The Hashemite University
Faculty of Science
Department of Physics

Course Title:	General Medical Physics	**Course Number:**	110102109
Semester:	Summer	**Year:**	2020
Designation:	Optional	**Prerequisite(s):**	None
Instructor:	Dr. Gassem Alzoubi	**Instructor's e-mail:**	gassem@hu.edu.jo
		Webpage:	http://staff.hu.edu.jo/gassem

Course Description (catalog): This is a non-calculus based introductory physics course usually taken by students from medical sciences. The aim of this course is to get students acquainted with basic concepts and skills in physics that help them to better understand applications of physics in medicine. Topics to be covered includes: motion in one and two dimensions, Newton's laws of motion, statics, work and energy, non-viscous fluids, mirror, lenses, and optical systems, nuclear physics (radioactivity and half-life), and ionizing radiation including interaction of radiation with matter (x-ray, neutrons, and gamma rays), radiation units, exposure and absorbed dose

Textbook(s) and/or Other Supplementary Materials:
   Textbook: Physics by Joseph W. Kane and Morton M. Sternheim, 3d edition. JOHN WILEY & SONS, Inc. ISBN: 0-471-63845-5

References:
   (1) Fundamental of Physics , by David Halliday , Robert Resnick ,and Jearl Walker ,10th Edition , John Wiley and Sons, 2012.

   (2) University Physics with modern physics, by Sears and Zemansky, 13th edition, Pearson education, 2012.

Major Topics Covered:

Topics	No. of Weeks	Contact hours*	Chapter in Text	Sections	Suggested Problems (from textbook 9th edition)
Motion in a straight line	1	5	1	1.1 – 1.6	1.3, 1.13, 1.16, 1.26, 1.45, 1.47
Motion in two dimensions	1	5	2	2.1, 2.2, 2.3	2.6, 2.12, 2.16, 2.18, 2.22
Newton's laws of motion	1	5	3	3.1-3.6, 3.8, 3.12	3.20, 3.44, 3.47, 3.75, 3.76, 3.91, 3.102
Statics	1	5	4	4.1 -4.5	4.6, 4.12, 4.31, 4.45
Work and energy	1	5	6	6.1-6.6, 6.9	6.5, 6.15, 6.27, 6.34, 6.35, 6.63, 6.69
Midterm Exam					
Non-Viscous fluids	1	5	13	13.1-13.6	13.2, 13.3, 13.4, 13.9, 13.10, 13.19, 13.20
Mirrors, lenses , and optical systems	1	5	24	24.1, 24.2, 24.4, 24.7, 24.13	24.1, 24.3, 24.5, 24.7, 24.8, 24.19, 24.21, 24.65, 24.66
Nuclear physics (Radioactivity and half-life)	0.5	2.5	30	30.1 and 30.2	30.2, 30.5, 30.7
Ionizing radiation (interaction of radiation with matter) (x-ray, neutrons, and gamma rays) radiation units, exposure and absorbed dose)	0.5	2.5	31	31.1 and 31.2	31.14, 31.16, 31. 23, 31.24
Final Exam					
Total	**8**	**45**			

*Contact hours include lectures and exams

Specific Outcomes of Instruction (Course Learning Outcomes):
After completing the course, the student will be able to:

	Course Learning Outcomes (CLO)	(SO*)
CLO1.	Develop a clear understanding of basic physical concepts in physics as an integral part of the student's overall education	(a), (k), (i)
CLO2.	Use algebra, trigonometry, and rules of vector analysis in solving problems in several areas in physics	(a), (k)
CLO3.	Provide detailed descriptions of Newton's laws of motion, conservation of energy, viscous flow, optical systems, radioactivity and half-life, and ionizing radiation	(a), (e) (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	
(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:

Midterm	30 points	**TBA**
Homeworks, quizzes, and attendance	20 points	
Final	50 Points	**TBA**

General Notes: **Attendance Policy:** students are expected to attend every online class 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 you cannot pass the course. Makeup excuses will be accepted only for very limited justified cases, such as illness and emergencies.

Prepared by: Dr. Gassem Alzoubi   **Date:** Jul, 4, 2020