



The Hashemite University  
Faculty of Science  
Course Syllabus

Department of Physics

**Course Title:** General Medical Physics                      **Course Number:** 110102109  
**Pre-requisite:** None    **Credit Hours:** 3  
**Designation:** Required    **Instructor:** Dr. Feras Afaneh  
**Instructor's E-mail:** afanehf@hu.edu.jo  
**Office Hours:** 11-12 (Sunday, Tuesday, Thursday)

**Course Description (Catalog):** This course introduce students to the kinematics, which describes the way objects move, their velocity, and their acceleration; Dynamics and. Newton's laws of motion; Work- energy theorem; Average and Instantaneous Power; Heat; Temperature and temperature scales; Thermodynamic laws; Fluids at Rest and Non-Viscous Fluids Motion; Bernoulli's Equation; Atomic Structure of Elements; Radiation; Ionizing Radiation; Radiation Activity, Electrical Components; Current; Voltage; Ohm's law; Resistance and Resistances Equivalent.

**Text Book:** Physics by Kane and Sternheim, John Wiley and Sons, third edition 2008.  
**References:** Medical Physics, by John R. Cameron and James G. Skofronick, John Wiley and Sons, New York 1978.

Major Topics Covered:

Topics	No. of Weeks	Contact Hours*
General Laws of Motion	3	9
Work, Energy and Power	2	6
Heat and Thermodynamics	3	9
Fluids	2	6
Nuclear and Radiation Physics	3	9
Electricity	2	6
<b>Total</b>	<b>15</b>	<b>45</b>

\*Contact Hours include lectures, quizzes and exams.

❖ **Specific Outcomes of Instruction (Course Learning Outcomes):**

After completing this course units, the students will be able to:

	Course Learning Outcomes (CLO)	(SO*)
<b>CLO1.</b>	State the laws of motion and gravitational forces; explain the nature of the relationships that exist between the forces acting on a body and the motion of the body.	(a), (k)
<b>CLO2.</b>	Learn how to describe the motion of an object on a straight line.	(a), (k)
<b>CLO3.</b>	Relate the performance of the human body to work, energy, and power.	(a), (e) (k)

Course Learning Outcomes (CLO)		(SO*)
<b>CLO4.</b>	Discuss fluids at rest and non-viscous fluids motion; understand of why an object may either sink or float in a fluid at rest (Archimedes' Principle); Develop the Bernoulli's Equation which puts work and energy concepts into a form suitable for fluids.	(a), (e), (k)
<b>CLO5.</b>	Understand the laws of thermodynamics applied to mixture of gases; Analyze the thermodynamics laws for various thermal systems; Evaluate the thermodynamic properties of various thermal systems.	(a), (k)
<b>CLO6.</b>	Demonstrate the ability of finding radiation activity, Half-life times and radiation dose for different radioactive sources.	(a), (k)
<b>CLO7.</b>	Understand the methods, devices and calculations used to measure different electrical quantities.	(a), (b), (k)

\* (SO) = Student Outcomes Addressed by the Course.

❖ **Student Outcomes (SO) Addressed by the Course:**

#	Outcomes Description	Contribution
	Applied and Natural Sciences Student Outcomes	
(a)	an ability to apply knowledge of mathematics, science, and applied sciences	H
(b)	an ability to design and conduct experiments, as well as to analyze and interpret data	L
(c)	an ability to formulate or design a system, process or program to meet desired needs	
(d)	an ability to function on multidisciplinary teams	
(e)	an ability to identify and solve applied sciences problems	L
(f)	an understanding of professional and ethical responsibility	
(g)	an ability to communicate effectively	
(h)	the broad education necessary to understand the impact of solutions in a global and societal context	
(i)	a recognition of the need for, and an ability to engage in life-long learning	
(j)	a knowledge of contemporary issues	
(k)	an ability to use the techniques, skills, and modern scientific and technical tools necessary for professional practice.	M

**H = High, M = Medium, L = Low**

**Grading Plan:**

First Exam:	30 points	To be announced later
Second Exam:	30 points	To be announced later
Final Exam:	40 points	To be announced later

**General Notes: (Attendance Policy)** students are expected to attend every class and arrive on time in compliance with HU regulations. In case you find yourself in a situation that prevents you from attending class or exam, you have to inform your

instructor. If you miss more than 6 classes for the (Sunday, Tuesday, and Thursday model) or 4 classes for the (Monday and Wednesday Model), you cannot pass the course. Makeup excuses will be accepted only for very limited justified cases, such as illness and emergencies. Changing your section without informing your instructors is not accepted at all.