The Ellesmere Port C of E College

Part of the Frank Field Education Trust

Year 13 Exploring Physics
Learning Programme 3

The LORIC skill focus for his LP is: RESILIENCE
The Moral Virtues focus for this LP are: RESPECT and JUSTICE

Respect - treat others how you would wish to be treated yourself.
Justice - our College rules are fair and reasonable.

What will I be learning about in this Learning Programme?

The properties and effects of magnetic fields.
How an magnetic field can be induced and how to use the transformer equations.
An introduction to nuclear and particel physics.

Where have I seen this learning before?

Magnetic fields at KS4.
Atomic structure topic at GCSE.

What could I use it for?

Undergraduate degrees courses in electrical and mechanical engineering, medicine and energy sector degrees.
Careers in nuclear science and nuclear engineering.

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 LP3.1, I will know: 06/01/25 - (WK 2)	**Key Vocabulary**	**Homework**
How to state and apply Fleming's Left Hand Rule and calculate the size of the force on a current carrying conductor in a magnetic field; how to find the magnitude of magnetic flux density via experiment; how to describe the motion of charged particles in magnetic fields.	Magnetic flux density	Magnetic fields exam questions
In LP3.2, I will know: 13/01/25 - (WK 1)	**Key Vocabulary**	**Homework**
How to define the weber, magnetic flux and magnetic flux linkage; how to calculate magnetic flux and magnetic flux linkage; how to describe Faradays Law and Lenz's Law.	Weber, flux linkage	Electromagnetic induction exam questions
In LP3.3, I will know: 20/01/25 - (WK 2)	**Key Vocabulary**	**Homework**
How to describe the construction of a transformer, and explain how a transformer alters potential difference; how to use the transformer equations.	Transformer	Transformer exam questions
In LP3.4, I will know: 27/01/25 - (WK 1)	**Key Vocabulary**	**Homework**
How to describe the observations and conclusions from the alpha-partcle scatering experiment; evidence of a small charged nucleus; how to describe the simple nuclear model of the atom, the strong nuclear force and the radius of nuclei; how to describe particles and their corresponding antiparticles, classifcaton of leptons; LP 3.1 formative assessment. Extended Task.	alpha antiparticle lepton	Alpha scattering experiment exam questions
In LP3.5, I will know: 03/02/25 - (WK 2)	**Key Vocabulary**	**Homework**
My strengths and areas for developments following the LP3.1 formative assessment and PRT; how to describe the classifcaton of hadrons; how to describe the simple quark model of hadrons in terms of up (u), down (d) and strange (s);	Hadrons	Quarks
In LP3.6, I will know: 10/02/25 - (WK 1)	**Key Vocabulary**	**Homework**
How to describe beta-minus (β-) decay and beta-plus (β+) decay in terms of the quark model; how to describe α-partcles, β-partcles and γ-rays; nature, penetraton and range of these radiatons; how to describe the change in the nucleaus during nuclear decay, and equatons for alpha, beta-minus and beta-plus decays; balancing nuclear transformaton equatons.	Beta Gamma	Neclear decay exam questions
LP3 RLW, I will: 24/02/25 - (WK 2)		
review my learning, recalling and applying key knowledge, and focus on closing any gaps in my knowledge.		
In LP3.7, I will know: 03/03/25 - (WK 1)	**Key Vocabulary**	**Homework**
How to describe the actvity of a source; to calculate decay constant and simulate half-life with dice; how to use equations to find the half-life of an isotope; LP 3.1 formative assessment; my strengths and areas for developments following the LP3.2 formative assessment and PRT. Extended Task.	Half-life	Half-life exam questions

PRT Task 1

PRT Task 2

Resources to support learning:

Knowledge organiser, Isaac physics, www.physicsandmathstutor.com, text book

FFET Award Challenge for this Learning Programme:

LP2 Year 13 Physics : Support with lower school STEM Club