The Ellesmere Port C of E College

Part of the Frank Field Education Trust

Year 10 Physics
Learning Programme 4

The LORIC skill focus for his LP is: INITIATIVE.
The Moral Virtues focus for this LP are: INTEGRITY and GRATITUDE.

Integrity - Having strong moral principles. I will show integrity by taking responsibility for my actions.
Gratitude - Feeling and expressing thanks. I will show gratitude by saying please and thank you.

What will I be learning about in this Learning Programme?
The evolution of the atomic model from the Plum Pudding to the Nuclear model while learning to calculate the subatomic compositions of atoms, isotopes, and ions. The topic also focuses on the physics of unstable nuclei, specifically how to model radioactive decay using nuclear equations and determine the rate of decay through half-life calculations.

Where have I seen this learning before?
You have learnt about the particle model in KS3 and LP3. 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?
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, and the knowledge of use of radioisotopes is beneficial for anyone that wants a career in medicine for the the treatment of and detection of cancer.

Literacy Non-Negotiables:
- 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
- Vocabulary to be taught using the Frayer model

In LP4.1, I will know: 09/03/26 - (WK 2)	Frayer Model Words	Homework
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. how to describe how the evidence from the alpha scattering experiment led to a change in the atomic model; how to describe the structure and nature of subatomic particles. Define isotope.	decay	Sparx Science homework task.
In LP4.2, I will know: 16/03/26 - (WK 1)	**Frayer Model Words**	**Homework**
how to describe and explain the properties of alpha, beta and gamma: composition, charge, mass, effect in a field, ionisation; how to describe and explain the penetration power and dangers of alpha, beta and gamm *demo practical*.	half life	Sparx Science homework task.
In LP4.3, I will know: 23/03/26 - (WK 2)	**Frayer Model Words**	**Homework**
how to construct and balance nuclear equations of alpha and beta decay; how to define half-life as the time taken for half the nuclei to decay; how to find the half-life from a graph and calculations using given information of mass or number of nuclei; how to explain what is meant when radioactive decay is described as random and spontaneous - half life practical. Extended Task.	contamination	Sparx Science homework task.
In LP4.4, I will know: 13/04/26 - (WK 1)	**Frayer Model Words**	**Homework**
my strengths and areas for development following the assessment and PRT; how to explain that contamination and irradiation can cause a risk to human health. Name common sources (natural and manmade) of background radiation;	Irradiation	Sparx Science homework task.
In LP4.5, I will know: 20/04/26 - (WK 2)	**Frayer Model Words**	**Homework**
how to evaluate the perceived risks of using nuclear radiation - Alexander Litvinenko story; how to describe and explain uses and risks of alpha, beta and gamma radiation in industry and medicine;	Becquerel	Sparx Science homework task.
In LP4.6, I will know: 27/04/26 - (WK 1)	**Frayer Model Words**	**Homework**
how to describe the process of nuclear fission; how to describe the process of nuclear fusion. Extended Task.	radiotherapy	Sparx Science homework task.
In LP4.7, I will know: 04/05/26 - (WK 2)	**Frayer Model Words**	**Homework**
how to describe the working of a nuclear power station; my strengths and areas for development following the assessment and PRT.	Nuclear Fission and Fusion	Sparx Science homework task.

PRT Task 1

PRT Task 2

Resources to support learning:
BBC bitesize, www.physicsandmathstutor.com, Physics Booklets from lesson (both content and revision). All homework's on synergy and SPARX

FFET Award Challenge for this Learning Programme:
LP4 Year 10 Science: Create a revision resource on a topic of your choice.