The Ellesmere Port C of E College

Part of the Frank Field Education Trust

Year 10 Physics - Combined Science
Learning Programme 5

The LORIC skill focus for his LP is: COMMUNICATION.
The Moral Virtues focus for this LP are: COURAGE and HUMILITY.

Courage - Acting with bravery and overcoming fears.
Humility - Having a modest view of oneself.

What will I be learning about in this Learning Programme?
How the behaviour of particles affects the behaviour of substances. Structure of the atom. Nuclear radiation. Radioactive decay.

Where have I seen this learning before?
From KS3: properties of materials, the particle model, changes of state, energy changes. The structure of the atom is a fundamental concept that you learnt in KS3 and have since reviewed in Chemistry.

What could I use it for?
This knowledge is further built upon in the two topics: Electricity and Thermodynamics at A-level. Essential knowledge for careers in engineering, catering and food design, insulating buildings. You will learn more about the particle model and the nucleus in greater depth in A-level Physics and Chemistry. Nuclear power will be crucial as we look to move to more carbon neutral energy.

Literacy:
- Capital letters must be used at the start of sentences and for the first letter of proper nouns
- Full stops must be used at the end of a sentence
- Question marks must be used at the end of a question
- Apostrophes should only be used for possession or omission
- Days of the week and months must be spelled correctly
- Key words must be spelled correctly

In LP5.1, I will know: 12/05/25 - (WK 1)	**Key Vocabulary**	**Homework**
how to describe the structure of the atom given its mass number and atomic number. Describe the nature of subatomic particles. how to define isotope; how to describe how the model of the atom has developed over time. Describe the difference between the plum pudding model and the nuclear model. Describe how the evidence from the alpha scattering experiment led to a change in the atomic model.	Isotope	Sparx Homework Task
In LP5.2, I will know: 19/05/25 - (WK 2)	**Key Vocabulary**	**Homework**
how to describe and explain the properties of alpha, beta and gamma: composition, charge, mass, effect in a field, ionisation, penetration power, dangers. *demo practical*; how to explain the nuclear equations for the decay of alpha, beta and gamma; how to define half-life as the time taken for half the nuclei to decay; how to find the half-life from a graph.	Radiation	Sparx Homework Task
LP5 RLW, I will: 02/06/25 - (WK 1)		
review my learning, recalling and applying key knowledge, and focus on closing any gaps in my knowledge.		
In LP5.3, I will know: 09/05/25 - (WK 2)	**Key Vocabulary**	**Homework**
how to explain what is meant when radioactive decay is described as random and spontaneous - half life practical. how to explain how contamination and irradiation can cause a risk to human health. Name common sources (natural and manmade) of background radiation; Extended Task.	Decay	Sparx Homework Task
In LP5.4, I will know: 16/06/25 - (WK 1)	**Key Vocabulary**	**Homework**
how to evaluate the perceived risks of using nuclear radiation - Alexander Litvinenko story; how to complete the LP5 Mock Combined Science GCSE Exam.	Contamination	Sparx Homework Task
In LP5.5, I will know: 23/06/25 - (WK 2)	**Key Vocabulary**	**Homework**
how to draw and describe particle diagrams for solid, liquid, gas. Describe the properties of solids, liquids and gases; how to describe the differences between heat and temperature in terms of kinetic energy of particles and explain key features of a heating/cooling curve during state changes; how to respond to my strengths and weaknesses following the Mock Combined Science GCSE exam.	Condensation	Sparx Homework Task
In LP5.6, I will know: 30/06/25 - (WK 1)	**Key Vocabulary**	**Homework**
how to define latent heat of fusion and vaporisation; how to apply the knowledge of specific latent heat to describe and calculate the energy changes that occur during heating/cooling and changes of state, using the equation E=mL. Extended Task.	Vaporisation	Sparx Homework Task
In LP5.7, I will know: 07/06/25 - (WK 2)	**Key Vocabulary**	**Homework**
how to define specific heat capacity. Rearrange and apply the equation E=mc x temp change; how to use kinetic theory to explain how the motion of particles relate to pressure , volume and temperature; how to respond to my strengths and weaknesses following the formative assessment.	capacity	Sparx Homework Task

PRT Task 1

PRT Task 2

Resources to support learning:
Knowledge organisers, booklets, BBC bitesize, https://www.physicsandmathstutor.com/, Synergy.

FFET Award Challenge for this Learning Programme:
Complete a practice paper as part of your revision.