

Year 13 Modelling Physics Learning Programme 4

<p>The LORIC skill focus for his LP is: INITIATIVE. The Moral Virtues focus for this LP are: INTEGRITY and GRATITUDE.</p> <p>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.</p> <p>What will I be learning about in this Learning Programme? Students will explore the lifecycle of stars and the fundamental laws governing planetary motion, alongside the observational techniques used to collect astronomical data. The module also investigates the origins and evolution of the universe, focusing on evidence for the Big Bang and the role of dark matter and dark energy in cosmic expansion.</p> <p>Where have I seen this learning before? This topic builds on the gravitational fields topics and explores the topic of space, last seen at KS4.</p> <p>What could I use it for? This part of the course is useful for anyone wanting to study astrophysics.</p>		<p>Literacy Non-Negotiables:</p> <ul style="list-style-type: none"> • 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
<p>How to define the terms planets, planetary satellites, comets, solar systems, galaxies and the universe; How to describe formation 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.</p>		Parsec	Astrophysics and cosmology booklet
In LP4.2, I will know:	16/03/26 - (WK 1)	Frayer Model Words	Homework
<p>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 transition of electrons between discrete energy levels.</p>		Hertzsprung–Russell diagram	Astrophysics and cosmology booklet
In LP4.3, I will know:	23/03/26 - (WK 2)	Frayer Model Words	Homework
<p>How to explain different atoms have different spectral lines which can be used to identify elements within stars, continuous spectrum, emission line spectrum and absorption line spectrum; How to describe the transmission diffracton gratng used to determine the wavelength of light.</p> <p>Extended Task.</p>		Spectrum - Emission and Absorption	Astrophysics and cosmology booklet
In LP4.4, I will know:	13/04/26 - (WK 1)	Frayer Model Words	Homework
<p>PAG 5 diffraction grating; How to estimate the radius of a star using Wien's displacement law (to estimate the peak surface temperature of a star) and Stefan's law (to find the luminosity L of a star).</p>		Stefan's Law	Astrophysics and cosmology booklet
In LP4.5, I will know:	20/04/26 - (WK 2)	Frayer Model Words	Homework
<p>How to describe stellar parallax and distances measured in astronomical unit (AU), light-year (ly) and parsec (pc); How to describe the Doppler effect, Doppler shift of electromagnetic radiation and use the Doppler equation.</p>		Stellar Parallax	Astrophysics and cosmology booklet
In LP4.6, I will know:	27/04/26 - (WK 1)	Frayer Model Words	Homework
<p>How to describe the Cosmological principle; universe is homogeneous, isotropic and the laws of physics are universal; use Hubble's law; $v \approx H_0 d$ for receding galaxies; How to describe experimental evidence for the Big Bang theory and an estimation for the age of the universe.</p> <p>Extended Task.</p>		Red shift	Astrophysics and cosmology booklet
In LP4.7, I will know:	04/05/26 - (WK 2)	Frayer Model Words	Homework
<p>How to describe the evolution of the universe after the Big Bang to the present and current ideas about the composition of the universe in terms of dark energy, dark matter and a small percentage of ordinary matter.</p>		Microwave background radiation	Astrophysics and cosmology booklet
<p>Resources to support learning: Textbook, revision guide, booklet and www.physicsandmathstutor.com</p>			
<p>FFET Award Challenge for this Learning Programme: Complete a full Paper 1 - Modelling Physics paper independently.</p>			

PRT Task 1

PRT Task 2