



**Jordan University of Science and Technology**  
**Faculty of Science & Arts**  
**Physics Department**

PHY109 Medical Physics - JNQF Level: 6

First Semester 2023-2024

**Course Catalog**

1 Credit Hours. This course provides students with a fundamental understanding of radiation physics, covering various radiation types, units of measurement, and interactions with living and non-living entities. Students will be introduced to the basic physics and equipment used in different diagnostic imaging modalities, including X-ray, MRI, ultrasound, thermography imaging, and laser technologies. The course will also offers an overview of radiation hazards and the tools used in radiation monitoring and detection.

هذا المنهج يقدم للطلاب المبادئ الأساسية في فيزياء الإشعاع، بمايشمل مختلف أنواع الإشعاع، والوحدات. الأشعاعية، وتفاعله مع الكائنات الحية وغير الحية. المنهج يقدم أيضا للطلاب الفيزياء الأساسية والالات المستخدمة في مختلف وسائل التصوير التشخيصي، بما في ذلك الأشعة السينية، والرنين المغناطيسي، والموجات فوق الصوتية، وتصوير الحرارة، وتقنيات الليزر. يقدم المنهج نظرة عامة أيضاً على مخاطر الإشعاع والأدوات المستخدمة في رصد الإشعاع والكشف عنه

**Instructor**

Name	Dr. Khaled Aljarrah
Office Location	-
Office Hours	Sun : 11:30 - 12:30 Mon : 12:30 - 13:30 Tue : 11:30 - 12:30 Wed : 11:30 - 13:30 Thu : 11:30 - 12:30
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**Class Schedule & Room**

Section 1:  
Lecture Time: Sun : 14:30 - 15:30  
Room: SG16

Section 2:  
Lecture Time: Tue : 14:30 - 15:30  
Room: SG17

**Tentative List of Topics Covered**

Weeks	Topic	References
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	Principles of Radiation Physics	
	Radioactivity	
	Interaction of radiation with matter	
	Introduction to Radiation Biology	
	Introduction to X-ray	
	Concepts of Ultrasound	
	Principles of MRI	
	Principles of Laser Physics	
	Thermography Imaging	
	Radiation Detection Devices (Dosimeter)	
	Personal Dosimeter	
	Radiation Protection	

<b>Mapping of Course Outcomes to Program Outcomes and NQF Outcomes</b>	<b>Course Outcome Weight (Out of 100%)</b>	<b>Assessment method</b>
Students will be able to provide definitions for key terms in radiation physics that are pertinent to diagnostic imaging, radiation biology, and the interaction with matter and living organisms. [31] [3L6K1]	30%	Midterm Exam
Demonstrate the ability to explain the fundamentals of different diagnostic imaging modalities, including the physics of production, equipment components, and their diverse applications in medical settings. [31] [3L6K2]	35%	Midterm Exam, Final Exam
Student will be able to identify and differentiate various types of radiation detection devices used in continuous monitoring of ionizing radiation in various medical settings and applications [31] [3L6K2]	35%	Final Exam

<b>Relationship to Program Student Outcomes (Out of 100%)</b>					
1	2	3	4	5	6
100					

<b>Relationship to NQF Outcomes (Out of 100%)</b>	
L6K1	L6K2
30	70

<b>Evaluation</b>	
<b>Assessment Tool</b>	<b>Weight</b>

Midterm Exam	50%
Final Exam	50%

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