

Ministry of Higher Education  
and Scientific Research  
University of Al-Qadisiyah  
College of Sciences  
Department of Medical Physics



وزارة التعليم العالي والبحث العلمي  
جامعة القادسية  
كلية العلوم  
قسم الفيزياء الطبية

Ref. :

العدد : ٩٨

Date:

التاريخ : ٢٠٢٤ / ٧ / ٨

الى / السيد عميد كلية العلوم المحترم  
م/محرر اللجنة العلمية

تحية طيبة

نرفق لكم طيا محرر اللجنة العلمية الخاص باقرار وصف البرنامج الدراسي لقسم الفيزياء الطبية.

للتفضل بالاطلاع مع التقدير

المرفقات

- محرر اللجنة العلمية

أ.م.د. حيدر سعد عبد الباقي

رئيس قسم الفيزياء الطبية

٢٠٢٤ / ١٠ / ٨

الحجوي  
أحمد  
١٠٧٨

Republic of Iraq  
Ministry of Higher Education  
& Scientific Research  
University of Al-Qadisiyah  
College of Science  
Medical Physics Dep.



جمهورية العراق  
وزارة التعليم العالي والبحث العلمي  
جامعة القادسية

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قسم الفيزياء الطبية

العدد : ٩٩  
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Date :

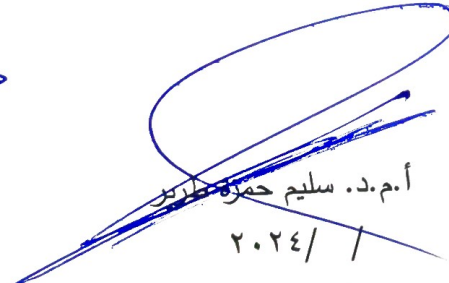
السيد العميد المحترم

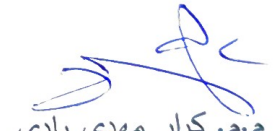
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تحية طيبة ...

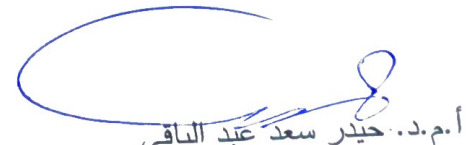
اجتمعت اللجنة العلمية بتاريخ ٢٠٢٣/٦/١٥ للنظر في الوصف الأكاديمي المقدم من قبل السادة  
التدريسيين للمواد الدراسية المعتمدة في القسم وفقاً لنظام مسار بولونيا. وبعد الاطلاع وابداء  
الملاحظات وتعديلها اقرت اللجنة الوصف ليتم اعتماده اعتباراً من العام الدراسي ٢٠٢٣-٢٠٢٤.  
مع التقدير


  
أ.د. ياسمين زيدان كلوود  
٢٠٢٤/ /

  
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رئيس قسم الفيزياء الطبية  
٢٠٢٤/ /

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



**Academic Programme Description and Learning Outcomes Form for the Bologna Process**

**University:** Al-Qadisiyah


**College/Institute:** College of Science

**Scientific Department:** Department of Medical Physics

**Date of description file:** 18/3/2024


**Date of filling out the file:** 24/3/2024

**Academic system:** Bologna Process

Signature 

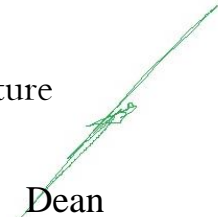
**Head of Department:** Hayder Saad Abdulbaqi

Date:

Signature 

**Scientific Assistant:** Habeeb Waseel Kadhum Shubber

Date:

Signature 

**Dean**  
**Mohammed Abdulwahab Al-Askeri**

Date:

File checked by  
Quality Assurance and University Performance Division  
Name: Yasir Majeed Dahdouh  
Date:



# University of Al-Qadisiyah



*First Cycle – Bachelor's degree (B.Sc.) – Medical physics*

بكالوريوس علوم - فيزياء طبية



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### 1. **Mission & Vision Statement**

- 1- The department aims to graduate medical professionals who are capable of designing various systems of medical physics technologies and analyzing their components.
- 2- Operating and maintaining the medical laboratory equipment used in hospitals and advanced laboratories.
- 3- Building and rehabilitating an integrated scientific department based on outstanding scientific experiences that align with the labor market and meet the needs of scientific institutions, while adhering to scientific methods that keep pace with and compete with similar departments in universities. This is built upon the Science direction of the Ministry.
- 4- A new and qualitative addition to the field of medical physics by following the goals of systematic scientific methods, well-studied qualitative research, medical laboratories, and experienced academic staff. This includes training specialists in medical physics

to achieve a high level of scientific and technical skills, contributing to meeting the needs of the labor market, and advancing in this field.

- 5- A graduate of medical physics is responsible for analyzing the results obtained from devices
- 6- Adopting modern teaching strategies to develop students' creativity skills and utilizing them in their professional field through practical application.

## 2. Program Specification

Programme code:	BSc-MPH	ECTS	240
Duration:	4 levels, 8 Semesters	Method of Attendance:	Full Time

Science Program in Medical Physics involves in the application of radiation physics in medicine. The program emphasizes on producing graduates who are capable of developing and applying sciences of diagnostic imaging physics, radiotherapeutic physics and nuclear medicine physics in diagnosis and treatment of diseases in a safe use approach. The program focuses on the student-centered and outcome-based education to stimulate self-development of knowledge through interactive lecture, problem-based discussion, case study, laboratory, and clinical practice. At the end, graduates will become a knowledgeable scholar and a medical physicist with high professional skill and high moral and ethical principles. Currently the radiation technology in medicine continues to change rapidly, with proper great in depth of teaching and learning, the graduates will play a key role to be a quality assurance staff who will guarantee that the quality, safety and outcome for patient care in the clinic are achieve professional standard.

## 3. Program Objectives

- 1- Graduating and qualifying a specialized staff in the field of medical physics who have the ability to provide high-quality medical services in the field of diagnosis and treatment.
- 2- Medical Physics is concerned with all therapy modalities, including photon, electron, particle therapy, as well as thermal therapies. Surgical excision uses ultrasound waves and also includes computed tomography (CT) scanning, radiography, and endoscopy, as well as ultrasound, magnetic resonance imaging (MRI), electrical impedance, and nuclear medicine imaging.
- 3- Medical Physics keeps track of updates related to methodological studies, virtual clinical trials, and radiation therapy
- 4- Medical physics works on developing algorithms and devices by measuring experimental and computational (ionizing or non-ionizing) doses.
- 5- Medical physics is involved in improving treatment, analyzing its results, and accurately characterizing the biological effects of the treatment.
- 6- Contribute to the development of scientific and healthcare research, opening new horizons and concepts in scientific research, and having the ability to work effectively in the field of healthcare and acquire administrative and scientific skills in this field.
- 7- Methods of using radioactive isotopes, due to their crucial role in internal organs, aid in identifying important physiological variables such as blood flow and metabolic rates

#### **4. Student Learning Outcomes**

- 1- A graduate of medical physics should have knowledge of the normal structure and functions of the human body and of the major biological systems.
- 2- A graduate of medical physics should have knowledge of radiation, radioactive activity, dose measurement, and medical devices.
- 3- Practicing radiation safety and requirements of radiation shielding.
- 4- A graduate of medical physics should have knowledge of medical imaging and related devices

**Outcome1:** A graduate of medical physics has knowledge about the normal structure and functions of the human body and of the major biological systems.

**Outcome2:** The ability to perform the clinical support procedures required of a medical physicist.

**Outcome3:** knowledge of radiation, radioactive activity, dose measurement, and medical devices.

**Outcome4:** The ability to Practice radiation safety and requirements of radiation shielding.

**Outcome5:** A graduate of medical physics should have knowledge of medical imaging and related devices

## 5. **Academic Staff**



No.	Name	Scientific title	E-mail	Mobile No.
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1٢	Haider Muhammad Hadi	Assistant Lecturer	haider.hadi@qu.edu.iq	07898746332
١٣	Haider Jabr Mihsin	Assistant Prof.		٠٧٧٠٤٣٠٦٠٤٤
١٤	Haneen saad Jabbar	Assistant Lecturer	haneen.saad@qu.edu.iq	07727379486

## 6. Credits, Grading and GPA

### Credits

(Name) University is following the Bologna Process with the European Credit Transfer System (ECTS) credit system. The total degree program number of ECTS is 240, 30 ECTS per semester. 1 ECTS is equivalent to 25 hrs student workload, including structured and unstructured workload.

### Grading

Before the evaluation, the results are divided into two subgroups: pass and fail. Therefore, the results are independent of the students who failed a course. The grading system is defined as follows:

GRADING SCHEME				
مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings

	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
<b>Fail Group (0 – 49)</b>	FX – Fail	راسب - قيد المعالجة	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
<b>Note:</b>				
Number Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

### Calculation of the Cumulative Grade Point Average (CGPA)

- The CGPA is calculated by the summation of each module score multiplied by its ECTS, all are divided by the program total ECTS.

CGPA of a 4-year B.Sc. degree:

$$CGPA = [ (1st^{th} \text{ module score} \times ECTS) + (2nd^{th} \text{ module score} \times ECTS) + \dots ] / 240$$

## 7. Curriculum/Modules

Semester	1	Module Code	Module Name in English	اسم المادة الدراسية	SSWL	USSWL	SWL	ECTS	Module Type
					hr/sem	hr/sem	hr/sem		
One	1	MPH11001	Mechanics 1	ميكانيك ١	63	112	175	7.00	C
	2	MPH11002	Electricity	كهربائية	63	112	175	7.00	C
	3	CS11004	Mathematics	رياضيات	33	117	150	6.00	B
	4	QU06	Arabic language	اللغة العربية	32	18	50	2.00	B
	5	CS11008	Analytic Chemistry	كيمياء تحليلية	63	87	150	6.00	B
	6	QU02	Democracy and human	الديمقراطية و حقوق الانسان	32	18	50	2.00	B
					286	464	750	30.00	
Semester	2	Module Code	Module Name in English	اسم المادة الدراسية	SSWL	USSWL	SWL	ECTS	Module Type
					hr/sem	hr/sem	hr/sem		
Two	1	MPH12103	Mechanics 2	ميكانيك ٢	63	112	175	7.00	C
	2	MPH12004	Biophysics	فيزياء حياتية	63	112	175	7.00	C
	3	MPH12005	General Biology	احياء عام	48	102	150	6.00	B
	4	QU04	Computer	حاسوب	47	28	75	3.00	B
	5	QU01	English	اللغة الإنكليزية	32	18	50	2.00	B
	6	CS12004	Organic Chemistry	كيمياء عضوية	32	93	125	5.00	B
					285	465	750	30.00	
Semester	3				SSWL	USSWL	SWL	ECTS	

		Module Code	Module Name in English	اسم المادة الدراسية	hr/sem	hr/sem	hr/sem		Module Type
Three	1	MPH23006	Magnetism	مغناطيسية	63	87	150	6.00	C
	2	MPH23007	Optics	بصريات	63	87	150	6.00	C
	3	MPH23008	Atomic molecular Physics	فيزياء ذرية و جزيئية	63	87	150	6.00	C
	4	MPH23009	Electromagnetic Waves	موجات كهرومغناطيسية	32	118	150	6.00	C
	5	MPH23010	Matlab	ماتلاب	48	27	75	3.00	B
	6	CS23005	Physiology	فسلجة	48	27	75	3.00	B
					317	433	750	30	
Semester	4	Module Code	Module Name in English	اسم المادة الدراسية	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type
Four	1	MPH24011	Medical Imaging	تصوير طبي	63	87	150	6.00	C
	2	MPH24012	Heat and Thermodynamic	حرارة وثرموداينمك	63	87	150	6.00	C
	3	MPH24013	Analog Electronics	الالكترونيات تماثلية	63	87	150	6.00	C
	4	MPH24014	Phonetics Science	علم الصوتيات	32	93	125	5.00	C
	5	CS24007	Molecular Biology	بايولوجي جزيئي	48	27	75	3.00	B
	6	MPH24015	Healthy Culture	ثقافة صحية	32	18	50	2.00	B
	7	QU08		جرائم نظام البعث في العراق	32	18	50	2.00	B
					333	417	750	30.00	
Semester	5	Module Code	Module Name in English	اسم المادة الدراسية	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type
Five	1	MPH35016	Digital Electronics	الالكترونيات رقمية	63	87	150	6.00	C
	2	MPH35017	Physics of Diagnostic Radiology	فيزياء الاشعة التشخيصية	63	87	150	6.00	C
	3	MPH35018	Laser Basics	اساسيات الليزر	63	87	150	6.00	C
	4	MPH35019	Biostatistics	احصاء حيوي	63	87	150	6.00	C
	5	MPH35020	Medical Terminology	مصطلحات طبية	32	43	75	3.00	B
	6	MPH35021	Optional 1	اختياري 1	32	43	75	3.00	B
					316	434	750	30.00	
Semester	6	Module Code	Module Name in English	اسم المادة الدراسية	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type
Six	1	MPH36122	Medical Physics 1	فيزياء طبية 1	63	87	150	6.00	C
	2	MPH36023	Physics of Nuclear Medicine	فيزياء الطب النووي	63	87	150	6.00	C
	3	MPH36124	Medical Laser Applications	تطبيقات الليزر الطبية	63	87	150	6.00	C
	4	MPH36025	Quantum Mechanics in Medicine	ميكانيك الكم في الطب	62	88	150	6.00	C

	5	CS26008	Anatomy	تشريح	48	27	75	3.00	B
	6	MPH36026	Optional 2	اختياري ٢	32	43	75	3.00	B
					331	419	750	30.00	
<b>Semester</b>	<b>7</b>	<b>Module Code</b>	<b>Module Name in English</b>	<b>اسم المادة الدراسية</b>	<b>SSWL hr/sem</b>	<b>USSWL hr/sem</b>	<b>SWL hr/sem</b>	<b>ECTS</b>	<b>Module Type</b>
<b>Seven</b>	1	MPH47027	Radiation physics	فيزياء اشعاعية	63	87	150	6.00	C
	2	MPH47028	Medical Image Processing and Analysis	تحليل ومعالجة الصور الطبية	63	87	150	6.00	C
		MPH47029	Bioelectronics	الالكترونيات الحيوية	63	87	150	6.00	C
	3	MPH47030	Medical Instrumentation Physics	فيزياء الاجهزة الطبية	32	68	100	4.00	C
	5	MPH47031	Optional 3	اختياري ٣	32	68	100	4.00	B
	6	MPH47032	Research project	مشروع البحث	32	68	100	4.00	C
						285	465	750	30.00
<b>Semester</b>	<b>8</b>	<b>Module Code</b>	<b>Module Name in English</b>	<b>اسم المادة الدراسية</b>	<b>SSWL hr/sem</b>	<b>USSWL hr/sem</b>	<b>SWL hr/sem</b>	<b>ECTS</b>	<b>Module Type</b>
<b>Eight</b>	1	MPH48133	Medical Physics 2	فيزياء طبية ٢	63	87	150	6.00	C
	2	MPH48034	Radiotherapy Physics	فيزياء العلاج الاشعاعي	63	87	150	6.00	C
	3	MPH48035	Material Science and Nanotechnology	علم المواد والنانوتكنولوجي	63	87	150	6.00	C
	4	MPH48036	Healthy physics	فيزياء صحية	32	68	100	4.00	C
	5	MPH48037	Research Project	مشروع البحث	32	68	100	4.00	C
	6	MPH48038	Optional 4	الاختياري ٤	32	68	100	4.00	C
						285	465	750	30.00

## 8. Contact

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