FUTURE UNIVERSITY IN EGYPT
جامعة المستقبل

Faculty of Engineering & Technology

Physics 2

Information :

Course Code :	PHY 132	**Level :**	Undergraduate	**Course Hours :**	4.00- Hours

Department :	Faculty of Engineering & Technology

Instructor Information :

Title	Name	Office hours
Assistant Lecturer	REHAM MILAD KAMEL SAMAAN	

Area Of Study :

The objective of this second physics course for the engineering students is to develop their ability to understand electricity and magnetism topics in classical physics and to analyze and logically solve problems of engineering applications based on these topics. On successful completion of these courses the engineering student will be able to:
1.Know and understand all old classical physics that is applied up to today.
2.Learn electricity as a single topic.
3.Learn magnetism as a single topic.
4.Solve problems about these two topics.
5.Understand at the end that electricity and magnetism are connected into one topic (Electromagnetic Theory).

Description :

Coulomb's Law, Electric Field and Flux, Gauss' Theorem in electrostatics and its Applications, Electric Potential and electric potential energy, Electrodynamics, electric current, electric current density, Ohms law and Kirchhoff's rules to solve an electric circuit-Magnetic field and flux, Gauss' law in magnetism Force due to a

moving charge and due to an Electric current, Ampere's circuital Law, Faraday's Law for Induction, Maxwell's equation in integral form and their physical meaning for electromagnetism

Course outcomes :

a.Knowledge and Understanding: :

1 -	Electric force and field.
2 -	Gaussôs law for electrostatics and its different applications.
3 -	Electric potential and electric potential energy.
4 -	Capacitors and dielectrics.
5 -	Electric circuit, electric current and ohmôs law.
6 -	Magnetostatic force and field and Ampereôs circuital law.
7 -	Magnetodynamics and Faradayôs Law for induction.

b.Intellectual Skills: :

1 -	Deal with physical problems.
2 -	Think logically and creatively.

c.Professional and Practical Skills: :	
1 -	Gaining skills in identifying and using the different physical parameters related to this course, and perform experiments related to these topics.
2 -	Gaining skills in constructing the physical laws and be able to solve the physical problems.
d.General and Transferable Skills: :	
1 -	Work effectively in team.
2 -	Develop skills related to creations thinking, problem solving , oral and written presentation, and team work.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Electrostatic force and field	10	6	4
Gaussâ s Law for electrostatics	10	6	4
Electric potential and electric potential energy	7	3	4
Capacitors and dielectrics	7	3	4
Electric current and Ohmâ s Law	6	2	4
Electric circuits	6	2	4
Magnetic force due to moving charge	6	2	4
Magnetic force due to current carrying wire	7	3	4
Ampereâ s Law	6	2	4
Gaussâ s Law for magnetism	10	6	4
Faradayâ s Law	6	2	4
Applications for Faradayâ s Law	6	2	4
Self and Mutual inductance	12	4	8
Revision	6	2	4

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Final Exam	40.00	16	
Lab	20.00	1	
Mid-Term Exam 1	15.00	6	
Mid-Term Exam 2	15.00	11	
Semester Work	10.00	1	

Course Notes :

handout and notes

Recommended books :

1.ñCollege physicsò, Giambattista and Richardson, Mac gramttill, 3rd edition, 2010.
2.ñPhysics for scientists and engineersò, Serway, Thomson Brookes/Cok., 8th edition, 2011.