

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



Academic Program and Course Description Guide

1st stage Medical Physics 2025-2026

Academic Program Description Form

University Name: University of Al-Qadisiyah

Faculty/Institute: College of medicine

Scientific Department:

Academic or Professional Program Name: General Medicine and Surgery

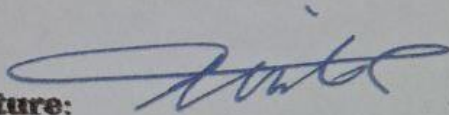
Final Certificate Name: Bachelor's degree in General Medicine and Surgery

Academic System: Annual year / 2 semester

Description Preparation Date: 10/9 /2025

File Completion Date: 16/9/2025

Signature:



Head of Department Name:

Prof Dr. Nael Mohammed

Signature:



Scientific Associate Name:

Prof. Dr. Amel alib


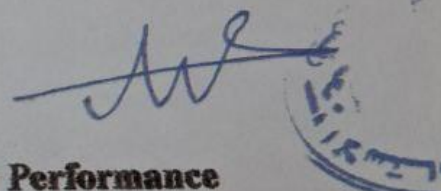
The file is checked by: Prof Dr. Anwar jassib

Department of Quality Assurance and University Performance

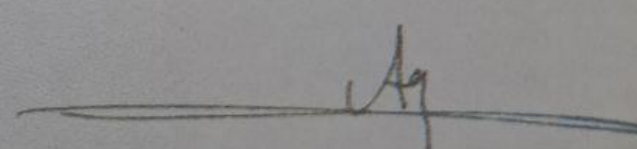
Director of the Quality Assurance and University Performance

Department:

Signature:



Approval of the Dean



1. Program Vision

Seeking to make the College of Medicine in Al-Qadisyiah University a distinguished college among the medical colleges in Iraq in the field of medical education. Additionally, to make it has a clear imprint in promoting the health field in the Iraqi community and works to provide distinctive proposals and views for basic and clinical medical sciences to ensure meeting the health needs of the community at the local and national levels..

2. Program Mission

Al Qadisyah medical college aims at producing medical doctors that are able to participate effectively in the health care delivery system whether in Iraq or any other country
The curriculum is designed to provide students with the necessary knowledge, skills and attitudes in order to function as safe doctors and have the baseline for lifelong learning in the medical field in the future

3. Program Objectives

1. Qualifying the student to attend the curriculum courses prescribed by the Ministry for that year.
2. Explaining the laws of medical physics and their applications in the medical field.
3. Build the student scientifically and qualify him to work in the field of medical physics in hospitals and radiation therapy centers
4. Contributing to the development of medical and laboratory education to assist in diagnosis.
5. Provides medical health education as well as the damage caused by misuse of the environment.
6. Conduct original scientific research and publish it in international sources that contribute to serving society
7. Continuous development of the courses provided by the branch.
8. Urging the student to be creative and think in the field of specialization and keep pace with developments in the field of medical physics

3. Program Accreditation

An application has been made for national accreditation for medical colleges

4. Other external influences

Advances in medical science and technology , requiring regular curriculum updates

5. Program Structure				
Program Structure	Number of Semester	Credit hours	Percentage	Reviews*
Institution Requirements	2	Total hour in annual year semester I and II 120h (60h theory and 60h practical)		Basic
College Requirements	2	Total hour in annual year semester I and II 120h (60h theory and 60h practical)		Basic
Department Requirements	2	Total hour in annual year semester I and II 120h (60h theory and 60h practical)		Basic
Summer Training	Not found			
Other				

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

6. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
First stage	MPH 1204	Medical physics	theoretical	practical
			60 h for annual year semester I,II	60h for annual year semester I,II

7. Expected learning outcomes of the program

Knowledge

Understand the basics and principles of medical physics applications.

Understand students and qualifying them of medical imaging and radiotherapy like (X ray, Ultrasound imaging, MRI).

Identify the components and components of medical devices and how to use them and acquire laboratory skills.

understand students to radiation, radioactivity, dosimetry, and medical devices.

Understand students to the practice of radiation safety and radiation protection requirements.

Understand students to the diagnosis and treatment of medical problems.

Teaching medical skills and keeping pace with the outside world.

Apply physical law to diagnosis and treat disease

Understand the methods of scientific discussion.

Skills

The ability to diagnose diseases efficiently through medical imaging

Ability to undergo radiation therapy.

Ability to prepare medical imaging and radiotherapy reports.

The ability to benefit from radiation energy in medical field, how to use it, and how to deal with radioactive materials.

Obtaining post-graduation skills.

Ethics

Developing students' abilities to share ideas

8. Teaching and Learning Strategies

1. Explaining the scientific material to students in detail
2. Students' participation in explaining the scientific material
3. Discussion and dialogue about vocabulary related to the topic
4. Explanation of the practical article which includes practical experiences related to medical specialization.

9. Evaluation methods

1. lectures: Evaluating the student inside the classroom to assess understanding of medical physics concepts as (Oral exams, Quizzes, monthly and daily exams).

2. Practical : Evaluation in the laboratory to assess the student's ability to use medical devices, create small learning groups of 10-15 students and completion of the logbook.

3. Student interaction with the lecture and class discussions.

4. Research projects: Preparing research projects for the student using medical physics in the medical field.

5. Scientific reports: The student can submit written reports on specific techniques such as (MRI, CT scan, Ultrasound Imaging, ECG, EMG, or radiation therapy).

6. An opinion questionnaire conducted by the subject professor for the students.

7. Supervising the development of students' skills in hospitals and medical imaging and radiation therapy centers.

10. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Prof.	BSc	Medical physics			1	
Asst. Prof.	BSc	Medical physics			1	
Asst. Prof.	BSc	Medical physics			1	
Asst. Prof.	BSc	Medical physics			1	
Lecturer	BSC	Medical physics			1	

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.

11. Acceptance Criterion

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

12. The most important sources of information about the program

https://www.hindawi.com/journals/bmri/2015/297158/?utm_source=google&utm_medium=cpc&utm_campaign=HDW_MRKT_GBL_SUB_ADWO_PAI_DYNA_JOUR_X_PJ_Sitelink_10authordiscount&gclid=EA1aIQobChMIssjWmPji-gIVw4bVCh1_GgvXEAAYAiAAEgJGafD_BwE

<https://www.news-medical.net/health/The-Role-of-Physics-in-Medicine.aspx>

13. Program Development Plan

- Modern sources
- Application in hospitals and radiation therapy centers
- Follow modern teaching and learning methods
- Describe the process used to guide new teaching staff on the educational institution and department.

Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
2025-2026 1 st stage	MPH 1204	Medical physics	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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

Course Description Form

1. Course Name: Medical Physics	
Medical Physics	
2. Course Code:	
MPH 1204	
3. COURSE:	
Annual year , 2 semester for first stage 2024-2025	
4. Description Preparation Date:	
10/9/2025	
5. Available Attendance Forms:	
Attendance sheet	
6. Number of Credit Hours (total) / Number of Units (units)	
120h for annual year (semester I,II (60h theory and 60 h practical) / 6 units for total	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Amel Al-Ibadi , Email: amel.al-ibadi@qu.edu.iq Dr. Khalid Ibrahim	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> - The of this course is for the student to gain a basic working knowledge of medical physics concepts which will be necessary for future scientific endeavors. - Upon completion of the course, the student should achieve an understanding of the following: <ul style="list-style-type: none"> ▪ Physics of heat and cold in medicine ▪ Physics of pressure in body ▪ Physics of eye & vision ▪ Physics of hearing & ear ▪ Physics of sound & ultrasound in medicine ▪ Electricity within the body ▪ Physics of the lung & breathing

	<ul style="list-style-type: none"> ▪ Major components of the cardiovascular system ▪ Principle of laser & application it in medicine ▪ Radiation application in medicine
--	---

9. Teaching and Learning Strategies

Strategy	<ul style="list-style-type: none"> ▪ Lectures by data show ▪ Discussion method ▪ Small groups ▪ E-Learning ▪ practical
-----------------	---

10. 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

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Medical Physics of the body by John R. Cameron
Main references (sources)	. Radiation physics for medical physics, by E. B. podrasak. . nuclear medicine physics. A Handbook for teachers students. By D. L. Bailey, J. l. Humm, 2014.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Google Scholar, Medical physics.

Assessment methods (marks %)		
Formative assessments	<ol style="list-style-type: none"> 1. Quick tests offered after lessons. 2. Presentations 3. Classroom debates 	Feedback method (for each assessment method)

Summative assessments	<ol style="list-style-type: none"> 1. Final exams (MCQ + Essay questions) 2. Final reports 3. projects 	Feedback method (for each assessment method)
Total	100%	Pass mark = 50%

First semester content :

week	Hours	Topic of Theory	Required learning outcomes	Lab. Experimental	Teaching method	Evaluation method
1	2h Theory +2h practical	Heat and cold in medicine	To study and understanding of Heat and cold in medicine	General information about Lab.	Theory + practical	Questions and discussions
2	2h Theory +2h practical	Pressure in human body (P.1)	To study and to provide basic information of Pressure in human body	Blood pressure (P.1)	Theory + practical	Questions and discussions
3	2 Theory +2 practical	Pressure in human body (P.2)	To study and to provide basic information of Pressure in human body	Blood pressure (P.2)	Theory + practical	Questions and discussions
4	2 Theory +2 practical	Physics of CVS (P.1)	To study and to provide basic information of Physics of CVS	Ear & hearing (P.1)	Theory + practical	Questions and discussions
5	2 Theory +2 practical	Physics of CVS (P.2)	To provide basic science information of Physics of CVS	Ear & hearing (P.2)	Theory + practical	Questions and discussions
6	2 Theory +2 practical	Physics of the lungs and breathing (P.1)	To provide basic science information for Physics of the lungs and breathing	Ear & hearing (P.3)	Theory + practical	Questions and discussions
7	2 Theory +2 practical	Physics of the lungs and breathing (P.2)	To study and to provide basic information of the lungs and breathing	Eye & vision (P.1)	Theory + practical	Questions and discussions
8	2 Theory +2 practical	Sound & Ultrasound in medicine (P.1)	To study and to provide basic information of Sound & Ultrasound in medicine	Eye & vision (P.2)	Theory + practical	Questions and discussions
9	2 Theory +2 practical	Sound & Ultrasound in medicine (P.2)	To study and to provide basic information ultrasound's interaction with the biological tissue	Eye & vision (P.3)	Theory + practical	Questions and discussions
10	2 Theory +2 practical	Sound & Ultrasound in medicine (P.3)	To study and to understand information of ultrasound's modes	Principle of laser	Theory + practical	Questions and discussions
11	2 Theory +2 practical	Principle of laser (P.1)	To study and to provide basic information of laser, commonly types of laser	Laser in medicine	Theory + practical	Questions and discussions
12	2 Theory +2 practical	Principle of laser (P.2)	To study and to provide basic information of laser interaction with the biological tissue, treatment, and diagnostic	CT scanner (P.1)	Theory + practical	Questions and discussions

13	2 Theory +2 practical	Light in medicine (P.1)	To study and to understand information of Light in medicine	CT scanner (P.2)	Theory + practical	Questions and discussions
14	2 Theory +2 practical	Light in medicine (P.2)	To study and to provide basic information about commonly used of Light in medicine as diagnostic, imaging and therapeutic	CT scanner (P.3) EBM	Theory + practical	Questions and discussions
15		Examination		Examination		

Second semester content :

week	Hours	Topic of Theory	Required learning outcomes	Lab. Experimental	Teaching method	Evaluation method
1	2h Theory +2h practical	Electricity within the body (P.1)	To study and understanding of electricity within the body	ECG (P.1)	Theory + practical	Questions and discussions
2	2h Theory +2h practical	Electricity within the body (P.2)	To study and understanding of electricity within the body	ECG (P.2)	Theory + practical	Questions and discussions
3	2 Theory +2 practical	Physics of nuclear medicine (P.1)	To study and to provide basic information of radiation in medicine and radioactivity	Principle of radiation material (p.1)	Theory + practical	Questions and discussions
4	2 Theory +2 practical	Physics of nuclear medicine (P.2)	To study and to provide basic science information of radiation for using in in diagnostic, imaging and therapeutic	Principle of radiation material (p.2)	Theory + practical	Questions and discussions
5	2 Theory +2 practical	Physics of radiotherapy (P.1)	To provide physical information of radiotherapy	Principle of radiation material & Instruments (p.1)	Theory + practical	Questions and discussions
6	2 Theory +2 practical	Physics of radiotherapy (P.2)	To provide basic radiation- science information of radiation interaction with body and how treatment by radiation doses	Principle of radiation material & Instruments (p.2)	Theory + practical	Questions and discussions
7	2 Theory +2 practical	Radiation protection in Medicine	To study and to provide basic information about the method o radiation protection in Medicine	NMR	Theory + practical	Questions and discussions
8	2 Theory +2 practical	Physics of diagnostic X-ray (P.1)	To study and to provide physical science information of X ray	X- RAY (P.1)	Theory + practical	Questions and discussions
9	2 Theory +2 practical	Physics of diagnostic X-ray (P.2)	To study and to provide physical science information of X ray interaction with the biological tissue	X- RAY (P.2)	Theory + practical	Questions and discussions

10	2 Theory +2 practical	Physics of diagnostic X- ray (P.3)	To study and to provide physical science information of X ray images, Diagnostic and treatment	X-RAY (P.3)	Theory + practical	Questions and discussions
11	2 Theory +2 practical	NMR (P.1)	To study and to provide basic information of nuclear magnetic resonance	NMR (P.1)	Theory + practical	Questions and discussions
12	2 Theory +2 practical	NMR (P.2)	To study and to provide basic information of radiation and commonly used in diagnostic, imaging and therapeutic	NMR (P.2)	Theory + practical	Questions and discussions
13	2 Theory +2 practical	Diagnostic Resonance imaging (P.1)	To study and to provide basic information of radiation	MRI (P.1)	Theory + practical	Questions and discussions
14	2 Theory +2 practical	Diagnostic Resonance imaging (P.2)	To study and to provide basic information of radiation and commonly used in therapeutic and treatment	MRI (P.2) EBM	Theory + practical	Questions and discussions
15		Examination		Examination		

Examinations description:

Examination	Description
1-Continuous progress test (CPT)	oral examination / spot diagnosis , quizzes , PBL ,Short answered questions, and skills assessment , log book activity , Case report ,homework activity
2- Mid theory exam for each semester	Short answered questions, M.C.Qs. and case presentation with short answer and matching according bloom and blue print
3- Half year exam	M.C.Qs. as case sinario or direct question , according bloom and blue print
4-Final year theory exam	M.C.Qs. as case sinario or direct question , according bloom and blue print
5- Final year practical exam for semester I,II	Spot slide diagnosis , prescription writing, M.C.Q , according bloom and blue print

The minimum passing grades (Faculty bylaws) is 50 marks.

Re-sit Examinations :- Students who fail in a in the final annual assessment will be required to re-sit (second sitting) the Final year examination (theory and practical exam) .