Year 13 Science (Physics)

Learning Standards

Unit title/ statement of inquiry	Knowledge Content Students are expected to know the following…	Concepts	Curricular Competencies Students are expected to do the following…
Fields Electric charges and masses each influence the space around them and that influence can be represented through the concept of fields	● Describing fields ● Fields at work	Fields Relationships	**Demonstrate knowledge and understanding of:** ● Facts, concepts and terminology ● Methodologies and techniques ● Communicating scientific information **Apply:** ● Facts, concepts and terminology ● Methodologies and techniques ● Methods of communicating scientific information **Formulate, analyse and evaluate:** ● Hypotheses, research questions and predictions ● Methodologies and techniques ● Primary and secondary data ● Scientific explanations **Demonstrate the appropriate research, experimental, and personal skills necessary to carry out insightful and ethical investigations**
Electricity and magnetism When charges move an electric current is created	● Electric fields ● Heating effect of electric currents ● Electric cells ● Magnetic effects of electric currents	Systems Energy	
Electromagnetic induction The majority of electricity generated throughout the world is generated by machines that were designed to operate using the principles of electromagnetic induction	● Electromagnetic induction (HL) ● Power generation and transmission (HL) ● Capacitance (HL)	Duality Systems	
Atomic, nuclear and particle physics In the microscopic world energy is discrete	● Discrete energy and radioactivity ● Nuclear reactions ● The structure of matter	Models Structure	
Quantum and nuclear physics The microscopic quantum world offers a range of phenomena, the interpretation and explanation of which require new ideas and concepts not found in the classical world	● The interaction of matter with radiation (HL) ● Nuclear physics (HL)	Quantization Models	
Energy production The constant need for new energy sources implies decisions that may have a serious effect on the environment. The finite quantity of fossil fuels and their implication in global warming has led to the development of alternative sources of energy. This continues to be an area of rapidly changing technological innovation	● Energy sources ● Thermal energy transfer	Feedback Systems	
Rigid bodies and rotational dynamics The basic laws of mechanics have an extension when equivalent principles are applied to rotation.	● Rigid bodies and rotational dynamics	Relationships Systems	

Actual objects have dimensions and they require the expansion of the pont particle model to consider the possibility of different points on an object having different states of motion and/ or different velocities			