Ecole Internationale Provence-Alpes-Côte d'Azur

Forward Planning

Long-Term Semester Planning

Academic Year: 2020-2021

Class : S4
Subject : Physics
Teacher : Erazmus
No. Students : 27

Ecole Internationale Provence-Alpes-Côte d'Azur

Curriculum – Long-Term Planning 2020-2021

Date	Objectives/ Connaissances	Activités	Resources	8 Compétences clés *	Evaluation

1/9/20 – 16/10/20
 	
2/11/20 – 18/12/20
	Understand that electricity is a versatile means of transferring energy;
	Recognize the Coulomb as the SI unit for measuring the quantity of charge;
	Determine current by calculating charge per unit time;
	Recognize voltage as energy per coulomb;
	Calculate potential difference or current or resistance using Ohm's Law;
	Apply the priniciple of conservation of current to calculate currents within circuits;
	Determine how voltage is divided in circuits;
	Calculate resistance, current & voltage in series and parallel circuits;
	Understand the rules of current, potential difference & total resistance in circuits;
	Construct circuits from a schema and measure current & voltage;
	
	Calculate power & energy:
	power=voltage x current;
	energy = power x time;
		Laboratory to calculate resistance of components using measurements of current & voltage;
		
		Laboratory to sketch UI graphs for Ohmic & non-Ohmic components;
		
		Design circuits using two or more switches which can govern the circuit alternatively as found on staircases;
		
		Build and explain circuits with sensors & bulbs or resistors;
			Textbooks:
			
			Edexcel IGCSE Physics
			Brian Arnold, Steve Woolley, Penny Johnson
			PEARSON Education Ltd.
			
			Cambridge IGCSE Physics Coursebook
			David Sang
			
			Complete Physics for IGCSE
			Stephen Pople
			OXFORD
			
			Physics for You
			Keith Johnson
			Nelson Thornes Ltd.
				1, 3, 5, 6, 8.	Notebook;
					
					Homework;
					
					Quiz(s);
					
					Test(s);
					
					Lab Reports;
					Participation individually and in lab groups;
					
					BTESTs;

4/1/21 – 19/2/21	Recognize commercial units of energy as kWh; Understand safety measures used in homes (isolation, earth ground, fuses,…); Sketch magnetic field diagram of a solenoid or magnet and describe similarities; Explain qualitatively how an electric motor Works; Understand that a varying magnetic field in a coil induces an electric current (this phenomena is used in generators); Recognize motors & generators as energy conversion devices; Identify examples of uses of magnetism and the motor effect; Define the quantities (s, v, a) and distinguish between vector & scalar terms; Calculate movements with constant speed or constant acceleration; Distinguish between instantaneous and average velocities or speed; Relate freefall acceleration to the force of gravity;	Identify which appliance in the hohome uses the most energy in a week; Make position-time graphs; Make velocity-time graphs using ticker-tape timer for freefall acceleration or on an inclined plane; Construct & analyse s(t) and v(t) graphs to get information and make calculations using gradients and key points on the graph; Laboratory to measure "g";	Revision Guides & Workbooks: Edexcel IGCSE Physics Steve Woolley PEARSON Education Limited Cambridge IGCSE Physical Science Physics Workbook David Sang AQA Physics Revision Guide Pauline Anning OXFORD Edexcel International GCSE Physics Practice Book Nick England, Nicky Thomas Hodder Education AQA GCSE (9-1) Physics Revision Workbook Higher PEARSON Education Limited		

8/3/21 – 23/4/21 10/5/21 – 5/7/21	Understand that forces can: - change speed - change direction of motion - deform materials Force as a vector: -sum of forces in 1 dimension -sum of forces in 2 dimensions Examples of common forces; Calculate magnitudes of weight, mass & field strength; Describe situations that give rise to a normal force; Understand and apply Newton's Laws of motion; Mass as a measure of inertia; Calculate velocity at a given time during a uniform acceleration; Understand the circumstances which result in the terminal velocity of a body; Characteristics of an oscillating source; Define and apply the the concepts of frequency, period & amplitude; Identify a wave as energy in motion due to an oscillating source; Describe the characteristics of waves and make calculations with frequency, velocity &	Draw vectors & vector sums graphically only; Laboratory to investigate Hooke's Law; Determine the resultant force, then calculate the acceleration of a body; Demontrations with an air-track; Investigate how air (or water) resistance changes the speed of the object moving through it; Investigate the factor(s) affecting the period of a pendulum;			

	wavelength; Distinguish between transverse & longitudinal waves and provide examples of each; Apply the characteristics of waves to sound; Identify the audible range of the human ear; Explain qualitatively how a musical instrument makes sound & what determines the characteristics of the sound; State examples of similar waves to sound (e.g. sonar, ultrasound or shock waves); Identify regions of the electromagnetic spectrum, relating them to frequency & wavelength; Discuss uses and applications of regions of the electromagnetic spectrum;	Laboratory to calculate the speed of sound; Investigate the frequency of a vibrating string as a function of the attached mass (tension); Demonstration of wave characteristics using a ripple tank;			

*Lien vers les 8 compétences clés:

1. Littératie (lecture et écriture)
2. Multilinguisme
3. Mathématiques, science, technologie et ingénierie
4. Numérique
5. Personnelles, sociales et capacité d'apprendre à apprendre
6. Citoyenne
7. Entrepreneuriale
8. Sensibilité et expression culturelles