Tripoli Evangelical School

Curriculum

Class : Life Science   **Cycle :** Secondary
Subject : Physics   **Textbook :** National Textbook
Teacher's name : Ziad Mina   **Coordinator :** Dr. Jamal Bitar
                    HOD : Miss Wafa Bitar

Unit	Objectives
Unit 1 : Mechanics	- Define the macroscopic mechanical energy - Explain the notion of internal energy of a system - Define the total energy of a system - Know the expression for the elastic potential energy of the system (spring – body) - Apply the conservation and the non conservation of the mechanical energy - Define the linear momentum of a particle and the linear momentum of a system of particles. - Know the relation between the linear momentum of a system of particles and the linear momentum of its center of mass - Know the expression of Newton's second law in terms of the linear momentum - Apply the law of conservation of the linear momentum - Define oscillatory phenomena and give examples of oscillators - Know the characteristics of damped oscillations - Establish the differential equation that governs simple harmonic motions

Unit 2 : Electricity	- Know the phenomenon of electromagnetic induction - State and apply the laws of induction - Define the equivalent generator of a coil - Know the power distribution of a coil-magnet system - Define the phenomenon of self-induction - Define the inductance of a coil - Give the expression of self-induced electromotive force - Write the expression of the potential difference across a coil - Give the expression of the magnetic energy stored in a coil - Interpret the spark produced when switching off a circuit - Define the alternating sinusoidal current - Apply Ohm's law to a resistor traversed by an alternating sinusoidal current - Study the RL series circuit when traversed by an alternating sinusoidal current - Explain the phenomenon of charging and discharging of a capacitor under a square signal and alternating sinusoidal voltage, and establish the corresponding differential equations. - Establish the differential equation of an RLC series circuit traversed by an alternating sinusoidal current. - Define the average power and the power factor.
Unit 3 : Aspects of Light	- Know Huygens principle - Interpret the diffraction phenomenon of light - Read the graph of light intensity in a diffraction pattern - Know the characteristics of light waves - Know the phenomenon of interference of light - Know the conditions of obtaining interference fringes - Interpret the formation of interference fringes - Give the expressions of the path difference and the inter-fringe - Define the photoelectric effect - State Planck-Einstein's hypothesis - Interpret the photoelectric effect using the Planck-Einstein's hypothesis

Unit 4 : Atom , Nucleus and Universe	• Know the historical development of the model of the atom • Know that the atom has discrete energy levels • Draw the energy level diagram of the hydrogen atom • Differentiate between emission and absorption spectra • Represent the nucleus. • Define the atomic mass unit • Define the isotope of an element • Explain the concept of binding energy • Explain the stability of the nucleus • Explain the radioactive disintegration • Characterize the radioactive radiations • Define the activity of a radioactive element • Define the period of a radionuclide • State the law of radioactive decay • Know the principle of artificial radioactivity • Know the existence of some natural radioactive series • Know the principle of nuclear fission & nuclear fusion • Explain the chain reaction • Apply the law of conservation of energy in a nuclear reaction • Identify nuclear waste