The Ellesmere Port C of E College

Part of the Frank Field Education Trust

Year 13 Modelling 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 physics of gravitiaional fields.
An introduction to astrophysics.

Where have I seen this learning before?
The space topic from GCSE Physics (triple only).

What could I use it for?
Degrees in physics, astrophysics and astronomy.

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 describe Newton's law of gravitation as the Force between 2 masses as being proportional to the product of the masses and inversly proportional to the square of their seperation; how to describe the gravitatonal feld strength, g, for a point mass.	Gravitation	Newton's Law of Gravitation exam questions
In LP3.2, I will know: 13/01/25 - (WK 1)	**Key Vocabulary**	**Homework**
How to describe Kepler's three laws of planetary moton, the relatonship for Kepler's third law T^2 ∝ r^3 applied to systems other than our solar systemand derive the equaton from frst principles; how to describe geostatonary orbit; uses of geostatonary satellites and predictng geostatonary orbit using Newtonian laws.	Kepler Geostationary	Orbits exam questions
In LP3.3, I will know: 20/01/25 - (WK 2)	**Key Vocabulary**	**Homework**
How to describe the gravitational potential at a point as the work done in bringing unit mass from infnity to the point; gravitatonal potental is zero at infinity; how to describe the gravitatonal potental energy E=mV = GMm/r at a distance r from a point mass M;	Potential	Gravitational potential exam questions
In LP3.4, I will know: 27/01/25 - (WK 1)	**Key Vocabulary**	**Homework**
how to describe and calculate escape velocity; LP 3.1 formative assessment; my strengths and areas for developments following the LP3.1 formative assessment and PRT. Extended Task.	Escape velocity	Escape velocity exam questions Revision
In LP3.5, I will know: 03/02/25 - (WK 2)	**Key Vocabulary**	**Homework**
How to define the terms planets, planetary satellites, comets, solar systems, galaxies and the universe; how to describe formaton of a star from interstellar dust and gas, evolving into either a low-mass star like our Sun into a red giant and white dwarf, or a massive star into a red super giant and then either a neutron star or black hole;	Planet Star Galaxy Universe	Introductory astrophysics questions
In LP3.6, I will know: 10/02/25 - (WK 1)	**Key Vocabulary**	**Homework**
How to describe the Hertzsprung–Russell (HR) diagram as luminosity-temperature plot; main sequence; red giants; super red giants; white dwarfs; how to describe the emission spectral lines from hot gases in terms of emission of photons and transiton of electrons between discrete energy levels.	Hertzsprung–Russell diagram Photon	HR diagram 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 explain different atoms have different spectral lines which can be used to identify elements within stars, contnuous spectrum, emission line spectrum and absorpton line spectrum; LP 3.1 formative assessment; my strengths and areas for developments following the LP3.2 formative assessment and PRT. Extended Task.	Spectrum Emission Absorption	Emission/absorption spectra 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:
LP3 Year 13 Physics: Support with lower school STEM Club