
Philadelphia University

Faculty of Science
Department of Basic Sciences and Mathematics.
Physics Program



General Physics (211101)

Course Syllabus

Course Title: General Physics

Course Level : 1

Course Code : 211101

Course Prerequisite(s): N/A

Semester : Fall 2018

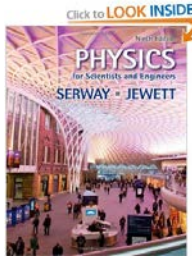

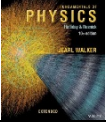

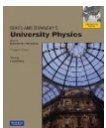



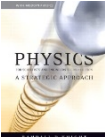


Instructor

Dr. Zuheir Subhi Saleh El-bayyari

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(1) Academic Staff Specific		
Name	Zuheir Subhi Saleh El-bayyari, Ph.D.	
Rank	Associate Professor	
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e-mail (2)	Z_bayyari@philadelphia.edu.jo	
Office hours	Sunday, Tuesday, and Thursday	08:10 – 09:00 AM 10:10 – 11:00 AM 12:00 – 13:00 PM
	Monday and Wednesday	08:00 – 09:00 AM 11:30 – 12:30 AM
	<ul style="list-style-type: none"> • At any time my door is open. • Questions submitted via email are welcome at any time. 	
Teaching Assistant		
Name	N/A	
e-mail	N/A	
Office	N/A	

(2) Basic Course Information and Description	
Course Title	General Physics
Course Code	0211101
Credit Hours	3.0 Credit Hours
Weekly Hours	3.0 Lecture Hours, 3.0 Office Hours
Pre-requisites	None
Co-requisites	None
Catalogue Description	This module is a first year physics course which will introduce the students majoring in engineering or physics and other sciences to the basic language and ideas of physics that occur in all branches of science and technology. In addition it provides them with a clear and logical presentation of the basic concepts and principles of physics, and to strengthen their understanding through a broad range of interesting applications to the real world. The course is a survey of the concepts, principles, methods and major findings of classical Physics. Primarily, it covers Newtonian mechanics, with topics include: Vectors, kinematics and dynamics of a single particle in one, two and three dimensions, Circular motion, Newton's laws of motion, Work, energy and power, Conservation of energy, Linear momentum, Rotational motion, Angular momentum; general rotation, and Static Equilibrium; Elasticity and Fracture .
Assumed Knowledge	This course is designed primarily for undergraduate students majoring in engineering or physics and other sciences. A major objective of this course is to develop the mathematical formalism necessary for solving the fundamental one and two dimensional problems of classical physics. Consequently a good foundation in calculus prior to have this or any physics course is highly recommended. Mainly, the course needs some knowledge of a one dimensional differential / integral calculus, and therefore calculus (1) is required. For the better, It is preferable that calculus (2) be taken prior to or concurrently with this course. The course assumes familiarity with physics at the level of high school physics. However, during the class if I base my explanation on any physical concept or use any mathematical techniques you have not seen before, tell me

	immediately, and I will go over it for quick review.															
Delivery Methods	Lectures explaining material, Problem solving, Lecture notes, Discussion by actively involving students in learning by asking questions that provoke thinking and verbal response.															
Assessment Schemes	Homework assignments, Two Midterm exams, Final Exam, Quizzes, might be a Project (short essay, Presentation, Poster,...etc).															
Resources	Textbook	 <table border="1"> <tr> <td>Title</td> <td>Physics for Scientists and Engineers</td> </tr> <tr> <td>Author</td> <td>Raymond A. Serway and John W. Jewett.</td> </tr> <tr> <td>Publisher</td> <td>Cengage Learning http://www.cengage.com/us/</td> </tr> <tr> <td>Edition</td> <td>9 edition</td> </tr> <tr> <td>Year</td> <td>January 17, 2013</td> </tr> <tr> <td>ISBN-10</td> <td>1133954057</td> </tr> <tr> <td>ISBN-13</td> <td>978-1133954057</td> </tr> </table>	Title	Physics for Scientists and Engineers	Author	Raymond A. Serway and John W. Jewett.	Publisher	Cengage Learning http://www.cengage.com/us/	Edition	9 edition	Year	January 17, 2013	ISBN-10	1133954057	ISBN-13	978-1133954057
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	ISBN-13	978-1133954057														
	<p>Please Note that: The textbook is a required purchase if you can afford buying your own copy. When the material in the class is too concise for your taste, you can turn to the textbook, which provides more detailed derivations and explanations of the results and formulas. It also has more worked examples and problems, problem-solving hints, etc.</p> <p>Homework problems will not be assigned from the textbook, because some copies of solution manuals are available with the students !. Instead, the problems in the text is open for all students to practice solving them, and in case of any difficulty in solving the problems, you can come to my office during the office hours to discuss your solutions with me. I believe that working out the problems in the text is absolutely essential to learning the material of this course. Trying to learn physics without doing problems is like trying to learn how to ride a car by reading a book. I strongly encourage students to get together in groups to discuss the problems, but of course the mere copying of solutions written by your friends or copying from solution manuals will not help you learn physics.</p>															
	Other Recommended Complements	 <p>Fundamentals of Physics, D. Halliday, R. Resnick and Jearl Walker, John Wiley and Sons (WIE), 10 edition, August 5, 2013, ISBN-10: 1118230728, ISBN-13: 978-1118230725</p> 														
 <p>Sears and Zemansky's University Physics With Modern Physics, Roger A. Freedman, A. Lewis Ford , Francis Weston Sears , Hugh D. Young, Pearson Pub., 13 edition , 2011, ISBN-10: 0321762185, ISBN-13: 978-0321762184</p> 																
 <p>Physics 9e, John D. Cutnell and Kenneth W. Johnson, John Wiley and Sons (WIE), 9 edition, January 3, 2012, ISBN-10: 0470879521, ISBN-13: 978-0470879528</p> 																
 <p>Physics for Scientists and Engineers: A Strategic Approach with Modern Physics, Randall D. Knight , Addison-Wesley, 2nd edition, October 4, 2007, ISBN-10: 0805327363 , ISBN-13: 978-0805327366</p> 																
 <p>The above recommended complements is not a required purchase, but is recommended resources to have a look at them at the university library and read extra explanation on topics of the course.</p>																
Useful websites	 <p>Physics Student Book Companion Sites for Physics for Scientists and Engineers , Raymond A. Serway: http://www.brookscole.com/cgi-</p>															

		wadsforth/course_products_wp.pl?fid=M20b&discipline_number=13&product_isbn_issn=0534408427		
	▶	http://www.ux1.eiu.edu/~cfadd/1150/Hmwk/Ch02/Ch02.html		
	▶	http://faculty.etsu.edu/lutter/courses/phys2010/index.htm		
	▶	http://www.physics.umd.edu/courses/Phys121/Roberts/F06/lecture_notes.htm		
	▶	http://romano.physics.wisc.edu/winokur/phys207/		
	▶	http://www.sfu.ca/phys/100/		
	▶	http://theory.uwinnipeg.ca/physics/		
	▶	https://ocw.mit.edu/courses/physics/8-01-physics-i-fall-2003/		
Course Schedule				
Instructor	Section	Day	Time	Location
Dr. Zuheir El-bayyari	1	Sun, Tues, & Thurs	09:10 – 10:00 AM	21005
Ms. Mariam Al-qudairat	2	Sun, Tues, & Thurs	10:10 – 11:00 AM	09313
Ms. Mariam Al-qudairat	3	Sun, Tues, & Thurs	12:10 – 13:00 PM	09313
Ms. Mariam Al-qudairat	4	Mon. & Wends.	09:45 – 11:15 AM	31310
Ms. Mariam Al-qudairat	5	Mon. & Wends.	11:15 – 12:45 PM	09421

(3) Mode of Assessment				
▶	Allocation of Marks			
▶	Expected Appointment			
Assessment Instruments	Mark	Day	Date	Time
First Examination	20	TB Announced by the Dept.	Sunday to Thursday	2:00 -- 3:00 PM
Second Examination	20	TB Announced by the Dept.	Sunday to Thursday	2:00 -- 3:00 PM
Homework's, Projects and (5) Short Quizzes	20	Each week	Sunday to Thursday	Lecture time
Final Examination	40	To Be Announced by Admission Department.	Sunday to Thursday	
Total	100			
Other forms of assessment Extra Homework's and Projects	5 % - 10 % For extraordinary efforts such as: <ul style="list-style-type: none"> • Effective participation in class discussions. • Presenting solutions to some noticeable challenging problems. • Demonstrating experiment to study a particular educational learning outcome of the course. • Translating a term paper into an effective and powerful PPT slides.. 			

(4) Grades compatibility with other systems								
Percent grade	90 -100	85 - 89	80 - 84	75 - 79	70 - 74	65 - 69	60 - 64	Below 60
Letter grade	A	B+	B	C+	C	D+	D	F
Earned Points	4.0	3.5	3.0	2.5	2.0	1.5	1.0	0.0
Important Remark: Only grades that are closer less than 0.5 pt will be rounded to the next letter grade. For example, if you have 59.51 you grade will rounded to 60 that is a D. However, a 59.49 will be rounded to 59 which is an F. No exceptions will be made.								

(5) General notes on exams

▶	Quizzes	<p>It is critical to constantly measure the follow-up of the students regarding the class material, and to check their current state of knowledge and to test the material that has been covered in the class and homework's if it is assigned. Thus I use quiz strategy. Besides it will help students to do not fall behind, quizzes will help the instructor to recognize early the student's weakness points. Occasionally 4-5 a 10-minute sudden quizzes shall be given during the semester, and the lowest one quiz grade may be dropped. The dates of the quizzes are not shown on the course calendar. Generally speaking you will have one quiz every two weeks. The following points, display the guidelines for taking and grading quizzes:</p> <ul style="list-style-type: none"> ▶ Quizzes are composed of 1-5 conceptual problems. ▶ Quizzes will count towards your final grade. ▶ Quizzes are not an open text book or open notes. ▶ We will utilize peer-to-peer learning methodology in solving the quizzes. The method is based on brainstorming with your next fellow. ▶ The setup for each step must be shown on quizzes. Answers with no effort to show how you get it constitute a zero.
▶	50-minute Exams	Two lecture periods during the last day of week 7 (exam #1) and week 12 (exam #2) will be used for 50-minute exams. Each exam will focus on all the material since the previous exam, and will include at least one problem that is at most a slight modification of a previously solved problem during the class session. Students will be assigned to exam rooms according to their sections.
▶	Make-Up Exams	The Make-up exams will be given one week after the original 50-minute exam, only for those who obtained an official excuse. The dates for the 50-minute exams are shown on the course calendar.
▶	Final Exam	The 2-hour final exam, which will cover the material from the entire course, will be held few days after the last lecture. There will be no make-up for the final exam.

(6) Exam Rules

▶		Exam is a vital evenhanded learning instrument to gauge students, qualitatively and quantitatively, on the course foremost theoretical concepts. The regulations regarding arrangements, attendance, and conduct, of examinations are summarized in the following points:
▶	1.	There will be two- one hour exams during the semester (first and second exams) and a two – hour's final exam. All exams are closed book closed notes. The final exam is comprehensive but will emphasize the material covered after the second exam.
▶	2.	Prior to each exam, special review sessions will be arranged depending on our progress in the course..
▶	3.	A single equation sheet may be brought to the exam. However a sheet of useful equations will be provided at the time of the exam (Might happen!). Bring to mind, having equations available does not guarantee success-understanding is the key.
▶	4.	There will be no makeup exams and no grade will be dropped,
▶	5.	If an exam is missed verifiable circumstances will be considered.
▶	6.	Two exams on one day is not a sensible reason to postpone an exam; if you have three or more exams on the same day you must notify the instructor prior to the exam.
▶	7.	<p>Date changes of a mid-semester exam is possible provided that:</p> <ul style="list-style-type: none"> • No date-change discussion inside the class. • The new date must be within one week of the assigned date. • A paper with the new date must be signed by all students and submitted to me or module coordinator or Department Chairperson.

▶	8.	<p>During the exams no outside material of any form is allowed. In case of any problem that emerges during the exam time all will be forwarded to the Associate Dean of Students Affairs of the Faculty of Science. / Students Committee</p> <p>For further information regarding academic honesty on conduct of examination refer to our university academic honesty policy and other disciplinary procedures that can be found at: http://www.philadelphia.edu.jo/PDF/laws/reg1.pdf</p>
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(7) Teaching Method

▶	Duration	16 weeks for each semester, 48 hours in total
▶	Lectures	45 hours in total, 3 per week (including two 1-hour midterm exams)
▶	Tutorials	13 in total, 1 per week.
		<p>Note that:</p> <p>Lectures: will be given by Prof. Zuheir El-bayyari three per week, for 1 hour each, or two per week, for 1.5 hour each. I expect you to attend the lectures. The lectures will explain the concepts that you are expected to understand. Unfortunately, there is no live demonstrations during the class that are important to your understanding of the material or any lab to support you in this regard.</p>
▶	Lecture Notes	Professor El-bayyari uses his own lecture notes to prepare for each class session. The whiteboards in the classroom will be used to detail information that is a subset of the information found in the lecture notes. Therefore, no lecture notes will be handed out to any student or put in the photocopy bookshop. It is your responsibility as a first year student to learn how to take your own notes during the lecture. Otherwise, for more information, discussion and explanation, you have to refer to the text book.

(8) Instructions and Regulations

▶	For all students in the class	
	1.	Using mobile phones or any other electronic devices such as (Blackberries, iPods, PDAs) during lectures or exams is prohibited. Shut off your mobile phones and other electronic devices during the class, any one uses mobile will be asked to leave the lecture hall.
	2.	You are not allowed to disturb the class. If you miss the classroom the first 10 minutes you are not allowed to enter the classroom and you will be reported absent.
	3.	Side talks are not allowed, if you miss something or have a question, please, ask the instructor and not a student. Any student involved in side talks will be asked to leave the classroom. This is for the benefit to all students.
	4.	Students are expected to attend all classes, if you do not show up for more than 15% of the classes, you fail the course. There are no grades for attendance.
	5.	Quizzes have no make-ups, so try not to miss any!
	6.	Students are expected to participate actively in the class during the discussion.
	7.	Check the department announcements regularly regarding the course.
	8.	Be responsible for all class activities, announcements, and assignments when you miss a class.
	9.	Do not hesitate to see me if you have any question during the office hours.
	10.	Prior to class, look over the section that will be covered.
	11.	Regularly check the university website at: http://www.philadelphia.edu.jo/ .
	12.	No make-up exam will be given; if you miss two exams, one exam only will be made up if the absence is appropriately justified. Missing two exams with no justifications will result with "Fail" in this class. The justification for missing an exam should be submitted no more than three days.

		Otherwise no makeup will be allowed. If you miss a final exam and you have a proper justification, an "incomplete" will be given until you make up the final exam at the beginning of the next semester and not earlier.
	13.	During exams, students are allowed to bring a scientific conventional calculator not a programmable one
	14.	Cheating is not tolerated. Students who cheat on an exam will be subjected to the university regulations regarding this matter. A second case of cheating will result in a failing grade for the course.

(9) Module Objectives

▶	<p>Our goal is to convey the excitement of the physicist's quest to understand nature at its deepest level, and to provide the knowledge and tools that you will need to continue your studies in science or engineering. Hoping that you will enjoy the course.</p> <p>The main objectives of this introductory physics course are:</p> <ol style="list-style-type: none"> 1. To provide the students with a clear and logical presentation of the basic concepts and principles of vectors, Newtonian mechanics, Work and energy, Conservation of energy, Linear momentum, Rotational motion, Torque, Static equilibrium and elasticity in general and other principles of physics; 2. Help students to develop and master mathematical techniques used to tackle, analyze, and solve simple physical problems associated with Newtonian mechanics and laws of physics to be covered in the course. 3. Apply these concepts and laws in solving real world problems; 4. Increasing student motivation and improving student problem-solving and higher order thinking by introducing new learning methods e.g., participatory learning through the laboratory experiments; 5. To strengthen an understanding of the concepts and principles through a broad range of interesting applications to the real world; 6. Provide students with generic skills which will be of great use in his/her field of study e.g. critical thinking, and quantitative and symbolic reasoning; <p>In order to meet these objectives, emphasis will be placed on sound physical arguments. At the same time, students will be motivated through practical examples if available that demonstrate the role of physics in other disciplines including engineering, chemistry, and medicine.</p>
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(10) Module Learning Outcomes

▶	By the end of this course the student is expected to gain understanding of the basic laws that govern everything in our world from the subatomic to the cosmic scale and will also learn much that will be important in his or her work in the science. The study of physics as a basic science is not particularly easy, but we believe it is rewarding, particularly for students planning further training in related sciences.
Observable / Measurable learning outcomes	
On Successful completion of the module students would be able to	
▶	(A) Knowledge and Understanding Skills
A.1.	Identify the base quantities in the SI system.
A.2.	Describe the translational motion of a single particle in terms of position and inertial frames, inertia, velocity, and acceleration.
A.3.	Identify some basic laws in physics in the areas of classical mechanics; including: Newton's laws of motion, law of conservation of energy, law of conservation of momentum, Angular momentum, ...etc.
A.4.	Define velocity types, acceleration types, work, energy, power, linear momentum, rotational

		motion, center of mass, torque, equilibrium, stability and balance, stress and strain, fracture.
▶	(B) Intellectual Skills	
	B.1.	Apply basic mathematical tools commonly used in physics; including: basic algebra, vector algebra, differentiation and integration.
	B.2.	Calculate velocity, acceleration, work, energy, power, centripetal force, linear momentum, torque, angular momentum, center of mass, rotational kinetic energy, moments of inertia, stability and balance, stress and strain.
	B.3.	Apply some basic laws in physics in the areas of classical mechanics; including: The laws of motion, The law of conservation of energy, The law of conservation of momentum, Angular momentum, Rotational motion and torque.
▶	(C) Professional and Practical Skills	
	C.1.	Draw a vector, a free body diagram.
	C.2.	Convert a physical situation articulated in English to a mathematical formulation, and then analyzes it quantitatively.
	C.3.	Extend the basics of mechanics to other fields i.e. electromagnetism.
▶	(D) Transferable Skills	
	D.1.	Explain the importance of the application of physics in science, engineering, and medicine.
	D.2.	Build a solid background for other studies related to physics or natural sciences.

(11) Syllabus			
Topics to be covered	Teaching Duration	Learning Outcomes	Assessment Tools
Vectors Coordinates systems and frames of reference, vectors and scalars, some properties of vectors, addition and subtraction of vectors, components of a vector and unit vectors, the scalar product of two vectors, the vector product.	[6 hours]	A.1. A.2. B.1. C.1	<ul style="list-style-type: none"> ▪ All Quizzes ▪ Tutorials ▪ Exam 1,3
Kinematics in one, two and three dimensions Displacement, Average velocity, Instantaneous velocity, average acceleration, instantaneous acceleration, one dimensional motion with a constant acceleration, free falling objects, vector kinematics and projectile motion, applications.	[4 hours]	A.1. A.2. A.3. A.4. B.1. B.2. D.1. D.2.	<ul style="list-style-type: none"> ▪ Quizzes ▪ Tutorials ▪ Exam 1,3
The Laws of Motion The concept of force, Newton's first law and inertial frames, inertial mass, Newton's second law, weight and the force of gravity, normal force, Newton's third law, free body diagrams, friction force, some applications of Newton's laws, uniform circular motion and non-uniform circular motion, applications.	[6 hours]	A.1. A.2. A.3. A.4. B.1. B.2. B.3. C.1. C.2. D.1. D.2.	<ul style="list-style-type: none"> ▪ Quizzes ▪ Tutorials ▪ Exam 1,3
Work and Energy Introduction, work done by a constant force, and a variable force, kinetic energy and the work energy theorem, mechanical power, applications.	[4 hours]	A.1. A.2. A.3. A.4. B.1. B.2. B.3. C.1. C.2. D.1. D.2.	<ul style="list-style-type: none"> ▪ Quizzes ▪ Tutorials ▪ Exam 2,3
Conservation of Energy Conservative and non-conservative forces, Potential energy, Mechanical energy and Its conservation, Problem solving using conservation of mechanical energy, conservation of energy principle, Energy conservation with dissipative forces, applications.	[4 hours]	A.1. A.3. A.4. B.1. B.2. B.3. C.1. C.2. D.1. D.2.	<ul style="list-style-type: none"> ▪ Quizzes ▪ Tutorials ▪ Exam 2,3

<p>Linear Momentum Momentum and Its relation to force, Conservation of momentum, Collisions and Impulse, Conservation of energy and momentum in Collisions, Elastic collisions in one dimension, Inelastic collisions, Collisions in two or three dimensions, Central of mass (CM), Central of mass and translational motion, Applications.</p>	[6 hours]	<p>A.1. A.3. A.4. B.1. B.2. B.3. C.1. C.2. D.1. D.2.</p>	<ul style="list-style-type: none"> ▪ Quizzes ▪ Tutorials ▪ Exam 2,3
<p>Rotational Motion Angular quantities, Vector nature of angular quantities, Constant angular acceleration, Torque, Rotational dynamics; Torque and rotational inertia, Solving Problems in Rotational Dynamics, Determining moments of Inertia, Rotational kinetic energy, Rotational plus translational motion; Rolling, Applications.</p>	[6 hours]	<p>A.1. A.3. A.4. B.1. B.2. B.3. C.2. D.1. D.2.</p>	<ul style="list-style-type: none"> ▪ Quizzes ▪ Tutorials ▪ Exam 2,3
<p>Angular Momentum; General Rotation Angular momentum-objects rotating about a fixed axis, Torque as a vector, Angular momentum of a particle, Angular momentum and torque for a system of particles; General motion, Angular momentum and torque for a rigid object, Conservation of angular momentum, Applications.</p>	[5 hours]	<p>A.1. A.3. A.4. B.1. B.2. C.1. C.2. D.1. D.2.</p>	<ul style="list-style-type: none"> ▪ Quizzes ▪ Tutorials ▪ Exam 3
<p>Static Equilibrium; Elasticity and Fracture Static equilibrium; Elasticity and fracture, Conditions for equilibrium, Solving statics problems, Stability and balance, Elasticity; Stress and Strain, Fracture, Applications.</p>	[3 hours]	<p>A.1. A.3. A.4. B.1. B.2. D.1. D.2.</p>	<ul style="list-style-type: none"> ▪ Quizzes ▪ Tutorials ▪ Exam 3

(12) Tentative / Module Academic Calendar	
▶ Week	Subject
1	Vectors
2	Vectors
3	Kinematics in one, two and three dimensions
4	Kinematics in one, two and three dimensions
5	The laws of Motion
6	The laws of Motion
7	Work , Energy and Power
	<i>Last day for the first exam. Time table will be announced by the Department of Basic Sciences</i>
8	Conservation of Energy
9	Conservation of Energy
10	Linear Momentum
11	Linear Momentum
12	Rotational Motion
	<i>Last day for the second exam. Time table will be announced by the Department of Basic Sciences</i>
13	Rotational Motion
14	Angular Momentum; General Rotation
15	Angular Momentum; General Rotation
16	Static Equilibrium; Elasticity and Fracture

(13) Expected Workload / How to succeed in this course

▶ This is a three-credit hour's class (excluding laboratory). The successful student typically spends 2-3 hours of concentrated effort for each hour spent in class. For a three-credit hour class this means up to nine hours per week, three hours in class and six hours outside of class, studying in groups and individually.

Teaching and learning are mutual, integrated, simultaneous, action. To raise students learning abilities of physics a great effort must be done by students to improve their conceptual and analytical understanding of physics. Physics is very fascinating science but due to the sophisticated mathematics behind every physics concept and law, physics emerges as a very challenging and demanding subject. Moreover, because of its accumulative nature, as always new ideas will be building upon the older ones, physics seems a bit overwhelming.

Students play a cardinal role in the teaching-learning process. Students feedback through students evaluation can improve and effective teaching methodology, while the effort exerted by students to utilizing and improving the accessible learning strategies would lead to a complete comprehension of a physics course.

In the following I will draw the best "in my view" students learning strategies for studying physics. Mentoring students toward adopting a broad spectrum of learning strategies will make huge difference to the performance of students. The student learning strategies drawn below are sort of suggestions on how to dramatically students are able to improve their understanding of and therefore their grade in a physics course. The proposed studying guidelines are relevant only for physics courses taken by students majoring in physics, or any science disciplines and engineering.

Here are some hints to help make these hours as productive as possible:

1.	Attend class !
2.	Read the material to be presented before class. Don't fall behind !
3.	During lectures students must record the main concepts, arguments, and results.
4.	Come prepared and ask questions regarding the difficult areas after they are covered in Class.
5.	Make a neat copy of the lecture notes, review and extend them as soon as possible after class.
6.	Study the examples in the text and in the class.
7.	Do the homework assignments by yourself first of all.
8.	Students must spend time after the class to read through his/her notes and text book.
9.	Solve other problems from the text book that are similar to the assigned ones, or the ones covered in class.
10.	Re-read the sections in the text where you experience difficulties.
11.	It is critical to have a good foundation in mathematics at the level of calculus (1) prior to taking any physics course.
12.	A student who does have a good background in physics and/or math should plan to spend at least 6-8 hours a week reading the text book, reviewing the notes, and working homework problems.
13.	Get help from fellow students. Study groups are extremely useful!
14.	See the instructor. Utilize office hours, email, etc.
15.	Spend at least nine hours a week in concentrated effort, both in and out of class.
16.	Physics is a highly visual subject and many physics concepts are best conveyed by taking the advantages of the web resources.
17.	Relax; we all learn one step at a time.

(14) Homework Assignments

▶ You will have four types of frequent homework assignments with regard to the course material; specifically, skimming each chapter before we take it up in class, reading your text book and reviewing your notes after every class, and performing your homework.

The first three tasks will serve to keep your attention and interest up whilst the last task will help you to powerfully comprehend the material and build up your problem solving techniques. In fact working through problems is crucial to your understanding of a physics course and corresponding passing grade. It is the only way to learn most of physics, so please take the homework very seriously. You will be present with a sheet on the topic "How to do physics problems?" Performance of homework problems is subjected to the following guidelines and rules:

- ▶ Students may encounter three types of homework; namely team problems, non-team problems and online problem through Mastering Physics softwares.
- ▶ Team problems, must be worked as team .In this case only one written copy of the solution is required per team but put all the team member's names on the sheet. The submitted solution sheet should be written in mutual manner.
- ▶ For the non-team problems, I expect you to write up your solutions individually. I encourage you to meet together in-groups to study, discuss and argue on the homework. However your write-up should show your insights of the problems.
- ▶ For non-team problems, before involving in group discussions I suggest that you initially attempt to solve the problems by yourselves, as this will help you to explore honestly your weaknesses.
- ▶ Selected problems will **NOT** be graded and included in the final grade determination.
- ▶ For team and non-team problems, if you cannot solve a problem try to write down why you are having difficulties.
- ▶ For team and non-team problems, just writing down a numerical answer for a problem will give you a zero point for that problem.
- ▶ Depending on time you will receive written solutions when problem sets are collected / submitted.
- ▶ For team and non-team problems, homework will be due in class next week of issue.
- ▶ For the online problem, the homework will be done online, using the Mastering Physics software available!. You need to log on to the system sited at with the following::

Section	Module ID on Physics Software
Applied Physics 1	http://ecourse.philadelphia.edu.jo/login/index.php
Applied Physics 2	Remark: The user name and password, if any, is the student university number.
General Physics 1	

Do the practice session to make sure you know how to use the software. Of course before that you need to register for the online Physics Software website above and follow the instructions.

- ▶ Any question concerning the homework can be directed to me in the office hours.
- ▶ For all types of homework, these are not acceptable:
 - handing your homework to your friends;
 - copying your friend's homework;
 - Copying previous year homework.
- ▶ Late assignments will be penalized by 5% deduction of the earned score for each working day beyond the deadline. However valid and verifiable excuse will be considered.

(15) Term Paper

- ▶ Preparing and presenting a term paper is aimed to improve the students communication skills, introduce students to the realistic application of class material, motivate students to learn more about multimedia facilities. Organization of your term paper must be subjected to the following rules:
- ▶ The term paper must be on a topic relevant to the material we cover; it should explain the applications of the studied theoretical physical concepts to a particular technologist issue or natural phenomenon.
 - ▶ Term papers must be composed of contents, introduction, main body (theory, application ...), conclusion, and references. During lectures, I will elaborate further on the topic "How to write a scientific report?".
 - ▶ No more than two students should be shared in the same project.
 - ▶ Some suggestions pertaining to the topics of the term papers will be passed to you.
 - ▶ We will set up the two-person groups in the first weeks of classes.
 - ▶ In preparing his/her term paper students should make use of multi sources of references e.g. text books, published Journal paper, and web resources. A single, one type –reference term paper will not be accepted.
 - ▶ An extra credit will be given to the student/group who will suggest or will find a new problem or give an illustration of the application of a particular theoretical principle in other sciences, e.g. chemistry, biology, or every-day life employing the presented, in class, physical concepts.
 - ▶ An extra credit will be given to the student/group that will besides the hard and electronic copy of his/her/their term paper will translate it into a poster.
 - ▶ All term papers will be a minimum of five pages long plus a bibliography, typed, double-spaced, 12-pitch, with 1-inch margins all around.
 - ▶ Presenting your work to the class will be included in the final grade for the term paper.
 - ▶ Term papers will be due on the last week of classes.

(16) Student Portfolio

- ▶ The student portfolio is a collection of student notes, ideas, questions, and perspectives of the course material. The main purpose of the portfolio is to allow students to demonstrate what they have learned in class and to identify and assess his/her personal scientific growth in the subject. Further, preparation of the portfolio will help students to gain experiences in keeping record of the material covered in class in an organized manner. Encouraging students to reproduce and organize the class material can be served as an instrument to improve dramatically their study procedure and consequently complete their preparation for quizzes and exams. Finally, I believe that the major objective of having the portfolio is to document that all of the above learning outcomes have been met.
- Each student is required to design and keep a student portfolio in a two-ring binder. The portfolio should be neatly organized and kept up to date. The portfolio should include the following entries:
- Table of contents.
- ▶ All in-class handouts.
 - ▶ Class notes.
 - ▶ Homework assignments.
 - ▶ Quizzes.
 - ▶ Exams.
 - ▶ General media articles relevant to the course topics
 - ▶ Term paper.

	<ul style="list-style-type: none"> ▶ Description of each chapter .Each description should contain : <ol style="list-style-type: none"> 1. Summary of the main concepts. 2. Illustration of the main concepts using videos and pictures out of hard or media articles. 3. Application of those concepts in real life situations. 4. Student reflections regarding the chapter content, class activities, and the obstacles that he/she has faced in studying the material. ▶ Challenging problems pertaining to the material we have covered. ▶ All in-class conceptual problems. ▶ Self-assessment statement. ▶ All laboratory reports.(optional). <p>Students are welcome at any time to talk about progress on their portfolios and to address any questions regarding the portfolio items. Portfolios shall be checked for completeness periodically during the semester and at the end of the semester. Student will be graded on the accessibility, readability, and intelligibility of his/her portfolio as well as the comprehension of the contents .The portfolios will be returned to students during the final week of class.</p>
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(17) Academic Behavior and Honesty

	<p>▶ Academic honesty is expected from all students. Therefore, during quizzes and exams, exchange of information with others is unacceptable. Cheating, plagiarism (using materials from sources without citation! i.e. presenting work as your own when it is not) fabricating data or references, or any use of notes or other materials, unless explicitly authorized will not be tolerated.</p> <p>The use of programmable calculators is not allowed absolutely!, a conventional calculator will be allowed for use when you authorized to do so such as in the exams. Anyone suspected of violating these guidelines will be charged with academic dishonesty and will be subjected to the university disciplinary procedures which may result in severe penalties, including failing the examination and possibly failing in the course. However, you are strongly encouraged to get together in groups to discuss the problem sets and the material presented in the course based on the principle that one's work is one's own.</p> <p>Our university academic honesty policy and other disciplinary procedures can be found at: http://www.philadelphia.edu.jo/PDF/laws/reg1.pdf</p>
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(18) Attendance Policy


	<p>▶ Absence from lectures and /or tutorials shall not exceed 15%. Students who exceed the 15% limit without a medical or emergency excuse acceptable to and approved by the Dean of the relevant college/faculty shall not be allowed to take the final examination and shall receive a mark of zero for the course. If the excuse is approved by the Dean, the student shall be considered to have withdrawn from the course.</p> <p>Our university attendance policy and other disciplinary procedures can be found at: http://www.philadelphia.edu.jo/PDF/laws/reg1.pdf</p>
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(19) Students with Disabilities

	<p>▶ If you have a Psychological and / or Physical disability or disabling medical conditions that could affect your performance in this course, Please see me privately at my office for a discussion of your disability-related academic needs and accordingly I can make the appropriate arrangements and actions according to Philadelphia University regulations. Also those students that have medical</p>
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	conditions (asthma, diabetes, ...etc.) are welcome if they wish to share with me any emergency medical information.
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(20) Feedback	
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	Concerns or complaints should be expressed directly and immediately to the course lecturer. At the end of the course, the students will fill a course evaluation form, evaluating the course contents, its teaching, learning, assessment methods, and the lecturer. Analysis of the students feedback will be useful to improve the quality of teaching and learning processes and related activities. For non-academic complaints or concerns you may refer to the students handbook or the university regulations.
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APPENDICES

To objectively and subjectively assess the course Portfolio, term paper, and term paper presentation three rubrics (rating scales) for the evaluation procedures are designed. The rubrics contain a set of assessment criteria that specifies the required characteristics for each level of quality of the items of the graded activities. The rubrics would serve as a systematic guide for providing learners with the necessary feedback on the components of the course activities.

APPENDIX A: Rubric to Assess Course Portfolio			
Assessment Dimensions 100 %	Grading Scale / Indicators		
	Exemplary 8 ⇒10	Satisfactory 6 ⇒ Less than 8	Unsatisfactory 4 ⇒ Less than 6
Completeness 30 %	<ul style="list-style-type: none"> All required materials are included. Contains a remarkable number of additional related materials. All issues raised in class are addressed, discussed, and outlined. 	<ul style="list-style-type: none"> All required materials are included. Contains a number of additional related materials. Some of the issues raised in class are addressed, discussed, and outlined. 	<ul style="list-style-type: none"> Some required materials are not included
Content & Organization 30 %	<ul style="list-style-type: none"> Sections are well organized and clearly presented. Sections are creatively and logically ordered, with clear transition sentences. Resources for extra items are clearly and correctly listed and cited. Presentation of the portfolio elements shows an accurate and through understanding of the material presented in class physics concept and its applications, and therefore illustrates the achievement of all expected student learning outcomes. Reveals the student ability to powerfully use Technology in preparing written document. 	<ul style="list-style-type: none"> Sections are organized and clearly presented. Sections are logically ordered. Some of the used resources for extra items are listed and cited. Presentation of the portfolio shows an understanding of the material presented in class physics concept and its applications, and therefore the achievement of the most of the expected student learning outcomes. Reveals the student ability to use Technology in preparing written document. 	<ul style="list-style-type: none"> Sections are poorly organized Sections are illogically ordered. Presentation of the portfolio demonstrates that student has gained the minimum expected learning outcomes. Provides no evidence for familiarity with using Technology in preparing written document
Student Reflection 25 %	<ul style="list-style-type: none"> Demonstrates the student skill in deeply analyzing and critiquing scientific work Indicates student ability to effectively propose and come up with new ideas to improve course contents and teaching strategies. 	<ul style="list-style-type: none"> Demonstrates the student skill in analyzing and critiquing scientific work Indicates the student ability to propose and come up with new ideas to improve course contents and teaching strategies 	<ul style="list-style-type: none"> Demonstrates the student skill in analyzing scientific work.
Overall Layout 15 %	<ul style="list-style-type: none"> Gives clear evidence of the excellent effort put in preparing the portfolio. Has attractive visual appeal 	<ul style="list-style-type: none"> Gives evidence of the effort put in preparing the portfolio. Has reasonable visual appeal. 	<ul style="list-style-type: none"> Shows no evidence for the effort put in preparing the portfolio.

APPENDIX B: Rubric to Assess Term Paper			
Assessment Dimensions 100 %	Grading Scale / Indicators		
	Exemplary 8 ⇨ 10	Satisfactory 6 ⇨ Less than 8	Unsatisfactory 4 ⇨ Less than 6
Aims & Purpose 10 %	<ul style="list-style-type: none"> Covers a significant contemporary topic that is much related to the course outcomes. Employs an original approach to study the selected topic. 	<ul style="list-style-type: none"> Covers a topic that is much related to the course outcomes. Employs a logical approach to study the selected topic. 	<ul style="list-style-type: none"> Purpose of term paper is not clear. A poor approach is used to study the selected topic.
Completeness 30 %	<ul style="list-style-type: none"> All required elements and components of term paper (Abstract, Introduction, Main Body, Conclusions, and Resources) are evidently addressed and included. All issues related to the topic are noticeably addressed, and outlined. 	<ul style="list-style-type: none"> All required elements and components of term paper (Abstract, Introduction, Main Body, Conclusions, and Resources) are included. All issues related to the topic are discussed. 	<ul style="list-style-type: none"> Some required elements are missing. Not all issues related to the topic are discussed
Content & Organization 25 %	<ul style="list-style-type: none"> Sections are well organized and clearly presented. Sections and sequenced concepts are creatively and logically ordered, with clear transition sentences. Presentation of the term paper elements shows an accurate and through understanding of all aspects of the chosen topic. Reveals the student ability to powerfully use Technology in preparing written document. 	<ul style="list-style-type: none"> Sections are organized and clearly presented. Sections are logically ordered. Presentation of the elements of term paper shows an understanding of all aspects of the chosen topic. Reveals the student ability to use Technology in preparing written document. 	<ul style="list-style-type: none"> Sections are poorly organized Sections are illogically ordered. Presentation of the elements of term paper shows that student has gained the minimum understanding of the basic aspects of the selected topic Provides no evidence for familiarity with using Technology in preparing written document
Writing Quality 10 %	<ul style="list-style-type: none"> Almost entirely free of spelling, punctuation, and grammatical errors. Sections are well written with strong sentence structure. Ideas and concepts are presented in a coherent and clear manner. 	<ul style="list-style-type: none"> A few spelling, punctuation, and grammatical errors are detected. Sections are clearly written with good sentence structure. Ideas and concepts are presented in a clear manner. 	<ul style="list-style-type: none"> Several spelling, punctuation, and grammatical errors are detected. Sections are unclearly written with weak sentence structure.
Resources 10 %	<ul style="list-style-type: none"> Good quality significant recourses are effectively utilized in writing the Term Paper. Resources are clearly and correctly listed and cited. 	<ul style="list-style-type: none"> Some of the recourses utilized in writing the Term Paper are significant. Resources are clearly and correctly listed and cited. 	<ul style="list-style-type: none"> Most of the recourses utilized in writing the Term Paper are insignificant. Resources are incorrectly listed and cited.
Overall Layout 10 %	<ul style="list-style-type: none"> Gives clear evidence of the excellent effort put in preparing the Term Paper. Reveals the writer ability to powerfully use Technology in preparing written document. Has attractive visual appeal. 	<ul style="list-style-type: none"> Gives evidence of the effort put in preparing the Term Paper. Reveals the writer ability to use Technology in preparing written document 	<ul style="list-style-type: none"> Shows no evidence for the effort put in preparing the Term Paper. Provides no evidence for familiarity with using Technology in preparing written document.

APPENDIX C: Rubric to Assess Term Paper Presentation

Assessment Dimensions 100 %		Grading Scale / Indicators		
		Exemplary 8 ⇨ 10	Satisfactory 6 ⇨ Less than 8	Unsatisfactory 4 ⇨ Less than 6
Delivery and Quality 50 %	Eye Contact 10 %	<p><u>Presenter:</u></p> <ul style="list-style-type: none"> • Maintains eye-contact with audience all OR most of the presentation time. 	<p><u>Presenter:</u></p> <ul style="list-style-type: none"> • Keeps irregular eye-contact with audience, and frequently goes back to notes 	<p><u>Presenter:</u></p> <ul style="list-style-type: none"> • Keeps very limited eye-contact with audience, and reads mostly from notes OR makes no eye-contact with audience and only reads from notes.
	Verbal Quality 10 %	<p><u>Presenter:</u></p> <ul style="list-style-type: none"> • All OR most of the time speaks using very clearly understood language. • Employs variation of voice tones, and volumes. • Speech is almost entirely free of spelling, punctuation, and grammatical errors. 	<p><u>Presenter:</u></p> <ul style="list-style-type: none"> • Speaks using semi-clearly language. • Sometimes uses different voice tones. • Speech has some spelling, punctuation, and grammatical errors. 	<p><u>Presenter:</u></p> <ul style="list-style-type: none"> • Often mumbles and cannot be understood. • Projected voice mostly is not easily to be heard • Has low rate tone. • Speech has many spelling, punctuation, and grammatical errors.
	Visual Aids 10 %	<p><u>Presenter:</u></p> <ul style="list-style-type: none"> • Makes use of attractive and effective visual aids to emphasize the major points and maintain audience's interest. 	<ul style="list-style-type: none"> • Makes use of visual aids to explain some of the important points of the presentation topic. 	<ul style="list-style-type: none"> • Integrates superficial visual aids OR no visual aids are used during the presentation.
	Slide Quality 10 %	<p><u>Slides:</u></p> <ul style="list-style-type: none"> • Are well organized and creatively and logically ordered. • Contains appropriate information. 	<p><u>Slides:</u></p> <ul style="list-style-type: none"> • Are semi-organized and logically ordered. • Contains adequate information. 	<p><u>Slides:</u></p> <ul style="list-style-type: none"> • Are poorly organized and illogically ordered. • Contains insufficient minimal information.
Knowledge 15 %	<p><u>Presenter:</u></p> <ul style="list-style-type: none"> • Shows a good and accurate grasp of the presented material. • Answers all /most of audiences questions accurately and perfectly. 	<p><u>Presenter:</u></p> <ul style="list-style-type: none"> • Shows a good grasp of the presented material. • Answers correctly some questions of audience. 	<p><u>Presenter:</u></p> <ul style="list-style-type: none"> • Does not have the required background. • Is unable to answer correctly audiences' questions. 	
Content & Organization 25 %	<ul style="list-style-type: none"> • All required elements and components of the presentation (Introduction, Main Body, Conclusions, and Resources) are evidently addressed and included. • All of issues related to the topic are noticeably addressed, and outlined. • The presenter is able to complete the presentation in the assigned time period. 	<ul style="list-style-type: none"> • All required elements and components of the presentation (Introduction, Main Body, Conclusions, and Resources) are included. • Most of issues related to the topic are addressed. • Presentation is ended slightly before OR after its assigned end period. 	<ul style="list-style-type: none"> • Some required elements are missing. • Not all issues related to the topic are discussed. • Presentation is completed much before OR very beyond its scheduled time 	
Team Work 10 %	<ul style="list-style-type: none"> • Harmonic transition between speakers. • Speakers participate equally in the presentation. • Speakers do not interrupt each other during presentation. 	<ul style="list-style-type: none"> • Speakers participate almost equally in the presentation. • Some Interruptions occurs during presentation. 	<ul style="list-style-type: none"> • Speakers participate unequally in the presentation. • Speakers frequently interrupt each other during presentation. 	

Finally remember that

The syllabus is not a contract, but plan of action. It may be subjected to alteration during the semester by the instructor as the learning environment requires.