

Course Description Template

University Name: Warith Al-Anbyaa.....

Faculty/Institute: Medicine.....

Scientific Department: Physiology and Medical physics.....

Academic or Professional Program Name: Medical Physics.....

Final Certificate Name:

Academic System: Annual course

Description Preparation Date: 25/8/2025

File Completion Date:

Signature:

Head of Branch:

Ayyed Hommed Hassan

Date: 25 - 8 - 2025

Signature:

Vice Dean for Scientific

Affairs: Dr. Luith M. Abbas

Date: 26 - 8 - 2025

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance

Department: Professor Dr. Ali Al Mousawi

Date: 25/8/2025

Signature:

Dean's approval

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Ministry of Higher Education and Scientific Research



Academic Program and Course Description Guide

2024

Strategy	<ul style="list-style-type: none"> • Lectures: Present core concepts with real-life medical examples. • Interactive Discussions: Encourage questions and clarify doubts. • Problem-Solving Sessions: Apply physics to medical scenarios and case studies. • Demonstrations & Simulations: Visualize principles like radiation, mechanics, and electricity in medicine. • Assignments & Quizzes: Reinforce understanding and promote continuous learning. • Laboratory Sessions : Hands-on experiments for practical understanding of medical physics concepts.
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	3	Modeling Measurement	Terminology	Theory lectures practicals Small groups	Quizzes Monthly written exam mid coarse exam
2nd	1	Describe how muscles and bones operate to produce body movements	Forces on and in the body		
	2		Simple pendulum		
3rd	1	Gives examples of levers in the muscular-skeletal system of the body.	Forces on and in the body		
	2		Simple pendulum Review		
4 th	1	Provide a simple analysis of: (a) The forces involved in standing, lifting and bending. (b) The interactions of the body with the ground in walking and running	Forces on and in the body		
	2		Skill lab-skeleton		
5th	1	1. What is the bone made of?	Physics of skeleton		
	2		Tutor lab –measure bone tension		
6 th	1	How strong are your bones?	Physics of skeleton		
	2		Tutor lab –measure bone tension Review		
7 th	1	Lubrication of bone joints. Measurements of bone mineral in the body.	Physics of skeleton		
	2		Skill lab-bone joints		
8 th	1	1. Estimate the power typically provided by muscle. 2. Describe how the body maintains a constant temperature	Energy , Work ,and Power of the Body		
	2		Specific heat capacity		

		video endoscope which uses charge couple devise. 4. Give examples of the use of endoscope in diagnosis and treatment. 5- Explain the principles of operation of the laser and give examples of its medical application			
21 st	2	Heat and cold in medicine 1-The airways. 2. Lung volumes	Heat and cold in medicine The Physics of Lungs and Breathing Focal length		
22 nd	2	3. Pressure airflow volume relationships of the lungs 4. Physics of the alveoli. 5.The breathing mechanism 6. Airway resistance	The Physics of Lungs and Breathing Surface tension		
23 rd	2	7. Work of breathing. 8. Physics of some common diseases.	The Physics of Lungs and Breathing Radiation (introduction)		
24 th	1	Radiation (introduction)	Tutor lab –PFT		
24 th	2	1. Physics of diagnostic x-ray ray production 2.X-ray interaction with matter	Radiation Hospital visit (CT scan ray)		
25 th	2	3.Using x-ray in diagnosis 1.Terminology 2. Properties of alpha, beta and gamma radiations. 3. Give an example of production of radionuclides	Radiation Physics of Nuclear Medicine(Radioisotopes Medicine) Gamma ray		
26 th	2	4. Production and use of technetium-99 and iodine-131 5. Uses of radioisotopes for diagnosis and therapy 6.Introduction to MRI & PET Scan	Physics of Nuclear Medicine(Radioisotopes Medicine) Hospital visit (MRI)		
27 th	2	1. Define, know the units of, use in calculations, the following terms: activity, exposure, absorbed dose, dose equivalent, exposure rate constant 2. Use the following terms correctly: committed dose equivalent, effective dose equivalent, collective dose equivalent, linear energy transfer, quality factor, relative biological effectiveness.	Radiation Protection in Medicine Radiation Dose measurement		
28 th	2	3. The background levels of radiation, and give examples of some common medical doses such as chest X-ray. 4. Discuss, in general terms, by giving examples, the relationships between radiation levels and the incidence of damage or disease.	Radiation Protection in Medicine Laser 1		
29 th	2	5. The general principles under which the use of radioisotopes is permitted, and gives examples of maximum permitted dose levels	Radiation Protection in Medicine Laser 2		
30 th	4	Medical Physics pre-exam general revision			
Final Examination					
11. Course Evaluation					
70 marks for final exam and 30 marks for mid exam					
12. Learning and Teaching Resources					
Required textbooks (curriculum books, if any)		"Medical Physics" by R. K. Hobbie & B. R. Roth – Fundamental concepts and clinical applications.			