outer Fundamentals(1)
2.	Course Code:
Comp	outer Fundamentals(1)
3.	Semester / Year:
The fi	rst stage/first semester
4.	Description Preparation Date:
2024/3	3/15
5.	Available Attendance Forms:
	Is mandatory
6.	Number of Credit Hours (Total) / Number of Units (Total)
	45h
7.	Course administrator's name (mention all, if more than one name)
	Name: huda noman obaied
	Email: huda.noman@alkafeel.edu.iq
8.	Course Objectives

 Objectives Providing the student with the skills of dealing with basic off applications, creating office files and documents, and using t operating system, as well as the basics of working within t digital environment. Overall goal: At the end of the academic year, the student should be able to Provide the student with knowledge in managing and usi various computer applications. Urging the student to be creative and think about specializati projects and keep pace with developments in this field. Providing students with scientific, practical and personal sk that enable them to solve practical problems and deal with the using scientific concepts. 							
9. Teaching a	and Learning Strategies						
Strategy	Name of the unit/topic	Required learning outcomes	hours	week			
	Computer Fundamentals, computer concept, phases of the computer life cycle, development of computer generations			1			
	Computer advantages and areas of use. Computer classification in terms of purpose, size and type of data			2			
	Computer Components Computer Components The physical parts of a computer and the software entities		1theor	3			
	Your personal computer, the concept of computer security and software licenses		etical +	4			
	Computer Safety & Software License	Bac	- 2 p	5			
	7	helor's	ractical				

		1
Ethics of the electronic world, forms of abuse, computer security,	6	
computer privacy.		
Computer software licenses and		
their types, intellectual property,		
electronic hacking, malware, the	7	
most important steps necessary to	'	
protect against hacking operations,		
computer harm to health.		
Definition of Operating Systems		
Operating system, functions, goals,	Q	
classification, examples of some	0	
operating systems		
Operating System Windows 7	Q	
Operating System	3	
Desktop components	10	
Start menu, taskbar	10	
Folders and files icons	11	
Performing operations on windows	12	
desktop backgrounds	12	
Control Panel Windows Control		
Panel "Control Category" Groups	13	
"Panel".		
From the Defragment control panel,		
you can organize files inside the	14	
computer, install programs, and	14	
delete them		
Some common conditions and		
settings in the computer, managing	15	
the printer, setting the time and		
date, maintaining the initial disks.		
10. Course Structure		
Course evaluation		
Distribution of the grade out of 100 according to the tasks assigned to the	ie studer	nt,
such as daily preparation, daily, orai, monthly, written exams, reports, et	.C.	
11 Learning and Teaching Decourses		
Thearning and Teaching Resources	()	
• Computer basics and office applica	ations / P	art O
- Mr. Dr. Gbassan Hamid Abdel Mai	bac bac	Dr 7
Muhammad Abboud and others.	eeu anu	שו. ב
Main references (sources) • Lectures provided by the subject teacher		
Main references (sources) Lectures provided by the subject te 	eacher	

Recommended books and references (scientific journals, reports)	 All reputable scientific journals related to compu- science And solid scientific research published on soon networks
Electronic References, Websites	Internet network

Course Description Form



			•	Apply gram accurately and writter Reading Comprehensic o Improve re by underst variety of E fiction, nor articles. o Identify ma and implie 	nmatical structures and effectively in spoken n communication. on: aading comprehension skills anding and interpreting a English texts, including -fiction, and academic ain ideas, supporting details, d meanings in English texts.		
20.	T(eaching and Learnin	g Strategies				
Strategy							
		 Emphasize English th problem-s Focuses o to develop Task-Based Lea Incorpora English to problems. Promotes skills throm 	es real-life communica rough activities such a solving tasks. In meaningful languag p speaking and listenir rning: tes tasks and projects accomplish specific ge language production ugh hands-on, experie	tion and intera is role-plays, dis e use in authen ng skills. that require stu oals or solve re and integration intial learning a	ction in scussions, and itic contexts idents to use al-world n of language ctivities.		
		3. Differentiated I	nstruction:				
	Tailors instruction to meet the diverse needs, learning styles, and proficiency levels of students.						
21. Co	ourse St	tructure					
Week	Hours	Required Learning	Unit or subject	Learning	Evaluation		
		Outcomes	name	method	method		

22. 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

23. Learning and Teaching Resources

Required textbooks (curricular books, if any)	No specific books
Main references (sources)	
Recommended books and references	
(scientific journals, reports)	
Electronic References, Websites	

15. **Program Vision**

Program vision is written here as stated in the university's catalogue and website.

16. **Program Mission**

Program mission is written here as stated in the university's catalogue and website.

17. **Program Objectives**

1. Understand the main physiologic concepts of cells and their component.

- 2. Understand the factors of homeostasis regulation in human body
- 3. Understand the physiologic mechanisms of blood flow, gases exchange and

gastric secretions

18. **Program Accreditation**

Does the program have program accreditation? And from which agency?

19. Other external influences

Is there a sponsor for the program?

20. Program Structure						
Program Structure	Number of Courses	Credit hours	Percentage	Reviews*		
Institution Requirements						
College Requirements						

Department Requirements		
Summer Training		
Other		

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

21. Program Description						
Year/Level	Course Code	Course Name	(Credit Hours		
2023-2024	3	General physiology	theoretical	practical		
			3	2		

22. Expected learning outcomes of the program						
Knowledge						
Learning Outcomes 1	Learning Outcomes Statement 1					
Skills						
Learning Outcomes 2	Learning Outcomes Statement 2					
Learning Outcomes 3	Learning Outcomes Statement 3					
Ethics						
Learning Outcomes 4	Learning Outcomes Statement 4					
Learning Outcomes 5	Learning Outcomes Statement 5					

23. Teaching and Learning Strategies

- 1. Method of discussion between the professor and the student
- 2. How to use examples close to our daily lives
- 3. How to use images
- 4. Brainstorming method

24. Evaluation methods

1. Through student participation

- 2. Practical skills within educational laboratories
- 3. Surprise exams (coz)
- 4. Written reports

25. Faculty

Faculty Members							
Academic Rank	mic Rank Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff		
	General	Special			Staff	Lecturer	

Professional Development

Mentoring new faculty members

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

Professional development of faculty members

Briefly describe the academic and professional development plan and arrangements for faculty

such as teaching and learning strategies, assessment of learning outcomes, professional development, etc.

26. Acceptance Criterion

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

27. The most important sources of information about the program

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

2. Essentials of Human Anatomy & Physiology, Global Edition Suzanne Keller Elaine Marieb (2017)

3. Human Anatomy and Physiology, Global Edition [Sep 14, 2015] Erin, C. Amerman

4. Study Guide to Human Anatomy and Physiology 1 (2012) Michael Harrell M.S.

28. Program Development Plan

Continue to develop information, educational laboratory expertise, and interpretation of the final results of an experiment.

	Program Skills Outline														
							Req	uired	progr	am Le	earning	g outcon	ies		
Year/Level	Course Code	Course Name	Basic or	Knov	vledge			Skills	5			Ethics			
			optional	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
				0	0	0		0	0	0		0	0	0	

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

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





2024



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

course Description Form

24. Course Name:

Computer Fundamentals(1)

25. Course Code:

Computer Fundamentals(1)

26. Semester / Year:

The first stage/first semester

27. Description Preparation Date:

2024/3/15

28. Available Attendance Forms:

Is mandatory

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

45h

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

Name: huda noman obaied Email: huda.noman@alkafeel.edu.iq

31. Course Objectives

Course Objectives	 Special goal: Providing the student with the applications, creating office fil operating system, as well as digital environment. Overall goal: At the end of the academic year Provide the student with know various computer applications Urging the student to be crear projects and keep pace with determined and the solve practure of the solve practure o	skills of de es and doc the basics ar, the stude owledge in tive and this evelopments ntific, pract tical proble	ealing w uments of wor ent sho manag nk abou s in this ical and ms and	vith basic o s, and using king within uld be able ging and u ut specializa field.
32. Teaching a	nd Learning Strategies			
Strategy	Name of the unit/topic	Required learning outcomes	hours	week
	Computer Fundamentals, computer concept, phases of the computer life cycle, development of computer generations			1
	Computer advantages and areas of use. Computer classification in terms of purpose, size and type of data			2
	Computer Components Computer Components The physical parts of a computer and the software entities		1theor	3
	Your personal computer, the concept of computer security and software licenses		retical -	4
	Computer Safety & Software License	Bac	+ 2 p	5
	22	helor's	ractical	

E	thics of the electronic of abuse, computer	world, forms security,		6
r p	Computer software lic their types, intellectua electronic hacking, ma nost important steps n rotect against hacking	enses and I property, alware, the ecessary to operations,		7
C	Definition of Operating perating system, func classification, example operating syste		8	
	Operating System W	/indows 7		9
	Desktop compor	nents kbar		10
	Folders and files icons Performing operations on windows			
F				
	Control Panel Windov Panel "Control Catego "Panel"		13	
F	rom the Defragment c you can organize files computer, install prog delete them	ontrol panel, inside the rams, and		14
s	Some common cond ettings in the compute the printer, setting the date, maintaining the i	itions and r, managing e time and nitial disks.		15
 Course Structure Course evaluati Distribution of th such as daily pre 	e on e grade out of 100 acc paration, daily, oral, n	cording to the nonthly, writte	tasks assigned n exams, repo	d to the student, rts, etc.
34. Learning and Te	aching Resources			
Required textbooks (o if any)	urricular boo • C	omputer basi Mr. Dr. Ghass Juhammad Ab	cs and office a an Hamid Abd	pplications / Part C el Majeed and Dr. 2 ers
Main references (sou	rces) • L	ectures provid	led by the sub	ject teacher
	В	<u>ooks</u> available	e in the college	e library

Recommended books and references (scientific journals, reports)	 All reputable scientific journals related to compu- science And solid scientific research published on so networks
Electronic References, Websites	Internet network

Course Description Form

35.	Course Name: English Langua	age					
	0 0	0					
36.	Course Code:	Course Code:					
37.	Semester / Year: first year fir	Semester / Year: first year first semester					
38.	Description Preparation Date	:					
20.4	111 A.J. 1 D						
39.Ava	llable Attendance Forms:						
40.Nun	nber of Credit Hours (Total 45) / 1	Number of Units (Total 15)					
41. nam	Course administrator's name	e (mention all, if more than one					
Nan	1e: Asst.L.Muhammad Abdel Hassan	Mohsen					
Ema	ail: MuhammadAbdel.H@alkafeel.e	du.iq					
42.	Course Objectives						
Course Ohio	ativas	Language Proficiency:					
Course Obje	Clives	 Develop proficiency in listening, speaking, reading, and writing skills in realist. 					
		 Demonstrate the ability to understand and produce spoken English with 					
		clarity, fluency, and appropriate pronunciation.					
		Vocabulary and Grammar: Expand vocabulary knowledge and use					
		a wide range of vocabulary					
		appropriately in various contexts.					
		accurately and effectively in spoken					
		and written communication. Reading Comprehension:					
		 Improve reading comprehension skills by understanding and interpreting a variety of English texts, including fiction, non-fiction, and academic 					
		 articles. Identify main ideas, supporting details, and implied meanings in English toxic 					
		and implied meanings in english texts.					
		•					

	I	Teaching and Learning Strategies							
Strategy	,								
		4. Communicative	Language Teaching	(CLT):					
		Emphasizes real-life communication and interaction in							
		English thi	English through activities such as role-plays, discussions, and						
		problem-s	solving tasks.						
		Focuses of	n meaningful languag	e use in authen	tic contexts				
		5 Task-Based Lear	speaking and listenir	ig skills.					
		J. Idsk-based Leaf	tes tasks and projects	that require stu	dents to use				
		English to	accomplish specific g	oals or solve re	al-world				
		problems.							
		Promotes	language production	and integratior	of language				
		skills throu	ugh hands-on, experie	ntial learning a	ctivities.				
		6. Differentiated In	nstruction:						
		Tailors inst	truction to meet the d	iverse needs, le	earning styles,				
		and profic	iency levels of studen	ts.					
44. Co	ourse S	tructure							
Week	Hours	Required Learning	Unit or subject	Learning	Evaluation				
		Outcomes	name	method	method				
15		Fuelwatian							
45. (Course	Evaluation							
45. (Distribu prepara	Course Iting the	Evaluation e score out of 100 accord ily oral, monthly, or wr	ding to the tasks assign itten exams, reports	ed to the studer etc	nt such as daily				
45. 0 Distribu prepara 46. 1	Course Iting the Ition, da	Evaluation e score out of 100 accord ily oral, monthly, or wri g and Teaching Resc	ding to the tasks assign itten exams, reports ources	ed to the studer etc	nt such as daily				
45. 0 Distribu prepara 46. 1 Require	Course Iting the Ition, da Learning	Evaluation e score out of 100 accord ily oral, monthly, or wri g and Teaching Reso oks (curricular books, if a	ding to the tasks assign itten exams, reports ources any)	ed to the studer etc	nt such as daily				
45. 0 Distribu prepara 46. 1 Require Main ref	Course uting the ation, da _earning d textboo	Evaluation e score out of 100 accord ily oral, monthly, or wri g and Teaching Reso oks (curricular books, if a (sources)	ding to the tasks assign itten exams, reports ources any)	ed to the studer etc	nt such as daily				

Recommended	books	and	references
(scientific journals	s, reports.)	
Electronic Refere	ences, Web	osites	

Course Description Form

1. Course Name: General chemistry	
2. Course Code:	
3. Semester / Year:year 2024	
4. Description Preparation Date:15/3/	/2024
5. Available Attendance Forms: 15/3/20)24
6. Number of Credit Hours (Total) / 2 (Total) 3	theory and 3practic Number of Units
7. Course administrator's name (me	ntion all, if more than one name)
Name: Jassim mohammed abdulhu	ssain
8. Course Objectives	
Course Objectives	• Be able to understand the basic principles
	general and life chemistry and its applications
	• Be able to link the traumatic pain to abnor
	changes in other components of the blood
	body
	• Have the ability to collect and treat biolog
	samples
9. Teaching and Learning Strategies	
Strategy	

10. Co	ourse St	ructure			
Week	Hours	Required Learning	Unit or subject	Learning	Evaluation
		Outcomes	name	method	method
30	80		- Scope of biochemistry in health and disease, cell and cell constituents. Some aspects of physical chemistry, Gas laws, Boyle's law, Graham's Law of diffusion, Dalton's Law of partial pressure, General gas equation, the international system of units. Radio activity and radioactive isotopes Solutions and methods of expressing concentrations colloidal solution. The PH concept, Acid- base balance, chemical equilibrium, common ion effect. Buffer and buffer systems of physiological importance in living systems. Blood, blood constituents, body fluids, regulation of blood Ph and body fluids. Water and electrolyte balance – osmotic pressure of body fluids, control of total electrolytes and body fluids. Carbohydrates classification reactions, main carbohydrates in human body Metabolism of carbohydrates, blood glucose factors controlling glucose level in blood Glucose abnormalities, diabetes mellitus, ketosis, glycosuria, glucose tolerance curve		

Lipids, classification, derived lipids, compound, lipids Lipid metabolism, lipid abnormalities Proteins, classification, functions, peptide bonds, amino acids, chemical reactions. leic acids and their ression, DNA Replication,	
	Lipids, classification, derived lipids, compound, lipids Lipid metabolism, lipid abnormalities Proteins, classification, functions, peptide bonds, amino acids, chemical reactions. leic acids and their ression, DNA Replication,

11. Course Evaluation=10 for day examin, 25 first course, 25 second course,

40 final examin.

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	General Chemistry: Principles, Patterns, and Applications	
	Context4Book	
Main references (sources)	General Organic chemistry NEET	
	Chemistry	
Recommended books and references		
(scientific journals, reports)		
Electronic References, Websites		

Course Description Form

47.	Course Name:			
General	Phtsiology			
48.	Course Code:			
49.	Semester / Year:			
Courses	/ first course / first stage			
50.	Description Preparation Date:			
24 /1 /20	023			
51.Av	vailable Attendance Forms:			
Theoretical and practical lectures				
52.Nu	umber of Credit Hours (Total) / Number of Units (Total)			

Theor	v 2h an	nd practical 2h, numb	er of units: 3		
53. Course administrator's name (mention all, if more than one					
name)					
Name Fmail	: Banee	en abdulhussaln rashe	eed		
54.	Course	Objectives			
Course Object	ives			Identify	the principles
				physiolo	egy and
				relations	ship to ot
				sciences	5.
				Distingu	uishing between
				normal	pnysiological si
				patholog	lical condition.
					,
				• To be ab	le to use laborat
				devices	and tools.
				Conduc	ting blood tests :
55	Taaabir	a and Learning Ctrate		other bo	ay fiulas
55.	Teachir	ng and Learning Strate	egies		
Strategy					
56. Course	Structur	re			
Week	Hours	Required Learning	Unit or	Learning	Evaluation
		Outcomes	subject name	method	method
first		Definition of physiology; cell physiology; cell membrane components and			
		su ucture.			

		_
	Movement of flu	
	solutes and gase	
as a sound	across the cell	
second	membrane.	
	membrane.	
	Muscular system	
	Muscular system	
	types &	
	characteristics.	
third		
	Contraction	
	mechanism,	
	fatigue, muscula	
	pain	
	1	
fourth	Types of nerve	
	cells functions d	
	nerve impuise,	
	synapses and	
fifth	reflexes	
Inten		
	Action potential	
	nerve and musc	
	fiber.	
	Plood functions	
sixth	component,	
	plasma and seru	
	Red blood cells,	
	shape, origin, Ht	
	structure and	
	Anemia	
Seventh	WBCs platelets	
	functions origin	
	atructure	
	suucture	
Eighth	Blood clotting	
-	mechanism	
	Cardiovascular	
	system.heart val	
ninth	cycle HB	
-	conductivo svete	
	conductive syste	
	Heart sounds an	
	murmers. ECG	1

1		
tenth	Blood pressure	
eleventh	Respiratory system, Pleura, Types of mechanism of respiration.	
twelfth	Oxygen Transporting a exchange Cart dioxide transporting a	
thirteenth	exchange, Lu Vol. and capac types of Hypoxia	
fourteenth		
fifteenth		
57. Course Eva Distributing the sco preparation, daily o 58. Learning ar	nuation re out of 100 according to the ta ral, monthly, or written exams, nd Teaching Resources	asks assigned to the student such as daily reports etc
Required textbooks	curricular books, if any)	No specific Books
Main references (sou	urces)	*
Recommended boo	ks and references (scientific	
journals, reports)	Υ.	
,		-

Course Description Form

59. Course Name:

Computer Fundamentals(1)

60. Course Code:

Computer Fundamentals(1)

61. Semester / Year:

The first stage/second semester

62. Description Preparation Date:

2024/3/15

63. Available Attendance Forms:

Is mandatory

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

45h

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

Name: huda noman obaied Email: huda.noman@alkafeel.edu.iq

66. Course Objectives Course • Special goal: **Objectives** Providing the student with the skills of dealing with basic office applications, creating office files and documents, and using the operating system, as well as the basics of working within the digital environment. Overall goal: At the end of the academic year, the student should be able to: - Provide the student with knowledge in managing and using various computer applications. □ Urging the student to be creative and think about specialization projects and keep pace with developments in this field. that enable them to solve practical problems and deal with them using scientific concepts. 67. Teaching and Learning Strategies

Strategy

Name of the unit/topic	Required learning outcomes	hours	week
Microsoft 2010 Run Microsoft Word 2010			.1
Microsoft Word 2010 interface		1theoretical	.2
File tab, Home tab		 + 2	.3
Page Layout tab, Display tab	Bache) pract	.4
Inserting objects in Microsoft Word	elor':	lical	.5
Insert tab, group of pages			.6
Tables group			.7
Tables group			.8
Collection of illustrations			.9
A link group is a header and footer group			.10
Text set, Symbols set			.11
Additional tasks for Microsoft Word 2010			.12
Microsoft PowerPoint 2010, open a new file and a safe on the desktop, Adding and editing slides (title slide, title with content, subtitle, two			.13

	contents, comparison, title only, blank slide, content with comment, image with comment)			
	Add themes Main display group Add animations and adjust time and repetition for entire slides and differently for each slide		.14	
	Add animations to slides		.15	
 Course Structure Course evaluation Distribution of the or 	ade out of 100 according to the tasks a	assigned to the	student. such	as dailv
preparation, daily, or	al, monthly, written exams, reports, etc	C.		
Required textbod (curricular books, any)	Computer basics and office applicat - Mr. Dr. Ghassan Hamid Abdel Maj	ions / Part One eed and Dr. Zia	e ad Muhammac	l Abboud a
Nain nafanan	others.			
(sources)	Books available in the college library	ncher		
Recommended • books and	Recommended • All reputable scientific journals related to computer science books and			
references (scientific journals, reports)	And solid scientific research published on social networks			
Electronic • References, Websites	Internet network			

First Stage /Second Course

Course Description Form

- 1. Course Name:
- Arabic language
 - 2. Course Code:
 - 3. Semester / Year:

 2^{nd} Semester

4. Description Preparation Date:

22-3-2024

5. Available Attendance Forms:

Classes

- 6. Number of Credit Hours (Total) / Number of Units (Total) 30 Hours/2
- 7. Course administrator's name (mention all, if more than one name) Name: assist.lec moatasem rabie hussain

8. Course Objectives

Course Objectives	Introducing the student and making him aware of the most important human rights				
	and what should be done in order to ensure life in freedom and dignity				
9. Teaching a	9. Teaching and Learning Strategies				
Strategy	 Adopting the method of delivering lectures and linking each topic with examples from a real work situation. Giving them some simple practical exercises that are discussed by the students and solved during the lecture, with the participation of all students in the section with the professor, to give the subject a kind of interaction. Presenting some practical cases. 				

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1	Bachalaria	Introduction to linguistic errors (ta' and ha')	Theoretical +	F
2	1	Dachelor s	Introduction to linguistic errors (ta' and ha')2	practical	Exams

			Rules for writing extended									
3	1		and short alifs - solar and									
			lunar letters									
4	1		Writing the hamza									
5	1		punctuation marks									
6	1		The noun, the verb, and the									
0	1		difference between them									
7	1		objects									
8	1		the number									
٥	1		Applications on common									
9	Ŧ		linguistic errors									
10	1	1	1	1	1	1	1	1	1		Noun and noun - meanings	
10	Ŧ		of prepositions									
11	1		Formal aspects of									
11	Ŧ		administrative discourse									
12	1		The language of									
12	1		administrative discourse									
13	1		Examples of administrative									
13	1		correspondence									
1/	1		Examples of administrative									
14	1		correspondence2									
15	1		Dhaad and Dhaa									
11 C	Course F	valuation										

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Collector of Arabic Lessons: Mustafa Al-Ghalay
Main references (sources)	
Recommended books and references	Books and references on Arabic language
(scientific journals, reports)	
Electronic References, Websites	Internet network

Course Description Form

1. Course Name:
Anatomy of body systems
2. Course Code:
3. Semester / Year: 2 nd 2023-2024
Courses / second course / first stage
4. Description Preparation Date:
38

2024-1-30					
5. Available A	ttendance Fo	rms:			
Theory and pr	actical lecture	es			
6. Number of	Credit Hours	(Total) / Number o	of Units (Total)	
Practical 3 hou	irs and theory	y 2 hours, number o	of units:	3	
7. Course adm	inistrator's n	ame (mention all, i	f more tl	han one name	e)
Name: Ahmed	Hasan Nasir				
Email:					
8. Course Obje	ectives				
Course Objectives			 Identify 	the principles of	anatomy and
			their relat	ionship to other	sciences.
			Identify	the body's syste	ems and organ
			structure.		
			Identify	the precise struc	cture of the
			organ.		
			• Focus on the primary information		
	pertaining to each organ, which i			which is	
			represented by its composition, location		
			and function		
9 Teaching an	0 Teaching and Learning Strategies				
Stratagy					
10. Course Struct	ure				
Week	Hours	Required Learning	Unit or	Learning	Evaluation
		Outcomes	subject	method	method
			name		
the first		CNS structure and			
		functions			
the second		DNC opinal normal			
		Sensory and moto			
the third		nerves systems			
_		GIT system ; parts a			
the fourth		structure of wall ar	1		
		Stomach			
Fifth	1	Colinary aland			
		Salivary gland			
171		structure , pancreas			

Seventh		Liver anatomy	/		
		structure and func	tie		
VIII					
		Urinary system ki	dr		
Ninth		, ureter , urinar	у		
INITIUT		bladder , urethr	a		
		Muscular syster	n		
The tenth		Reproductive sys	ste		
		- male genitalia	1.		
eleventh		Female reproduc	tiv		
		organs.			
twelveth					
ewerveen		Endocrino glano	łc		
		anatomy and funct	15.		
T1 1 1			u c		
Thirteenth		Endocrine gland	le.		
		anatomy and func	tic		
The tenth		Special sense anat	on		
quarter		opeenar sense anae	011		
		Skeletal system	n		
Fifteenth		anatomy.			
Theenen		j ·			
		The development	ai		
		inheritance.			
11. Course Eval	uation				
Distributing the scor	e out of 100 ac	cording to the tasks	s assigned to	o the student s	uch as dailv
preparation, daily or	al, monthly, or v	vritten exams, repo	rts etc		
12. Learning and	d Teaching Re	sources			
Required textbooks (curricular books, if any)		Anatomy	r text books		
Main references (sources)					
Recommended books	Recommended books and references (scientific journals,				
reports)					
Electronic References	Electronic References, Websites				

Second Stage / First Course

Course Description Form

70.Course Name:Conventional Radiological Equipment techniques

71. Course Code:

72. Semester / Year:

 1^{st} semester / 2023 - 2024

73. Description Preparation Date:

74. Available Attendance Forms:

75.Number of Credit Hours (Total) / Number of Units (Total) Theoretical 2 hours/ practical 3 hours / total units 4

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

Name: Dr. Abdulameer Aboody Mohammed Email:

77. Course Objectives

Course Objectives	Understanding the principles and	
	operation of conventional radiological	
	equipment.	
	• Familiarization with safety protocols and	
	precautions when operating radiological	
	equipment.	
	• Proficiency in positioning patients for	
	various radiological procedures.	
	• Mastery of techniques for obtaining	
	high–quality radiographic images.	
	Competence in troubleshooting common	
	issues with radiological equipment.	
	Awareness of radiation protection	
	measures for both patients and	
	operators.	

			c. Complia		en etenderde
			Compliant and guid	lelines in radioloc	ical practice.
78.	Teachi	ng and Learning S	trategies		, <u> </u>
Strategy Utilize diverse instructional techniques, modern learning environments, practical training opportunities, and technology integration to empower students for successful careers in healthcare.					
79. Cours	se Structu	ire			
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	5		4		Mid term exam and fii exam
80. 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					
81. Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Main references (sources)					
Recommended books and references (scientific					
journals, reports)					
Electronic R	References,	Websites			

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.
- Explain the important techniqes types used in radiographic imaging.
 Determine the methods of scatter control in x-ray imaging system.

Theoretical & practical syllabus		
Week	Details	
	X-Ray machine system:	
	• Operating console:	
	 line compensation, 	
1	– autotransformer,	
	– KVp adjustment,	
	– mA control	
	 Exposure timer 	
	High voltage generators:	
	– transformers,	
2	 voltage rectification, 	
<u> </u>	 phase power types, 	
	 x-ray circuits 	
	 Effect of waveform on radiation output & image quality 	
	• X-ray tube:	
3	– Basic design	
5	 Line focus principle 	
	– Heel effect	
	X-ray tube failure:	
4	 Causes of X-ray Tube Failure 	
· .	– Results	
	– Remedy	
5	• Construction of film, Intensifying screens, cassette.	
	• Processing the latent image:	
	– Manually	
	– Automatically	
	• Filters	
6	– Types	
	 Half-value layers 	

1	• Control of scatter radiation:				
	– Beam restrictors,				
	 The grid (Characteristics of grid construction, grid ratio, grid 				
	frequency)				
-	• Grid types:				
	 linear, crossed, focused, moving grids 				
	• Digital radiography: Computed Radiography (CR):				
8	– System apparatus,				
	 mechanism of work 				
	 Image processing 				
	• Direct to digital radiography (DDR):				
0	• Flat Panel Detectors (DR):				
9	• Indirect conversion detector (a-Si)				
	• Direct conversion detector (a-Se)				
	• Image quality:				
10	– Contrast				
10	– Resolution				
	– Noise				
	– Unsharpness				
	– Magnification				
11	– Distortion				
	– Artefacts				
	Mammography:				
10	 Imaging system equipments, 				
12	 Types of mammography systems. 				
	Film-sceen system				
	– Digital mammography (FFDM)				
	– CEDM				
13	 Breast tomosynthesis 				
	 Computer-aided detection (CAD) 				
	– Scintimammography				
	• Fluoroscopy:				
14	 Traditional imaging system apparatus & mage Intensification 				
17	 Digital Fluoroscopy 				
	 Digital subtraction angiography 				
	• Bone density scan (DEXA scan):				
	 Imaging system apparatus 				
15	– Mechanism				
	• Orthopantomogram (OPG):				
	– Types,				
	– Mechanism				

References:

- Stewart Carlyle Bushong, "Radiologic Science for Technologists Physics, Biology, and Protection" Elsevier, Inc., 7th edition, 2017.
 Chris Guy & Dominic ffytche, "An Introduction to The Principles of Medical Imaging",
- Imperial College Press, 2005.
 Perry Sprawls, "*Physical principles of medical imaging*", 2nd Edition 1996.