Sets (s): Triple award

YEAR 9

SUBJECT Physics

Knowledge Focus: Features of waves and generating electricity

Ysgol Uwchradd Prestatyn High School

This half term : Skills, Knowledge and Understanding to be developed: This topic introduces the ideas of tranverse and longitudinal waves and the differences between them. It introduces the wave equation and gives learners the ideas and skills to study electromagnetic and sound waves. Students will finally learn about the total internal reflection of waves and its applications.

Key Terms to be learned this half term:

Transverse, longitudinal waves, amplitude, wavelength, frequency, wave speed, reflection, refraction, radiation, electromagnetic waves, ionizing radiation, communication, satellites, geostationary orbit, total internal reflection, medium, critical angle

Week 1 and 2 Learning Objectives etc: Learn the difference between a transverse and longitudinal wave. Learn the features of waves. Know what amplitude, frequency and wavelength are. Look at the graphical representation of a transverse wave, including labelling the wavelength and amplitude. Learn what happens to speed, frequency, wavelength, direction of water waves as they move from deep to shallow water (visa versa). Practice calculating wave speed using wavelength and frequency also distance and time.	**Objective assessments:** Construct a wave diagram from given data Observe the specified practical on speed of water waves and complete calculations using the formula for speed.	**Homework:** Revise energy for APP
Week 3 and 4 Learning Objectives etc: Study diagrams showing plane wave fronts being reflected or refracted, eg as shown by water waves in a ripple tank. Study reflection of waves and carry out investigation on reflection of light waves. Study refraction and carry out investigations on refraction of light waves. Study the electromagnetic spectrum and how all regions transmit information and energy. The uses and dangers of the different regions of the em spectrum. Higher frequencies transmit higher energies.	**Objective assessments:** learn the terms normal, angles of incidence/ reflection / refraction. Be able to name the 7 regions of the em spectrum. Know the order in terms of wavelength, frequency and energy.	**Homework:** Question on waves.
Week 5 and 6 Learning Objectives etc: Learn about communication using microwaves via geosynchronous satellites. The conditions for total internal reflection of light. How optical fibres rely on total internal reflection for their operation.	**Objective assessments:** SA Physics.	**Homework:** Revise for SA
Week 7 Learning Objectives etc: Comparison of the advantages and disadvantages of optical fibres and geosynchronous / geostationary satellites for long distance communication The use of optical fibres for remote imaging, including endoscopic medical examinations and a comparison of endoscopy with CT scans for obtaining medical information.	**Objective assessments:** Literacy task	**Homework:** Literacy task hw