Birches Head Academy

Part of the Frank Field Education Trust

Year 11 Science
Learning Programme 3

The LORIC skill focus for his LP is: RESILIENCE
The values for this LP are COMPASSION and HONESTY

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?
You will be learning about how living things adapt and survive in different environments, including the adaptations of plants and animals. In chemistry, you will explore the development of the periodic table, electronic structure, and the properties of Groups 1 and 7. You will learn about states of matter, how atoms form ions, and the different types of bonding—ionic, covalent, and metallic—as well as structures like giant lattices, fullerenes, and graphene. You will also develop skills in chemical calculations, including relative masses, moles, and concentrations, and learn to write balanced equations. Later, you will study the reactivity series, displacement reactions, and methods for extracting metals, along with how salts are made and the processes of neutralisation and pH. Finally, you will understand the differences between strong and weak acids and why they matter. Throughout this programme, you will improve your practical and literacy skills, apply your knowledge to real-world contexts, and build problem-solving and analytical abilities.

Where have I seen this learning before?
You have seen much of this learning before in earlier science lessons at Key Stage 3. For example, you have already explored basic ideas about adaptation and survival in biology, looking at how animals and plants cope with different environments. In chemistry, you have learned about the periodic table, simple patterns in elements, and basic properties of metals and non-metals. You have also studied states of matter, particle models, and simple bonding ideas like how atoms join together. Concepts such as neutralisation, pH scale, and making salts were introduced when you first learned about acids and alkalis. These topics now build on that foundation by going deeper into calculations, bonding structures, reactivity, and energy changes, helping you connect what you already know to more advanced GCSE-level ideas.

What could I use it for?
These science topics are vital because they connect classroom learning to real-world applications and future careers. Adaptation and survival underpin ecology, medicine, and agriculture, helping us conserve species and develop resilient crops. The periodic table and atomic structure are essential for chemistry, engineering, and healthcare, enabling the creation of new materials and medicines. Bonding explains substance properties and supports nanotechnology and chemical engineering. Calculations involving moles and concentrations are key in pharmaceuticals, industry, and environmental monitoring. Reactivity and salts link to metallurgy, energy storage, and agriculture, while acids and bases are crucial in healthcare and manufacturing. Mastering these topics prepares students for technology, sustainability, and innovation.

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 LP3.1, I will know:	**05/01/26 - (WK 2)**	**Frayer Model Words**	**Homework**
How organisms adapt to survive in different environments. Key adaptations in animals and plants for survival. IGNITION Why adaptation is important for evolution and biodiversity.		Adaptation	Complete your weekly homework on https://sparxmaths.com/
In LP3.2, I will know:	**12/01/26 - (WK 1)**	**Frayer Model Words**	**Homework**
How the periodic table was developed and organized How electronic structure relates to the periodic table. Properties and trends of Group 1 (alkali metals) and Group 7 (halogens)		Structure	Complete your weekly homework on https://sparxmaths.com/
In LP3.3, I will know:	**19/01/26 - (WK 2)**	**Frayer Model Words**	**Homework**
The differences between solids, liquids, and gases (states of matter). How atoms form ions and why this happens. How ionic and covalent bonding create different structures.		Matter	Complete your weekly homework on https://sparxmaths.com/
In LP3.4, I will know:	**26/01/26 - (WK 1)**	**Frayer Model Words**	**Homework**
Properties of fullerenes and graphene and their uses. How metallic bonding works and why metals conduct electricity How bonding affects the properties of substances. Extended Task.		Bonding	Complete your weekly homework on https://sparxmaths.com/
In LP3.5, I will know:	**02/02/26 - (WK 2)**	**Frayer Model Words**	**Homework**
How to calculate relative masses and moles in chemical reactions. How to write and balance chemical equations accurately How to express concentrations in different ways.		Equation	Complete your weekly homework on https://sparxmaths.com/
In LP3.6, I will know:	**09/02/26 - (WK 1)**	**Frayer Model Words**	**Homework**
The reactivity series and how it predicts reactions. How displacement reactions occur and what they show How metals are extracted and why reactivity matters.		Reactivity	Complete your weekly homework on https://sparxmaths.com/
LP3 RLW, I will:	**23/02/26 - (WK 2)**	**Frayer Model Words**	**Homework**
review my learning, recalling and applying key knowledge, and focus on closing any gaps in my knowledge.		Knowledge	Complete your weekly homework on https://sparxmaths.com/
In LP3.7, I will know:	**02/03/26 - (WK 1)**	**Frayer Model Words**	**Homework**
How salts are made from metals and insoluble bases How neutralisation works and what the pH scale shows. The difference between strong and weak acids and their uses. Extended Task.		Insoluble	Complete your weekly homework on https://sparxmaths.com/

PRT Task 1

PRT Task 2

Resources to support learning:

BBC Bitesize, Sparx Science

FFET Award Challenge for this Learning Programme:

You are a scientist working on a project to design a sustainable habitat on another planet. Your challenge is to ensure life can adapt, resources can be managed, and chemical processes are efficient.