



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

PHY102 General Physics (2)
First Semester 2017-2018

Course Catalog
3 Credit Hours. Charge and matter. Electric field. Gauss law. Electric potential. Capacitors and dielectrics. Electromotive force and electric circuits. Magnetic field. Ampere's law. Faraday's law of induction. Self-induction.

Text Book	
Title	Physics for Scientists and Engineers
Author(s)	Raymond A. Serway & John W. Jewett
Edition	9th Edition
Short Name	Serway
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Giancoli	1. Physics for Scientists & Engineers with Modern Physics	Douglas C.	4th Edition	
Feynman	The Feynman Lectures on Physics	R.P. Feynman, M. Sands, R. Leighton	10th Edition	

Instructor	
Name	Prof. Mohammad-Khair Qaseer
Office Location	PH4 L-1
Office Hours	Sun : 11:30 - 14:00 Mon : 11:30 - 13:00 Tue : 08:30 - 09:30 Wed : 09:00 - 10:00 Thu : 11:30 - 12:30

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Class Schedule & Room

Section 1:
 Lecture Time: Sun, Tue, Thu : 09:30 - 10:30
 Room: NF46

Prerequisites

Line Number	Course Name	Prerequisite Type
921010	PHY101 General Physics (1)	Prerequisite / Study

Tentative List of Topics Covered

Weeks	Topic	References
Weeks 1, 2	Electric Fields: Properties of electric charges, insulators and conductors, coulomb's law, electric field of point charges, electric field of a continuous charge distribution, electric field lines, motion of charged particles in a uniform electric field.	Ch23 From Serway
Weeks 3, 4	Gauss's Law: Electric flux, Gauss's law, applications of Gauss's law to charged insulators, conductors in electrostatic equilibrium.	Ch24 From Serway
Weeks 5, 6	Electrical Potential: Potential difference and electrical potential, potential difference in a uniform electric field, electric potential and potential energy due to point charges, Electric potential due to continuous charge distribution, obtaining electric field from electric potential, potential of charged conductor.	Ch25 From Serway
Weeks 7, 8	Capacitance and Dielectrics: Definition of capacitance, calculation of capacitance, combinations of capacitors, energy stored in a charged capacitor, capacitors with dielectrics	Ch26 From Serway
Week 9	Current and Resistance: Electric current, resistance and Ohm's law, electrical energy and power.	Ch27 From Serway
Weeks 10, 11	Direct Current Circuits: Electromotive force, resistors in series and parallel, Kirchhoff's rules, resistance-capacitance circuits	Ch28 From Serway
Weeks 12, 13	Magnetic fields: Definition and properties of magnetic field, magnetic force on a current-carrying conductor, torque on a current loop in a uniform magnetic field, motion of a charged particle in a uniform magnetic field, the Hall effect	Ch29 From Serway
Week 14	Sources of the Magnetic Field: The Biot-Savart law, the magnetic force between two parallel conductors, Ampere's law, the magnetic field of a solenoid, magnetic flux, Gauss's law in magnetism	Ch30 From Serway
Week 15	Faraday's law: Faraday's law in induction, motional electromotive force, Lenz's law, induced electromotive forces and electric fields	Ch31 From Serway
Week 16	Final exams starts	

Mapping of Course Objectives to Program Student Outcomes¹	Assessment method
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Be able to calculate the electric field and the electric potential for a point charge and for simple continuous charge distributions using Coulomb's law and Gauss's law. [3(a), 1(c), 2(e), 3(i)]	First
Comprehend the concepts of capacitance and resistance and be able to analyze multi-loop circuits and RC circuits using Kirchhoff's rules. [3(a), 1(c), 2(e), 3(i)]	
Be able to calculate the magnetic force and the magnetic field and comprehend Faraday's law of induction. [3(a), 1(c), 2(e), 3(i)]	

Relationship to Program Student Outcomes (Out of 100%)										
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
33.33		11.11		22.22				33.33		

Evaluation	
Assessment Tool	Weight
First	30%

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