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| Module Title: | General physics (2) |
| Module ID: | PHYS 104 |
| Prerequisite: | None |
| Level: | 2 |
| Credit Hours: | 4 (3+2+1) |

Module Description:

The aim of this course is to give the students outlines on general Physics and to increase their ability to better be aware of their material environment. In addition, this course could improve methods to analyses natural phenomena and to make students build organized information basing upon exact laws and theorems. Thus, they can exploit this knowledge in order to capitalize on the technological interest.

The two main axis of this course are: Electrostatics and Magneostatics

Module Aims:

- Enable students to analyze the electric phenomenon and calculate the values in relation with
- Enable students to analyze the magnetic phenomenon and calculate the values in relation with

Learning Outcomes:

- Student having organized information
- Student able to calculate physical values related with electrostatics and magnetostatics

- Student having the least scientific formation in parallel with his own specialty that establishes equilibrium in his spirit. Thus, we have integrated scientific personality

| List of Topics | No. of Weeks | Contact Hours |
|---|--------------|---------------|
| Overview of fundamental aspects of Physics and in particular static and current electricity. | 1 | 4 |
| Statement of Coulomb's laws and its equation and solution to the problems. | 1 | 4 |
| Electric field and equation and analysis of problems on force between charges and electric field due to charge. | 1 | 4 |
| Study on electric field lines for positive and negative charge, electric potential and solution to some problems. | 1 | 4 |
| Gauss's law or Gauss Theorem and its equations. Solution to the problems. | 1 | 4 |
| An introduction and a brief over view of capacitance and dielectric materials. | 1 | 4 |
| Study on Ohm's law and relation between current and resistance and solution to the problems. Calculation of electrical energy and power. | 2 | 8 |
| Study of DC circuits, Kirchhoff's rules and illustrations. | 1 | 4 |
| Study on magnetic fields, motion of charged particle in a magnetic field, sources of the magnetic field and solution to the problems. Faraday's law of induction (statement, equation and problems). | 2 | 8 |
| State and explanation of Ampere's law, Definition of mutual inductance. | 1 | 4 |
| Explanation of alternating current circuits, the RLC series circuit (a resistor, an inductor, and a capacitor connected in series and parallel), calculation of power in an A.C. circuit, resonance in RLC services circuit | 2 | 8 |

Textbook:

Douglas C. Giancoli, " Physics for Scientists & Engineers", Vol. 1 , Addison-Wesley; 4 edition (April 2, 2007).