



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

HSS104PHY Medical Physics - JNQF Level: 6

First Semester 2023-2024

Course Catalog

3 Credit Hours. Jordan University of Science & Technology Faculty of Science & Art Department of Physics Title & Instructors Course Title Medical Physics Course Number Phys 104 Coordinator Prof. Dr. Mohammad-Ali AL-Omari (Al-Akhras) Text Book Physics 3rd Edition By Joseph W. Kane Office Location PH 3 L1 Office Phone Office hours To be announced E-mail Instructors Prof. Dr. Mohammad-Ali AL- Omari (Al-Akhras) PH 3 L1 Dr. Khaled Aljarrah PH 3 L1 Dr. Nabeel AL-Jamal PH 4 L0 COURSE CONTENT: # of Lectures Chapter Suggested Problems 5 3.1 Force, Weight, and Gravitational mass 3.2 Density 3.3 Newton's first law 3.4 Equilibrium 3.5 Newton's third law 3.6 Newton's Second Law 3.8 Give Some examples of Newton's law 3.12 Apply Newton's Laws with Friction 3-1, 3-2, 3-11, 3-13, 3-14, 3-26, 3-30, 3-37, 3-39,3-41, 3-42, 3-43, 3-45, 3- 47, 3-49, 3-50, 3-52, 3-54, 3-90, 3-91, 3-92, 3-93, 3-108, 3-109 5 4.1 Torque and Direction of the Torque (cross product 4.2 Equilibrium of rigid bodies 4.5 Levers; Mechanical advantage 4.6 Muscles 4.7 Levers in the body 4-1, 4-2, 4-3, 4-6, 4-7, 4-13, 4-14, 4- 31, 4-32, 4-33, 4-34, 4-36, 4-37, 4-39, 4-40, 4-41, 4-42, 4-51, 4-55 2 8.1 General Aspects of Stress and Strain 8.2 Young's Modulus 8-2, 8-5, 8-6,8-7, 8-9, 8-11, 8-17, 8-20, 8-23 3 10.1 Temperature scales 10.3 Pressure 10-2, 10-4, 10-15, 10-16, 10-17, 10- 18, 10-19, 10-20 5 13.1 Archimedes' Principle 13.2 Equation of Continuity; Streamline Flow 13.3 Bernoulli's Equation 13.4 Static Consequences of Bernoulli's Equation. 13.5 Role of gravity in the circulation 13.6 Blood pressure measurements using the Sphygmomanometer 13-1, 13-2, 13-3, 13-4, 13-5, 13-9, 13-10,13-11, 13-12, 13-15,13-18, 13-19, 13-20, 13-21, 13-24, 13-25, 13-29, 13-30, 13-31, 13-32 4 14.1 Viscosity 18.1 The structure of nerve cells 18.2 The Resistance and capacitance of an axon 18.6 Electroencephalography and Electrocardiography 14-4, 14-5 18-1, 18-2, 18-4, 18-6, 18-8, 18-12 5 22.1 The nature and speed of sound 22.2 Standing sound waves. 22.3 The Intensity of sound waves 22.6 Auditory response 22.8 Ultrasound (pg. 542) 22-2, 22-3, 22-9, 22-12, 22-18, 22- 20, 22-26, 22-30, 22-39, 22-41, 22-61, 22-62, 22-63, 22-65 4 23.1 The index of reflection 23.3 Define the Reflection of light. 23.4 Refraction of light 23.5 Total internal reflection 23.11 X-ray diffraction and the structure of biological molecules (pg. 571) 23-2, 23-4, 23-6, 23-9, 23-10, 23-12, 23-14, 23-18, 23-19, 23-20, 23-46, 23- 47 4 24.1 Mirrors 24.2 Lenses 24.4 The power of a lens; Aberrations 24.7 The Human Eye 24.13 Optical defects of the eye (pg. 623) 24-4, 24-5, 24-18, 24-20, 24-22, 24- 31, 24-32, 24-63, 24-64, 24-66, 24-68 2 30.1 Radioactivity 30.2 Half-life 30-1, 30-2, 30-5 4 31.2 Radiation and its units 31.3 Harmful effects of radiation 31.4 Chronic radiation exposure 31.5 Radiation in Medicine 31-14, 31-15, 31-18, 31-22 Assessment Assessment Type Expected Due Date Weight Evaluation First Exam 7-11-2023 30 Second Exam 30 Final Exam 40 Total 100

Teaching Method: On Campus

Instructor

Name	Shaker Abu Bidier
Office Location	-
Office Hours	

Email	saabubidier@just.edu.jo
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Instructor	
Name	Prof. Mohammad-Ali Al-Omari
Office Location	PH3 L1
Office Hours	Sun : 10:15 - 11:15 Sun : 11:15 - 12:15 Mon : 10:00 - 11:00 Tue : 10:15 - 11:15 Tue : 11:15 - 12:15 Wed : 10:00 - 11:00
Email	alakmoh@just.edu.jo

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

Instructor	
Name	Nabeel Jammal
Office Location	-
Office Hours	
Email	nfjammal@just.edu.jo

Class Schedule & Room

Section 1:
Lecture Time: Sun, Tue, Thu : 09:30 - 10:30
Room: N1302

Section 2:
Lecture Time: Sun, Tue, Thu : 09:30 - 10:30
Room: NF39

Section 3:
Lecture Time: Sun, Tue, Thu : 13:30 - 14:30
Room: NF38

Section 4:
Lecture Time: Sun, Tue, Thu : 14:30 - 15:30
Room: NB53

Section 5:
Lecture Time: Sun, Tue, Thu : 12:30 - 13:30
Room: NF39

Section 7:
Lecture Time: Mon, Wed : 11:30 - 13:00
Room: NF37

Section 8:
Lecture Time: Mon, Wed : 13:00 - 14:30
Room: NF38

Section 9:
Lecture Time: Mon, Wed : 08:30 - 10:00
Room: NB72

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
To understand and to become familiar with the new emerging fields in physics Such as: Nanoscience and Nanotechnology Applications from the perspective of applied physics point of view. [1SLO1(K1S1)] [1L6S2]	30%	First
An ability to work as a teams or groups that establish goals, plan tasks, meet deadlines, and present their work using state of the art technology [1SLO2(S23C1)] [1L6C1]	30%	Second
An ability to develop and conduct a write edit and present a review on a special topic related to the latest application in such fields using a scientific method to write a summary and draw conclusions. [1SLO1(K1S1), 1SLO3(C24)] [1L6C5]	40%	Final

Relationship to Program Student Outcomes (Out of 100%)					
SLO1(K1S1)	SLO2(S23C1)	SLO3(C24)	SLO4(C3)	SLO5(C4)	SLO6(S2C3)
50	30	20			

Relationship to NQF Outcomes (Out of 100%)		
L6S2	L6C1	L6C5
30	30	40

Evaluation	
Assessment Tool	Weight
First	30%
Second	30%
Final	40%

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