

**Curriculum Map: Science/Biology (KS4 offer: Entry Level Science, Biology GCSE, broader flexibility exists to extend GCSE Combined Science and Chemistry and Physics GCSEs dependant on student prior knowledge and health needs)**

Curriculum Aims: Through the Science curriculum, we want students to

- To develop an understanding of Biology, Chemistry and Physics.
- To be inspired by Scientists and scientific development that has changed the world, by developing skills such as thinking scientifically and working scientifically.
- To grow confident in designing scientific investigations and develop analytical thinking skills that can be used and transferred.
  - To use ELC Science as a springboard to build confident progression into GCSE level learning.
  - Gain academic qualifications that have genuine impact on life choices and opportunities.

Core content: What do we want students to know/be able to do?

- To build upon prior knowledge, engaging and developing knowledge and understanding across the three scientific disciplines – Biology, Chemistry and Physics.
- To understand the key concepts using specialist vocabulary and also develop and apply mathematical skills to build understanding of scientific enquiry: Prediction, observation, design, analysis and evaluation embedded within lessons supported by a termly focus.
- Aspire to understand and show genuine interest and enthusiasm for the world around them. Recognising the key role Science plays in everyday life.

**Key Stage Three Science – Topic rotation is selected dependant on students' prior knowledge and transition to and from mainstream education.**

**Key areas of study:**

Cells - The building blocks of life
Mixing, Dissolving and separating
Energy transfers and Sound
Forces and their effects
Eating, Drinking and Breathing
Elements, Compounds and reactions

Getting the energy your body needs
Explaining Physical changes
Exploring Contact and Non contact Forces
Magnetism and Electricity
Looking at plants and ecosystems

Variation for survival
Obtaining useful metals
Waves and Energy transfer
Using our Earth Sustainably
Motion on Earth and Space
Our Health and the effects of drugs

## **Year 10/11 AQA Entry Level Certificate**

### **Key themes and progression:**

Unit One - The human body

Unit 3 - Elements, mixtures and compounds

Unit 5 - Energy, forces and the structure of matter

Unit 4 - Chemistry in our world -

Unit 2 - The environment, evolution and inheritance

Unit 6 - Electricity, magnetism and waves

Progression to GCSE Biology if appropriate– review of 10 required practical investigations.

1. Microscopy
2. The effect of light on growth of germinating seeds
3. Investigate the effect of antiseptics on the growth of E.coli
4. Investigate the effect of temperature on the rate of decay
5. Investigate the effect of a range of concentrations on the mass of plant tissue
6. Investigate the effect of pH on the rate of reaction of amylase
7. Food tests
8. Investigate the effect of light intensity on the rate of photosynthesis
9. Plan an investigation into the effect of a factor on the human reaction time
10. Measure the population size of a common species within a habitat.

## **Year 10/11 AQA GCSE Biology**

### **Key themes and progression:**

- Unit One Cell Biology – Cell structure and division, microscopy and transport in cells.
- Unit Two Organisation – Tissues, organs and organ systems. The digestive system and circulatory system. Plant cell organisation and transport. Introduction to health and disease, specific examples studied include cardiovascular disease, cancer and risk factors.
- Unit Three Infection and immune response – Communicable diseases in animals and plants, immunity, vaccination, drugs and development, monoclonal antibodies and their uses.
- Unit Four Bioenergetics: Aerobic, anaerobic respiration and photosynthesis.
- Unit Five Homeostasis, the nervous system, endocrine system and reproduction including fertility treatment and contraception.
- Unit Six Inheritance: DNA, genetics, variation, evolution and classification.
- Unit Seven Ecology: Organisms and their environment, sampling techniques, human impact on the environment. Food and Biotechnology.