The University of Jordan

Accreditation & Quality Assurance Center

Course Syllabus

Course Name:
General Physics 2
0302102

1	Course title	General Physics 2
2	Course number	0302102
3	Credit hours (theory, practical)	3 hours
	Contact hours (theory, practical)	1.5 hours five times a week
4	Prerequisites/corequisites	General Physics 1
5	Program title	Physics
6	Program code	
7	Awarding institution	The University of Jordan
8	Faculty	Science
9	Department	Physics
10	Level of course	1st year student
11	Year of study and semester (s)	Summer 2017/2018
12	Final Qualification	
13	Other department (s) involved in teaching the course	
14	Language of Instruction	Arabic +English
15	Date of production/revision	August 2018

16. Course Coordinator:

Office numbers, office hours, phone numbers, and email addresses should be listed.
Dr. Mohammad Hussein
Department of Physics
Office: 206
Phone #:00962-6-5355000 ext:22043
E-mail: bashar_lahlouh@ju.edu.jo

17. Other instructors:

Office numbers, office hours, phone numbers, and email addresses should be listed.

Dr. Hassan Al-Juwhari, Dr. Bashar Lahlouh

18. Course Description:

Basic Principles of Electricity and Magnetism. Electric Field, Gauss's Law; Electric Potential; Capacitance and Dielectrics; Current and Resistance; Direct Current Circuits, Magnetic Field, Sources of the Magnetic Field, Faraday's Laws of Induction.

19. Course aims and outcomes:

A- Aims:

1- Understanding the fundamental concepts in electricity and magnetism.
2- Utilizing physics concepts qualitatively as well as quantitatively.
3- To develop critical thinking and analytical problem-solving skills.
4- To gain an appreciation of how large a role electromagnetism plays in our daily life.

B- Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to …

1) Define what is a pn-junction.
2) Identifies pn-junctions as diodes and transistors.
3) Be able to identify and analyze the different basic pn-junctions circuits and devices.
4) Understand the characteristic curves of both diodes and transistors.
5) Develop a proper understanding of op-amps and their applications.
6) Design simple electronics circuits.

20. Topic Outline and Schedule:

Chapter Number	Title	Sections	Suggested problems
21	**Electric Charge and Electric Field** *(4 Lectures, 1 hours each)*	21.3 Coulomb's Law 21.4 Electric Field and Electric Forces 21.5 Electric-Field Calculations 21.6 Electric Field Lines 21.7 Electric Dipoles	9, 13, 16, 23, 29, 51, 48, 65
22	**Gauss's Law** *(3 Lectures, 1 hours each)*	22.1 Charge and Electric Flux 22.2 Calculating Electric Flux 22.3 Gauss's Law 22.4 Applications of Gauss's Law 22.5 Charges on Conductors	2, 5, 8, 11, 21, 17, 43
23	**Electric Potential** *(4 Lectures, 1 hours each)*	23.1 Electric Potential Energy 23.2 Electric Potential 23.3 Calculating Electric Potential 23.4 Equipotential Surfaces 23.5 Potential Gradient	7, 8, 26, 37, 43, 68
24	**Capacitance and Dielectrics** *(3 Lectures, 1 hours each)*	24.1 Capacitors and Capacitance 24.2 Capacitors in Series and Parallel 24.3 Energy Storage in Capacitors and Electric-Field Energy 24.4 Dielectrics	1, 17, 20, 33
25	**Current, Resistance, and Electromotive Force**	25.1 Current 25.2 Resistivity	2, 7, 20, 38

	(3 Lectures, 1 hours each)	25.3 Resistance 25.4 Electromotive Force and Circuits 25.5 Energy and Power in Electric Circuits	
26	**Direct-Current Circuits** *(3 Lectures, 1 hours each)*	26.1 Resistors in Series and Parallel 26.2 Kirchhoff's Rules 26.3 Electrical Measuring Instruments (Self-Reading) 26.4 R-C Circuits 26.5 Power Distribution Systems	4, 18, 23, 28, 39, 49, 68
27	**Magnetic Field and Magnetic Forces** *(4 Lectures, 1 hours each)*	27.1 Magnetism 27.2 Magnetic Field 27.3 Magnetic Field Lines and Magnetic Flux 2 7.4 Motion of Charged Particles in a Magnetic Field 27.5 Applications of Motion of Charged Particles 27.6 Magnetic Force on a Current-Carrying Conductor 27.7 Force and Torque on a Current Loop	4, 5, 11, 27, 36, 45
28	**Sources of Magnetic Field** *(4 Lectures, 1 hours each)*	28.1 Magnetic Field of a Moving Charge 28.2 Magnetic Field of a Current Element 28.3 Magnetic Field of a Straight Current-Carrying Conductor 28.4 Force between Parallel Conductors 28.5 Magnetic Field of a Circular Current Loop 28.6 Ampere's Law 28.7 Applications of Ampere's Law	14, 23, 43, 46, 64
29	**Electromagnetic Induction** *(2 Lectures, 1 hours each)*	29.1, 29.2, 29.3, 29.4	
30	**Inductance** *(2 Lectures, 1 hours each)*	30.1, 30.2, 30.3, 30.4	

21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:
Lecturing, Problem solving, specifically designed exams, and Class demonstrations.

22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:
Periodic e
Exams and class discussions.

23. Course Policies:

A- Attendance policies: Class attendance is mandatory. A student whose absence exceeds 15% of lectures will be dismissed.

B- Absences from exams and handing in assignments on time:
Absence from exams without an acceptable excuse means ZERO.
No grades for homework assignments. Some suggested problems will be discussed in class for every chapter.

C- Health and safety procedures:
No special precautions.

D- Honesty policy regarding cheating, plagiarism, misbehaviour:
All these issues will be considered according to the regulations and laws adopted at the University of Jordan.

E- Grading policy: First Exam: 20% Second Exam: 30%
Final Exam: 50%

F- Available university services that support achievement in the course:
Class Room, Equipped Laboratory, Library

24. Required equipment:

Text Book, Lecture Notes, Scientific Calculator.

25. References:

A- Required book (s), assigned reading and audio-visuals: "University Physics with Modern Physics" F. Sears & M. Zemansky's, 14th edition, (Pearson, Pearson Education Limited, 2016).

B- Recommended books, materials, and media:
1. Raymond A. Serway and John W. Jewett Jr., "Physics For Scientists and Engineers with Modern Physics", 9th

edition, (Thomson Learning, Belmont, CA, USA, 2014).
2. David Halliday, Robert Resnick, and Jearl Walker, "EXTENDED PRINCPLES OF PHYSICS", 9th Edition (John Wiley & Sons, Inc., 2011).
3. Bauer Westfall, "University Physics with Modern Physics", (McGraw Hill, 2011).
4. James S. Walker, "Physics" Fourth Edition, (Addison – Wesley, 2010).
5. Giancoli, "Physics for Scientists & Engineers with Modern Physics", Fourth Edition, (Pearson Education, 2009).
6. Ohanian and Market, "Physics for Engineers and Scientists", Extended Third Edition, (W. W. Norton & Company, 2007).

26. Additional information:

Students are encouraged to engage in class discussions and are motivated to conduct simple experiments that may help them to better grasp the basic concepts behind the physics of electricity and magnetism.

Name of Course Coordinator: *Bashar Lahlouh* Signature: ---------- Date: August 12 2018

Head of curriculum committee/Department: ---------- Signature: ----------

Head of Department: ---------- Signature: ----------

Head of curriculum committee/Faculty: ---------- Signature: ----------

Dean: ---------- -Signature: ----------

Copy to:
Head of Department
Assistant Dean for Quality Assurance
Course File