Academic Year 2019/2020
First Semester

Benha Faculty of Engineering
Department of Basic Sciences

Physics I (B1031) – Course Specs

Benha University

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Objectives:	Upon successful completion of this course, the student should be able to demonstrate knowledge of basic concepts of electricity and magnetism and to apply this knowledge efficiently to solve problems and to perform Laboratory experiments under controlled guidance and supervision. Moreover, the course aims to develop the spirit of cooperation with others and working in a team.
Text:	Lecture notes
Reference:	Raymond A. **Serway** and John W. Jewett, *"Physics for Scientists and Engineers with Modern Physics"*, 9th edition, Brooks Cole, 2013.
Online Resources	1- http://www.bu.edu.eg/staff/tarekhassan015 2- http://hyperphysics.phy-astr.gsu.edu/hbase/hph.html 3- http://www.learnerstv.com/lectures.php?course=ltv008&cat=Physics 4- http://www.nvcc.edu/home/nvmajew/new/Phy232/lectures.html 5- http://hazemsakeek.com/magazine/

Course Topics:

Topic	Hours
The Electric Field	4
Gauss Law	4
The electric potential	4
Capacitance	4
Current and resistance	2
Magnetic field	4
Ampere's Law	4
Faraday's Law	4
Inductance	2

Learning Outcomes:

Upon completion of the course, students will be able to

1. define and calculate electric force and electric field.
2. apply Gauss's law to calculate the electric filed due to various charge configurations.
3. define and calculate the electric potential and relate it to the electric field.
4. define and calculate the capacitance of various conductors
5. define and calculate the electric current and electric resistance.
6. define and calculate the magnetic field of moving charges and electric currents
7. Apply Ampere's law to calculate the magnetic field due to various current configurations.
8. Apply Faraday's law to calculate the induced emf in a conductor.
9. Define and calculate the inductance of various inductors.

Time Plan

Week	Date	Lecture1	Lecture2	Lab.	Notes
1	22/9/2019	**Ch0**: Units and Dimensions	**Ch1**: Electric Field		
2	29/9/2019	**Ch1**: Electric Field	Exercises on **Ch1**	Exp. 1	
3	6/10/2019	**Ch2**: Gauss' Law	**Ch2**: Gauss' Law	Exp. 2	Holliday (**6/10**)
4	13/10/2019	**Ch3**: Electric Potential	Exercises on **Ch2&3**	Exp. 3	Quiz #1
5	20/10/2019	**Ch3**: Electric Potential	**Ch4**: Capacitance	Exp. 4	
6	27/10/2019	**Ch4**: Capacitance	Exercises on **Ch3&4**	Exp. 5	
7	3/11/2019	**Revision Ch(1-4)**	**Ch5**: electric current	Lab Exam #1	Midterm Exam
8	10/11/2019	**Ch6**: Magnetic Field	Exercises on **Ch5&6**	Exp. 6	
9	17/11/2019	**Ch6**: Magnetic Field	**Ch7**: Ampere's Law	Exp. 7	Holliday (**20/11**)
10	24/11/2019	**Ch7**: Ampere's Law	Exercises on **Ch6&7**	Exp. 8	
11	1/12/2019	**Ch8**: Faraday's Law	**Ch8**: Faraday's Law	Exp. 9	Quiz #2
12	8/12/2019	**Ch9**: Inductance	Exercises on **Ch8&9**	Exp. 10	
13	15/12/2019	**Revision**	Exercises (revision)	Lab Exam #2	
14	22/12/2019	**Lab Final Exam**			
15	29/12/2019				
16	**Final Written Exam**				

Notes:

1. There are two Quizzes on the theoretical lectures (5 marks each) at weeks 4 and 11
2. There are two Quizzes on the Lab (5 marks each) at weeks 7 and 13
3. The Midterm Exam (20 marks) on the theoretical lectures will be at week 7 or 8
4. The final Lab Exam will start at week 14
5. The final written Exam will start at week 16

Grading Policy

Semester works	Lab	Final Exam	Total
30	**30**	**90**	**150**

Semester works **30**	Quiz #1 **5**	The first Quiz is at the 5th week
	Midterm Exam **20**	The first Major Exam is after the 5th week
	Quiz #2 **5**	The second Quiz is at the 12th week
Lab **30**	Lab semester works **10**	Performing experiments, solving pre-lab questions, and discipline
	Lab quizzes **10**	The first quiz is after finishing 5 experiments and the second is after finishing the other 5 experiments
	Final lab exam **10**	Final Lab exam is to be held after 13th week.
Final exam **90**		