



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

PHY109 Medical Physics - JNQF Level: 7

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 المنهاج يقدم للطلاب المبادئ الأساسية في فيزياء الإشعاع، بمايشمل مختلف أنواع الإشعاع، والوحدات، الأشعاعية، وتفاعله مع الكائنات الحية وغير الحية. المنهاج 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 أيضًا على مخاطر الإشعاع والأدوات المستخدمة في رصد الإشعاع والكشف عنه

Teaching Method: On Campus

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
Email	kjarrah@just.edu.jo

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
	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	

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
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. [3SLO1(K1S1)] [1L7K1, 1L7S1]	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. [3SLO1(K1S1)] [1L7S1]	40%	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 [3SLO1(K1S1)] [1L7K1, 1L7S1]	30%	Final Exam

Relationship to Program Student Outcomes (Out of 100%)					
SLO1(K1S1)	SLO2(S23C1)	SLO3(C24)	SLO4(C3)	SLO5(C4)	SLO6(S2C3)
100					

Relationship to NQF Outcomes (Out of 100%)	
L7K1	L7S1
30	70

Evaluation

Assessment Tool	Weight
Midterm Exam	50%
Final Exam	50%

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