

**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



Academic Program Description Form

University Name: University of Hilla

Faculty/Institute: Science College

Scientific Department: Medical Physics

Academic or Professional Program Name: BSc Bachelor

Final Certificate Name: BSc in Medical physics application

Academic System: courses

Description Preparation Date: 1/10/2025

File Completion Date:


Signature:

Head of Department Name: Raheem

Gaayid Kadhim

Date: 1.10.2025


Signature:

Scientific Associate Name:

Prof. Dr. Ahmed Saleem Abbas

Date: 1 - 10 - 2025

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department: Ali Hussein

Date: 1/10/2025

Signature: 



Approval of the Dean

1/10/2025

أ.د. أسعد صباح هادي

عميد كلية العلوم

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.

1. Program Vision

The Department of Medical Physics at Hillah University College seeks to achieve excellence in the field of science training Medical physics by applying quality standards in a climate characterized by independence and motivation

Ambition and creativity contribute to preparing knowledgeable graduates who will have a positive role in. The process of development and comprehensive construction towards change

2. Program Mission

The Department of Medical Physics at Hilla University College is moving towards preparing a graduate specializing in the field of physics Medical diagnosis reveals various scientific news, experiences, and personal abilities and qualifies him to keep pace Continuous scientific and technological development in various fields of work

3. Program Objectives

1- Preparing cadres in the field of medical physics, which bear the responsibility of studying the country's need for development and progress and able to meet the needs of the labor market in the state's health institutions and industry sectors, and preparing an educated generation armed with science and adopting it as a sound basis to bring about radical changes and put scientific knowledge and scientific method in Thinking and analyzing in the service of the country's goals, able to pursue higher studies and adapt to the development of medical technologies in order to keep pace with the expansion of human needs.

2- The academic program aims to apply the principles and methods of physics to

diagnose diseases (Diagnosis) and treat them (Therapy). The practice of modern medicine relies effectively on an important number of techniques, tools and physical principles. The urgent need has led to accuracy in the methods of diagnosis and treatment, improving their performance, and to the continuous development of techniques and tools. The physical used in this led to the emergence of the specialty of medical physics.

3- Preparing cadres that provide health and the Ministry of Environment to work in the areas of diagnosing and treating patients of cancer departments.

4- Balance in focusing on the principles of theoretical and applied medical physics, and working to provide students with analytical, computer, mathematical and methodological tools and means to identify, formulate and solve medical problems and focus on introducing modern methods into the learning system that increase students' ability to design, creativity and innovation in the field of medical devices and equipment Providing self-education and continuing education for the community and spreading medical knowledge in the public and private sectors through short courses, workshops, seminars and conferences, providing consultations and lectures, raising the level of medical studies in the scientific and research field, and providing its various requirements in proportion to the country's needs.

5- Providing an appropriate academic environment for study and research to contribute to finding solutions to medical problems by using appropriate and appropriate techniques through courses that provide a strong foundation in the aspect of mathematics and health physics and their medical applications, in addition to actively contributing to deepening and documenting the university's relationship with society through the implementation of advisory work, training and development of cadres Teaching and administration.

4. Program Accreditation

The department relied on clear assessment methods for students' education, of high quality and modernity, in order to maintain the quality of the graduate and the department's scientific reputation. This is reflected in the college regulations and the requirements of continuous evaluation of students, provided that there are several types of evaluation methods in order to ensure the quality and quality of the graduate, which It constitutes the final product of the educational process, and the most important methods of assessment are:

A- Objective tests to measure knowledge and understanding of scientific facts,

apply scientific knowledge in new places, and measure recollection, through the following:

- True and False Questions.
- Multiple choice questions.
- Interview questions (Matching items).
- Completion questions.

b- Scientific tests related to the following matters:

- Remember facts and figures.
- Understanding of scientific material and medical physical principles.
- The ability to recall, link and interpret.

C- Applying knowledge in a simple way in interpreting data, diagnosing and treating various diseases that affect humans and the environment, which is done through the following:

- Open-ended test questions.
- Questions that have one answer.
- Questions that do not have a definite answer

5. Other external influences

Is there a sponsor for the program?

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements				basic
College Requirements				
Department Requirements	42	242	%17	
Summer Training	Third stage			
Other				

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

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours		units
/ 2025-2026 fourth	HUMP-014103	Medical physics 3	2	2	3
/ 2025-2026 fourth	HUMP-0141013	Medical instrumentation physics2	2	2	3
/ 2025-2026 fourth	HUMP-0141014	English languages 4	2	-	2
/ 2025-2026 fourth	HUMP-0142019	Radiotherapy	2	-	2
/ 2025-2026 fourth	HUMP-0142020	Medical image processing & analysis	2	2	3
/ 2025-2026 fourth	HUMP-0141017	Medical physics 4	2	2	3
/ 2025fourth	HUMP-0141016	Biomaterial	2	-	2
/ 2025fourth	HUMP-0142021	Professional ethic	2	-	2
/ 2025fourth	HUMP-0141016	Material & nanotechnology	2	-	2
/ 2025fourth	HUMP-014203	Project research	4	-	4
/ 2025fourth	HUMP-0142018	Neruphysics	2	2	3

8. Expected learning outcomes of the program

Knowledge	
	A1 . The ability to analyze and think scientifically by applying the laws in physics and mathematics and to abide by the guidelines and instructions for any effectiveness in the organizational and administrative framework in the implementation of a project or facing a physico-medical problem, solving and evaluating it and submitting a proposal or a plan or reformulating it, translating or interpreting it . A2. The student should be able to speak and write in

	an effective scientific manner in Arabic and English . A3 . To be familiar with international medical physics standards, to estimate the needs of the medical and health aspect, and to apply the concepts of quality management in health work. A4 . Adherence to the ethics of practicing the profession and the ability to show high professional competence in addition to a commitment to personal appearance and behavior . A5 . To be interested in protecting the patient from the dangers of using medical devices, especially those related to the radiological aspect, and minimizing harm to the patient and workers in this field.
Skills	
	B1 - The ability to apply the principles of medical physics. B 2 - Analyzing medical problems from the scientific side that have a physical basis and reaching their solution and the midwife to suggest appropriate alternatives. B 3 - Constructive medical discussions and opinion. B-4 - Enabling graduates to keep pace with the research development in the field of medical physics, which contributes to the development of the medical aspect.
Ethics	
	- Having the ability to freely answer. - Having the ability to organize. - Having the ability to organize ideas. - Not to cheat and address it.

9. Teaching and Learning Strategies

- 1- The ability to learn simple and deep in the exploration of knowledge and focus on the application of knowledge to solve existing problems
- 2- The student's ability to analyze, apply and arrange knowledge so that he can

- make assumptions and interpretation as well as describe solutions.
- 3- Using brainstorming to bring out the creative ideas of some talented students.
- 4- Distinguishing that the test increases the student's motivation towards studying and gaining more, and is not a means of punishment for him.

10. Evaluation methods

- Quiz's , seminars , examination , research's

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (If applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Professor	Physics				1	1
Assistant Professor	Physics				0	3
Assistant Professor	Chemistry				1	
teacher doctor	Physics				0	0
assistant teacher	Physics				7	1
assistant teacher	Biology				2	1
assistant teacher	chemstry				1	

Professional Development

Mentoring new faculty members

Selection is made through a personal interview of the applicant after announcing the required specializations

Professional development of faculty members

Participation in training courses

12. Acceptance Criterion

Admission is based on the central admission for private colleges and for morning and evening studies

13. The most important sources of information about the program

- Text book
- website

14. Program Development Plan

- 1- Using new concepts in the field of physics and using electronic devices to display information
- 2- Field visits to hospitals and training on operating the devices and explaining their working principles

Curriculum Skills Map Matrix

Please tick the boxes corresponding to the individual program learning outcomes being assessed.

		Program Intended Learning Outcomes (PILOs)												
		Knowledge & Understanding (A)				Cognitive & Practical Skills (B)				Affectionate & Value Goals (C)				General & Transferable Skills (D)
		A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	
HUMP-014103	Medical Physics 3	✓	✓			✓	✓						✓	
HUMP-0141013	Medical Devices Physics	✓	✓	✓	✓	✓	✓	✓					✓	
HUMP-0141014	English Language 4									✓	✓	✓	✓	✓
HUMP-0142019	Radiotherapy	✓	✓			✓		✓						✓
HUMP-0142020	Medical Image Analysis & Processing	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓
HUMP-0141017	Medical Physics 4	✓	✓			✓	✓						✓	
HUMP-0141016	Biomaterials	✓		✓		✓								✓
HUMP-0142021	Professional Ethics				✓					✓	✓	✓	✓	✓
HUMP-0141016	Materials Science & Nanotechnology	✓		✓		✓								✓



HUMP-014203 Graduation Project

Core

✓

✓

7

7

7

7

7

7

7

4

1

1

1

3

1

HUMP-0142018 Neurophysics

Core

7

7

2

7

1

1



Introduction:

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Course Description Form



1. Course Name:

2. Course Code:

3. Semester / Year:

4. Description Preparation Date:

5. Available Attendance Forms:

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

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

Name:

Email:

8. Course Objectives

Course Objectives

-
-
-



9. Teaching and Learning Strategies

Strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

11. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Main references (sources)					
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					



Course description template

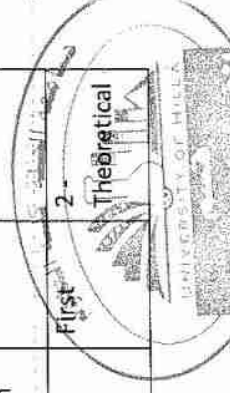
1- Course Name:	
Medical Physics 3	
2- Course Code:	
HUMP-014103	
3- Duration:	
Semester-based	
4- Description Preparation Date:	
1\10\ 2025	
5- Attendance Format:	
CLASSROOM	
6- total Study Hours / Total Units:	
30 / 3	
7- Course Instructor(s):	
Name: Ali Husain	
Email:	
8. : Course Objectives	
Course Objectives	1- Course Objectives 1. Introduce students to the field of medical physics and its medical applications. 2. Familiarize students with laboratory equipment and bridge the theoretical foundations with practical applications. 3. Enhance students' abilities and skills in identifying atomic spectra and the types of energies emitted from them. 4. Provide students with theoretical and practical qualifications enabling them to pursue further studies and excel in research and work in scientific and industrial facilities
9- Education and Outputs	
Outputs	A-Cognitive Objectives: 1. Enable students to acquire comprehensive



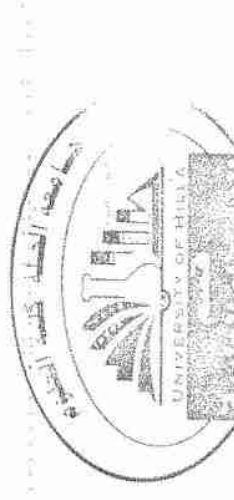
	knowledge about medical diagnosis. 2. Enable students to acquire comprehensive knowledge about medical devices used in treatment and diagnosis. B -Skill-based Objectives specific to the course: 1-Knowledge recall skills. 2-Recall and analysis skills. 3-Skills in application and development..		
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10.Course Vocabulary:

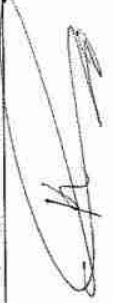
Assessment Method	Teaching Method	Unit/Topic	Learning Outcomes	Hours	Week
Daily and Monthly Exams	In-person and Discussion	Classification of radiation	Study of the classification of radiation	First	2 - Theoretical
Daily and Monthly Exams	In-person and Discussion	radiodosimetry	Introduction to radiometry	Second	2 - Theoretical
Daily and Monthly Exams	In-person and Discussion	Unit of dosimetry quantities	Study of Basic Units in dosimetry quantity	Third	2 - Theoretical
Daily and Monthly Exams	In-person and Discussion	Relation ship between dosimetry quantity	Study the relation between dosimetry quantity	Fourth	2 - Theoretical
Daily and Monthly Exams	In-person and Discussion	Relative biological effectiveness RBE	Principles of biological effective RBE	Fifth	2 - Theoretical
Daily and Monthly Exams	In-person and Discussion	Radiation weighting factor equivalent dose and sievert	Study of Contrast in MRI	Sixth	2 - Theoretical
Daily and Monthly Exams	In-person and Discussion	Interaction of gamma ray and x ray	Introduction to x ray and gamma ray	Seventh	2 - Theoretical
Assessment Method	Teaching Method	Photo electric absorption	Learning photo electric absorption	Hours	Week
Daily and Monthly	In-person and Discussion	Compton's scattering	Study of compton effect	First	2 - Theoretical

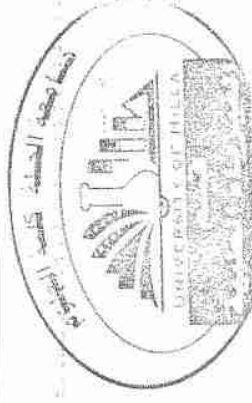


Exams	In-person and Discussion	Pairs production	Study how pairs production	Second	2 - Theoretical
Daily and Monthly Exams	In-person and Discussion	Coherent scattering	Study of coherent	Third	2 - Theoretical
Daily and Monthly Exams	In-person and Discussion	Photodistillation	Introduction to generate of photo distinction	Fourth	2 - Theoretical
Daily and Monthly Exams	In-person and Discussion	Overall interaction of photons with matter	Principles of interaction photon with matter	Fifth	2 - Theoretical
Daily and Monthly Exams	In-person and Discussion	Making an x- ray image	Study how the image created by x ray	Sixth	2 - Theoretical
11. Assessment Methods:					
The division of the grade out of 100 is explained as conducting daily or monthly tests or assigning students to prepare reports and other tasks.					
12. Teaching and Learning Resources					
		Required Textbooks			
(Biological and Medical Physics, Biomedical Engineering) Muhammed Maqbool (eds.) - An Introduction to Medical Physics-Springer International Publishing (2017)		Primary References (Sources):			
		Recommended Books and References: (Journals, reports, and other recommended books and references).			
		Online resources and websites			



Course Description Form

1. Course Name: nano materials and technology			
2. Course Code: HUMP-0141017			
3. Semester / Year: semester			
4. Description Preparation Date: 1\10\2025			
5. Available Attendance Forms: CLASSROOM			
6. Number of Credit Hours (Total) / Number of Units (Total) 60\h			
7. Course administrator's name (mention all, if more than one name) Name: Kahtan Adnan Email: 			
8. Course Objectives Course Objectives ☐			
9. Teaching and Learning Strategies			
Strategy	Introducing the student to the science of medical materials and relationship to medicine, introducing the student to the theoretic basis and linking it to practical application, developing student's abilities and skills in identifying the science of materia and the basic laws in medical applications, and qualifying student theoretically and practically to enable them to continue the postgraduate studies on their own hand and to perform distinguishedly in research and work in the scientific and industrial facility.		
10. Course Structure			
Week	Hours	Required Learning Outcomes	Unit or subject name Learning method Evaluation method

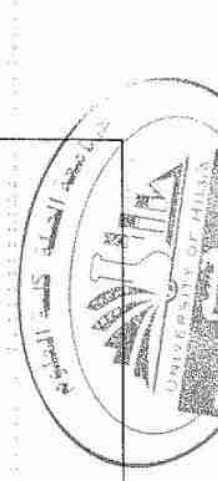


		Introduction		homework's presentation
2 th	2	The Structure of Matter		
3 th	2	Types of Nanoparticles Metal Nanoparticles		
4 th	2	Nanomaterial properties		
5 th	2	Effect of nanosize, nanometer and nanoscale on properties		
6 th		Nano Fabrication		
7 th	2	Scanning probe lithography		
8 th	2	nano partials measurement and spectroscopy		
		Elimination of Pollutants		
		Nano Materials Applications		
11. Course Evaluation				
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc				
12. Learning and Teaching Resources				
Required textbooks (curricular books, if any)			Lectures	
Main references (sources)			https://www.mdpi.com	
Recommended books and references (scientific journals, reports...)			Writing reports on bio subjects and the supervision of the subject profess	

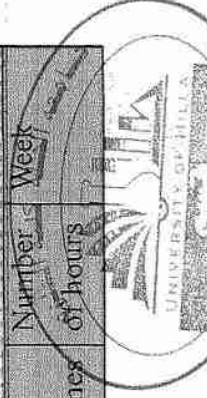


Course description template

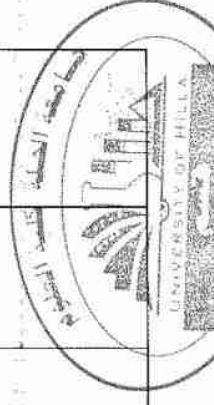
1. Course Name :	
Medical image analysis and processing	
2. Course Code :	
HUMP-0142020	
3. Annual / Quarterly:	
Quarterly	
4. The date of preparing the course description is	
1/10/2025	
5. Attendance forms:	
CLASSROOM	
6. Number of study hours (total) / number of units (total):	
3\30	
7. Course administrator (mention more than one name)	
Name : zeyad nabeel	
Email : 	
8. Course objectives	
...Introducing the student to methods of analyzing medical images Introducing the student to the programs used to introduce medical image analysis and linking the theoretical basis to practical	Course objectives



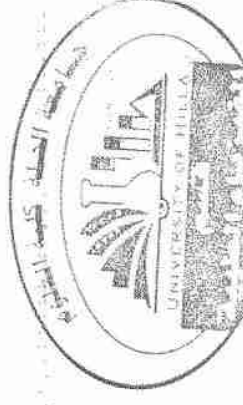
application Developing and improving the student's abilities and skills in reading					
Removing noise from medical images and analyzing them in ways that make the necessary diagnosis better					
Qualifying students theoretically and practically enables them to continue their higher studies on the one hand and to perform outstandingly in research and work					
In scientific and industrial facilities					
9. Education and outcomes					
outcomes					
10. Course vocabulary					
Evaluation method	Teaching method	Name of the unit or topic	Requirements Learning outcomes	Number of hours	Week



	Exercises	Segmentation of medical images Regions of interest for medical image segmentation	tenth
	Image Segmentation Point, Line, and Edge Detection, Line Detection Using the Hough Transform, Thresholding . Region-Based Segmentation, Segmentation Using the Watershed Transform . Feature Detection .	Extracting features from images	eleventh
	Edge Tracking, Hough Transform, Corners, Template Matching . Classification and Clustering .	Image classification Deep learning	tweleventh
	Features and Feature Space, Bayesian Classifier, Classification Based on Distance to Training Samples. Decision Boundaries, Convolutional Neural Networks and Deep Learning, Applications in Medical Image Analysis, Classification by Association.		Thirteen th

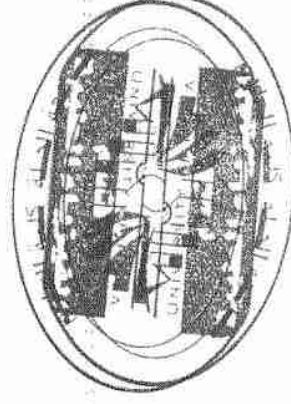
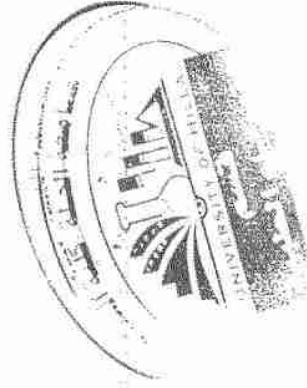


11.	Evaluation methods
The division of the score out of 100 is explained, such as conducting daily or monthly tests, or assigning the student to prepare reports, etc	
12.	Education and teaching References
	1 Required prescribed books
	1- Main references (sources) Klaus D. Toennies, Guide to Medical Image Analysis, Methods and Algorithms, Second Edition, Computer Science Department, ISG, Otto-von-Guericke- Universität Magdeburg, Magdeburg, Germany. 2- William K. Pratt, Digital Image Processing, Third Edition, 2001, Los Altos, California, pp.241-289. Rafael C. Gonzalez, Richard E. Woods and Steven L. Eddins, "Digital Image Process Using MATLAB, University of Tennessee", 2004 by Pearson Education, Inc Recommended books and references (scientific journals, reports, etc.)
	Electronic references and websites

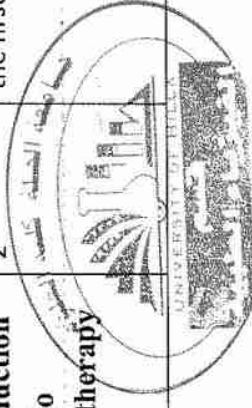


Course description template

1. Course name:	radiotherapy
2. Course code:	HUMP-0142019
3. Annual / Quarterly:	Quarterly
4. The date of preparing the course description is	1/10/2025
5. Forms of attendance:	CLASSROOM
6. Number of study hours (total) / number of units (total):	30/3
7. Course administrator (mention more than one name)	Name: shymaa ahmed Email: 
8. Objectives of the course	



Course objectives					
The primary goal of the radiation therapy lesson is to learn about the basics of radiation therapy in addition to... The most important devices used in this field.					
9. Education and outcomes		Outputs			
The student acquires all sufficient knowledge in the field of radiotherapy and what distinguishes it from diagnosis - Radiological. 2 - The student can find a connection between the practical and the theoretical through the vocabulary of the scientific method. B. Skills objectives of the course: 1 Knowledge skills remembering - - 2 Memorization and analysis skills					
10. Course vocabulary					
Evaluation method	Teaching method	Learning outcomes requirements	Name of the unit or topic	The number of hours	the week
daily exams	Screen and blackboard	The student learns an introduction to radiation therapy	Introduction to Radiotherapy	2	the first



Daily exams	Screen and blackboard	Learn about doses and how to measure them	Measurement of absorbed dose	2	the second
Daily exams	Screen and blackboard	Learning how the x ray production	Production of xray	2	the third
Daily exams	Screen and blackboard	Introduction to linear accelerator and how it work	Linear accelerator 1	2	the fourth
Daily exams	Screen and blackboard	Introduction to linear accelerator and how it work	Linear accelerator 2	2	Fifth
Daily exams	Screen and blackboard	Learning the dose distribution and scatter	Dose distribution and scatter analysis	2	sixth
Daily exams	Screen and blackboard	Learning the dose distribution and scatter in the depth of dose	Dose distribution and scatter analysis (percentage depth dose 1)	2	Seventh
Daily exams	Screen and blackboard	Learning the dose distribution and scatter in the depth of dose	Dose distribution and scatter analysis (percentage depth dose 2)	2	eighth
			Mid exam	2	Ninth
Daily exams	Screen and blackboard	Learning the dose distribution and scatter in the tissue – air ratio	Dose distribution and scatter analysis tissue –air ratio)	2	The tenth
Daily exams	Screen and blackboard	Learning the dose distribution and scatter in the scatter factor	Dose distribution and scatter analysis back scatter factor	2	eleventh
			Final exam		twelfth

11. Evaluation methods

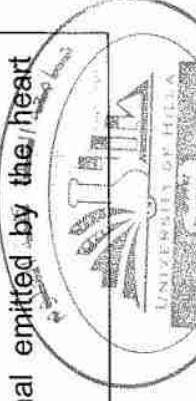
The division of the score out of 100 is explained, such as conducting daily or monthly tests, or assigning the student to prepare reports, etc



12. Sources of education and teaching	
	1 required textbooks
The Physics of Radiation Therapy (Faiz M. Khan)	Main references (sources)
All scientific research specialized in radiation treatment	Recommended books and references (scientific journals, reports, etc.)
Everything related to the lesson from the Internet	Electronic references and websites

Course description template

1. Course Name : Physics of Medical Instrumentations 2. Course Code : HUCMPH-0141013 3. Annual / Quarterly: Quarterly 4. The date of preparing the course description is 1/10/2025 5. Attendance forms: CLASSROOM 6. Number of study hours (total) / number of units (total): 3\30 7. Course administrator (mention more than one name) Name : zahraa najah Email :	8. Course objectives The purpose of giving this course is to study medical devices that are subject in their work to physical foundations and their applications and the characteristics of each device in terms of the general physical, electronic and radiation foundation and the difference between medical devices and other electronic devices as they are devices that work as an integrated circuit in the presence of the human body and the study of internal electronic circuits and training on methods of operation and on-site maintenance and calibration from a physical perspective, which qualifies the student to use the device in the future and maintain and calibrate it, such as the electrocardiogram device, which is considered one of the most important devices for planning the electrical signal emitted by the heart and how to deal with it physically
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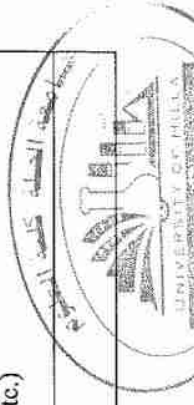


9. Education and outcomes					
outcomes					
10. Course vocabulary					
Evaluation method	Teaching method	Name of the unit or topic	Requirements Learning outcomes	Number of hours	Week
		Biopotential Electrodes	The student has the ability to understand the poles of the vital potential	2	first
		Cardiac function Recorders & Monitors.	The student has the ability to comprehend the waves of the electrocardiogram	2	Second
		Endoscopy System			third
				2	fourth
		Radiation (Computed Tomography)	The student has the ability to comprehend the medical endoscope system	2	fifth
		Imaging Tech. (Computed Tomography)	The student has the ability to comprehend and learn radiation and computed tomography		sixth
		Thermal NMR (Computed Tomography)			seventh
		Thermal NMR (Computed	The student has the ability to understand the work of the imaging technique of	2	eight



	Tomography(1st Exam	radiation The student has the ability to understand and track the nuclear thermomagnetic frequency	2	nineth
	Ultrasound	The student has the ability to understand and track the nuclear thermomagnetic frequency		tenth
	Ultrasound	The student has the ability to understand the work of the sonar device and the transmission of ultrasonic waves		eleventh
	Ophthalmic System	The student has the ability to understand the work of the sonar device and the transmission of ultrasonic waves		twelevth
	Ophthalmic System			Thirteen th

11. Evaluation methods	
The division of the score out of 100 is explained, such as conducting daily or monthly tests, or assigning the student to prepare reports, etc	
12. Education and teaching References	
	1 Required prescribed books
	> Medical Instrumentation: application and design, John G Webs > Biomedical engineering from theory to application, reza fazel reza > The Basic Principles of Laser Technology,
	Recommended books and references (scientific journals, reports, etc.)
	Electronic references and websites



Course Description Form

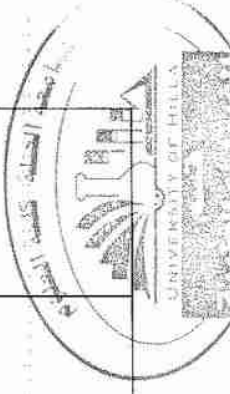
1. Course Name: Professional ethic 2. Course Code: HUMP-0142021 3. Semester / Year: Semester 4. Description Preparation Date: 1/10/2025 5. Available Attendance Forms: CLASSROOM 6. Number of Credit Hours (Total) / Number of Units (Total) 30/2 7. Course administrator's name (mention all, if more than one name) Name: zahraa najah Email: 	8. Course Objectives Course Objectives This course contains a set of valuable topics that the student must be familiar with: the concept of professional ethics, a statement between the profession and the job, the sources of professional ethics, the conditions of the profession in Islam, the status of work in Islam, the general functional ethics of all professions in the light of the Qur'an and Sunnah, the ethics required of the employer, the characteristics
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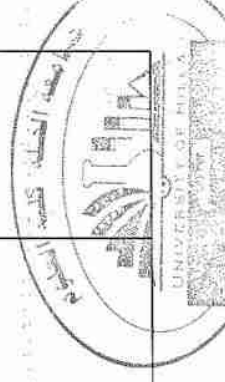
	of the professional, material and moral ethics of the teacher's profession, the duties of the teacher and the teacher, the general qualities of the teacher, the rights and behavior of the job and the ethics of the job, combating financial and administrative corruption
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9. Teaching and Learning Strategies	
Strategy	The student should know the ethics of the profession and its place in Islam The student should realize the importance of professional ethics in the success of work and the life of the individual The student should be familiar with the applications of professional ethics in Islamic civilization The student should be aware of the interest of the regulations of the Kingdom of Saudi Arabia in professional ethics

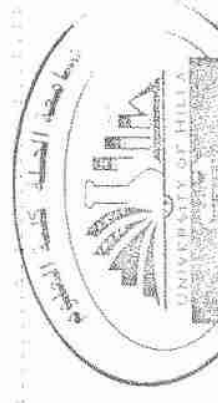
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Students' knowledge of the definition of ethics conceptually and idiomatically	The concept of ethics and its origin		
2	2	The student knows the difference between profession and job	Statement between profession and job, sources of ethics		



3	2	The student knows the difference between profession and job	Statement between profession and job, sources of ethics	
4	2	Learn about the ethics of the profession and the way of dealing	What is professional ethics?	
5	2	What are the sources of ethics and their standards?	Sources of Ethics	
6	2	Part of ethics	Honesty. Honesty. Advice. Justice.	
7	2	What is financial and administrative corruption and how to avoid it	Administrative corruption. Unethical administrative behavior. definition	
8	2	What are the types of corruption in dealing	Administrative corruption. Types of administrative corruption	
9	2	the characteristics of professional ethics	Characteristics of the ethics of the teaching profession,	
10	2	How to eliminate financial and administrative corruption	Combating financial and administrative corruption.	
11	2	avoid and renounce	Fighting reprehensible	



		reprehensible ethics in dealing	ethics at work	
12	2	the employee's duties and behavior at work?	Employee duties, conduct and job ethics	
13		Final exam		
11. Course Evaluation				
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports ... etc				
12. Learning and Teaching Resources				
Required textbooks (curricular books, if any)		Professional work ethics: its concept is the most important principles governing it		
Main references (sources)				
Recommended books and references (scientific journals, reports...)				
Electronic References, Websites				



Course description template

Course Title:	
Neurophysics	
Course Code:	
HUMP-0142018	
System:	
Semester	
Date of Course Description Preparation:	
1/10/2025	
Attendance Patterns:	
CLASSROOM	
Total Study Hours / Total Units:	
30/3	
Course Coordinator (More than one name mentioned):	
Name: nibrass haider	
Email:	
1. Course objectives	
Course objectives	1- Course Objectives: Neuroscience is considered one of the emerging research disciplines, integrating aspects of medicine, informatics, psychology, physics, and life sciences. This field aims to help students understand the functioning of the nervous system at the cellular level, including the role of hormones and electrical signals resulting from external stimuli, and their processing based on the



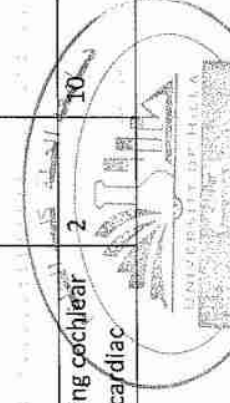
student's cognitive knowledge of life sciences and human anatomy. Subsequently, it delves into learning neural processes through mathematical equations to comprehend the mechanisms occurring within cells and neurons. The study of neurophysics offers various significant directions aiding in the comprehension of neural processes within their cells. For instance, cognitive neuroscience focuses on learning the mechanisms of perception and brain activities, in addition to emphasizing neural physiology and the effect of various stimuli such as light. Moreover, it focuses on the neurobiology, which forms the molecular and cellular basis of the nervous system. This facilitates familiarizing the student with laboratory equipment, connecting theoretical foundations with practical applications, contributing to the development of the student's abilities and skills, theoretically and practically, enabling them to pursue higher studies and play a distinguished role in research and work in scientific, medical, and industrial institutions.	
2. Education and outcomes	Outcomes 1. Empowering students to acquire knowledge of neurophysiology and nerve impulse. 2. Empowering students to acquire knowledge of the structure of nerve fibers and neural transmission lines to and from nerve cells, and linking them to human organs. 3. Empowering students to acquire knowledge of the mathematical relationships that explain the internal efforts of nerves and increase the graduates' skills in mathematically dealing with devices specialized in this field of knowledge. 4. Enhancing students' ability to understand disorders of the nervous system and some diagnostic tests for these disorders. 5. Enhancing students' skill and cognitive ability to perceive and track the cochlear system and cardiac mapping, and the relationship of nerves to diagnostic results. 6. Enhancing students' cognitive capacity to understand the



	spinal cord and the conduction of nerve impulses within it. 7. Providing educational programs that keep pace with technological advancements and conducting short scientific research aimed at enriching the given knowledge content. Interaction with scientific theoretical experiments in a manner that serves students' cognitive goals.			
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8. Course vocabulary

Assessment Method	Teaching Method	Unit/Topic	Learning Outcomes	Hours	Week
Directing short questions	Lecture delivery	Neuron & The Physiology of Nerve Impulse	Understanding neurophysiology and nerve impulse	2	1
Directing short questions	Lecture delivery and discussion	Nerve Fiber Structure	Understanding nerve fiber structure	2	2
Directing short questions	Lecture delivery and discussion	Transmission Lines	Understanding neural transmission lines	2	3
Directing short questions	Lecture delivery and discussion	Speed of Propagation	Understanding nerve impulse initiation and directions	2	4
Directing short questions	Lecture delivery and discussion	Nerve Fiber Action	Understanding nerve fiber action and branching	2	5
Directing short questions	Lecture delivery and discussion	Measurement of Potentials	Understanding and tracking nerve potentials measurement	2	6
Directing short questions	Lecture delivery and discussion	Problems and Solutions	Problem-solving based on studied information	2	7
			1st Test		8
Directing short questions	Lecture delivery and discussion	Nerve System Disorder & Some Diagnostic Tests for Nervous System Disorders	Understanding nervous system disorders and diagnostic tests	2	9
Directing short	Lecture delivery	CT Scan. Electroencephalogram	Understanding cochlear system and cardiac	2	10



Course description template

1- Course Name:	
medical Physics 4	
2- Course Code:	
HUMP-0141017	
3- Duration:	
mester-based	
4- Description Preparation Date:	
1\10\2025	
5- Attendance Format:	
ASSROOM	
6- total Study Hours / Total Units:	
30 / 3	
7- Course Instructor(s):	
Name: Ali Hussein	
Email:	
8. : Course Objectives	
Course Objectives	1. Introduce students to the field of medical 2. physics and its medical applications. 3. Familiarize students with laboratory equipment and bridge the theoretical foundations with practical applications. 4. Enhance students' abilities and skills in identifying atomic spectra and the types of energies emitted from them. 5. Provide students with theoretical and practical qualifications enabling them to pursue further studies and excel in research and work in scientific and industrial facilities

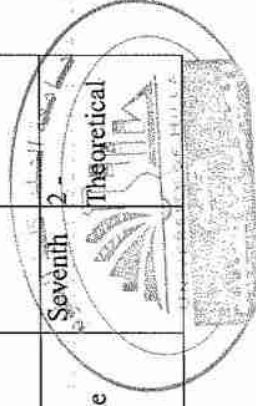


9- Education and Outputs	
	A-Cognitive Objectives:

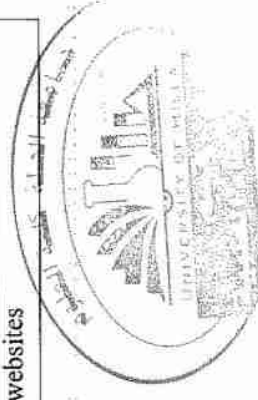
Outputs	1. Enable students to acquire comprehensive knowledge about medical diagnosis. 2. Enable students to acquire comprehensive knowledge about medical devices used in treatment and diagnosis. B -Skill-based Objectives specific to the course: 1-Knowledge recall skills. 2-Recall and analysis skills. 3-Skills in application and development.		
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10. Course Vocabulary:

Assessment Method	Teaching Method	Unit/Topic	Learning Outcomes	Hours	Week
Daily and Monthly Exams	In-person and Discussion	Computed Tomography	Study of Computed Tomography	First	2 - Theoretical
Daily and Monthly Exams	In-person and Discussion	History and Generations of Computed Tomography	Introduction to CT Generations	Second	2 - Theoretical
Daily and Monthly Exams	In-person and Discussion	CT Numbers, Hounsfield Unit, and Gray Scale	Study of Basic Units in CT	Third	2 - Theoretical
Daily and Monthly Exams	In-person and Discussion	Magnetic Resonance Imaging (MRI)	Introduction to Magnetic Resonance Imaging (MRI)	Fourth	2 - Theoretical
Daily and Monthly Exams	In-person and Discussion	MR Imaging Principle	Principles of MR Imaging	Fifth	2 - Theoretical
Daily and Monthly Exams	In-person and Discussion	Contrasts in MRI	Study of Contrast in MRI	Sixth	2 - Theoretical
Daily and Monthly Exams	In-person and Discussion	Nuclear Medicine Physics	Introduction to Nuclear Medicine Physics	Seventh	2 - Theoretical



Assessment Method	Teaching Method	Unit/Topic	Learning Outcomes	Hours	Week
Daily and Monthly Exams	In-person and Discussion	Computed Tomography	Study of Computed Tomography	First	2 - Theoretical
Daily and Monthly Exams	In-person and Discussion	History and Generations of Computed Tomography	Introduction to CT Generations	Second	2 - Theoretical
Daily and Monthly Exams	In-person and Discussion	CT Numbers, Hounsfield Unit, and Gray Scale	Study of Basic Units in CT	Third	2 - Theoretical
Daily and Monthly Exams	In-person and Discussion	Magnetic Resonance Imaging (MRI)	Introduction to Magnetic Resonance Imaging (MRI)	Fourth	2 - Theoretical
Daily and Monthly Exams	In-person and Discussion	MR Imaging Principle	Principles of MR Imaging	Fifth	2 - Theoretical
Daily and Monthly Exams	In-person and Discussion	Contrasts in MRI	Study of Contrast in MRI	Sixth	2 - Theoretical
11. Assessment Methods:					
The division of the grade out of 100 is explained as conducting daily or monthly tests or assigning students to prepare reports and other tasks.					
12. Teaching and Learning Resources					
		Required Textbooks			
(Biological and Medical Physics, Biomedical Engineering) Muhammed Maqbool (eds.) - An Introduction to Medical Physics-Springer International Publishing (2017)		Primary References (Sources):			
		Recommended Books and References: (Journals, reports, and other recommended books and references).			
		Online resources and websites			

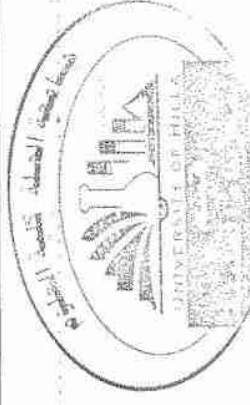


Course Description Form

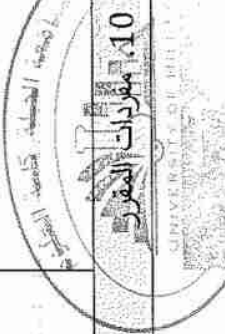
1. Course Name: Bio materials			
2. Course Code: HUMP-0141016			
3. Semester / Year: semester			
4. Description Preparation Date: 1\10\2025			
5. Available Attendance Forms: CLASSROOM			
6. Number of Credit Hours (Total) / Number of Units (Total) 60\h			
7. Course administrator's name (mention all, if more than one name) Name: maher hassan Email: 			
8. Course Objectives ☐			
9. Teaching and Learning Strategies Strategy Introducing the student to the science of medical materials and relationship to medicine, introducing the student to the theoretic basis and linking it to practical application, developing student's abilities and skills in identifying the science of materia and the basic laws of medical applications, and qualifying student theoretically and practically to enable them to continue the postgraduate studies on their own hand and to perform distinguishedly in research and work in the scientific and industrial facility.			
10. Course Structure			
Week	Hours	Required Learning Outcomes	Unit or subject name
			Learning method Evaluation method

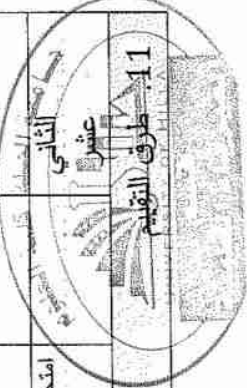


2 th	2	structure of Solid materials			homework's presentation
3 th					
	2	characterization of Material			
4 th	2	Electrical materials			
5 th					
	2	Metallic implant materials			
6 th					
7 th	2	Ceramic implant materials			
	2	Polymer implant materials			
8 th					
	2	Composite materials bio materia			
11. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)		Lectures			
Main references (sources)		https://www.mdpi.com			
Recommended books and references (scientific journals, reports...)		Writing reports on bio subjects under the supervision of the subject professor			
Electronic References, Websites		Internet			



نموذج وصف المقرر الدراسي

1. اسم المقرر : العلاج بالأشعاع 2. رمز المقرر : HUMP-0142019 3. سنوي / فصلي : فصلي 4. تاريخ اعداد وصف المقرر 2025/10/1 5. اشكال الحضور : القاعات الدراسية 6. عدد الساعات الدراسية (الكلية) / عدد الوحدات (الكلية) : 3/30 7. مسؤول المقرر الدراسي (ذكر اكثر من اسم) الاسم : م.م. شيماء احمد اليميل : 	8. اهداف المقرر اهداف المقرر الهدف الأساسي من درس المعالجة الاشعاعية التعرف على أساسيات المعالجة الاشعاعية بالإضافة الى أهم الأجهزة المستخدمة في هذا المجال. 9. التعليم و المخرجات المخرجات عن يميزه وما الاشعاعي العلاج مجال في الكافية الاطلاعات كل الطالب يكتسب - التشخيص الاشعاعي المنهج مفردات خلال من النظري و العملي بين ارتباط الطالب - يستطيع 2 العلمي . - بالمقرر الخاصة المهاراتية الاهداف ب - - التذكر المعرفة مهارات 1 2مهارات التذكروالتحليل
10. مهارات المقرر 	

طريقة التقييم	طريقة التعليم	مطلوبات مخرجات التعلم	اسم الوحدة أو الموضوع	عدد الساعات	الإسبوع
امتحانات يومية	الشفافة و السبورة	يتعرف الطالب على مقدمة في العلاج الإشعاعي	Introduction to Radiotherapy	2	الأول
امتحانات يومية	امتحانات يومية	التعرف على الجرعات و كيفية قياسها	Measurement of absorbed dose	2	الثاني
امتحانات يومية	امتحانات يومية	التعرف على كيفية توليد الأشعة السينية	Production of xray	2	الثالث
امتحانات يومية	امتحانات يومية	مدخل للمعجلات الخطية	Linear accelerator 1	2	الرابع
امتحانات يومية	امتحانات يومية	توضيح موسع عن المعجلات الخطية	Linear accelerator 2	2	الخامس
امتحانات يومية	امتحانات يومية	يتعرف الطالب على توزيع الجرعات كتحليل و تشتت	Dose distribution and scatter analysis	2	
امتحانات يومية	امتحانات يومية	التعرف على توزيع الجرعات من خلال نسبة العمق	Dose distribution and scatter analysis (percentage depth dose 1)	2	السادس
امتحانات يومية	امتحانات يومية	التعرف على توزيع الجرعات من خلال نسبة العمق	Dose distribution and scatter analysis (percentage depth dose 2)	2	الثامن
امتحانات يومية	امتحانات يومية	امتحانات يومية	امتحان شهري	2	التاسع
امتحانات يومية	امتحانات يومية	التعرف على توزيع الجرعات من خلال نسيج هواء	Dose distribution and scatter analysis tissue -air ratio)	2	العاشر
امتحانات يومية	امتحانات يومية	التعرف على توزيع الجرعات من خلال معدل استرجاع التشتت	Dose distribution and scatter analysis back scatter factor	2	الحادي عشر
امتحانات يومية	امتحانات يومية	امتحانات يومية	امتحان نهائي		
 الجمهورية العراقية وزارة التعليم العالي والبحث العلمي الجامعة العراقية كلية الطب قسم الأشعة 11 طرق التقييم					

يوضح تقسيم الدرجة من 100 كأجراء اختبارات يومية أو شهرية أو تكليف الطالب بأعداد تقارير و غيرها	
12. مصادر التعليم و التدريس	
I الكتب المقررة المطلوبة	
المراجع الرئيسية (المصادر)	
The Physics of Radiation Therapy (Faiz M. Khan)	
الكتب و المراجع التي يصي بها (المجالات العلمية - التقارير و غيرها)	كل الأبحاث العلمية المختصة في المعالجة الإشعاعية
المراجع الالكترونية و مواقع الانترنت	كل ما يخص الدرس من الانترنت

