

BIOLOGY

Student year: **Lower 4 (Yr 8)**

Head of Department: **Mrs S. Thorne**

SUBJECT OVERVIEW

This is the second year of a 2 year Key Stage 3 course. Students learn the knowledge and skills that give a sound foundation for studying Biology to GCSE. The course is divided into five topic-based units.

Subject / Topic

Muscles and bones

- The skeletal system
- Muscles and movement
- Joints and movement

Microbes

- Microorganisms
- Growing organisms
- Pregnancy and birth
- Defence against disease
- Vaccines and antibiotics

Lungs and gas exchange

- The breathing system
- Gas exchange
- Measuring lung volumes
- The heart and circulatory system

Respiration

- Aerobic respiration
- Detecting respiration
- Changes during exercise
- Anaerobic respiration
- Respiration in plants

Inheritance and evolution

- Variation
- Genes, chromosomes and DNA
- Natural and artificial selection
- Extinction

Working Scientifically

Students will learn the following skills in the contexts of the topics studied in Lower 4:

- Planning and carrying out scientific enquiries to test predictions.
- Making measurements and applying mathematical concepts in data analysis. Using tables and graphs.
- Interpreting observations to draw conclusions. Suggesting possible improvements to investigations.

CHEMISTRY

Student year: **Lower 4 (Yr 8)**

Head of Department: **Mr I Macdonald**

SUBJECT OVERVIEW

This is the second year of a 2 year Key Stage 3 course. Students learn the knowledge and skills that give a sound foundation for studying Chemistry to GCSE. The course is divided into four topic-based units.

Subject / Topic

Working scientifically for Lower 4

Atoms, elements and compounds

- A simple (Dalton) atomic model
- Differences between atoms, elements and compounds

The Periodic Table

- The principles underpinning the Mendeleev Periodic Table
- Predicting patterns in reactions using the Periodic Table

Extracting Metals

- The reactivity series
- The blast furnace

Reactions of acids

- Compounds and acidity
- Introduction to titration

Describing reactions

- Representing reactions using formulae & equations
- Different types of reaction

Students will learn the following skills in the contexts of the topics studied in Lower 4:

- Understanding how the scientific community uses evidence.
- Planning and carrying out experiments to test predictions.
- Applying mathematical concepts in data analysis.
- Using tables and graphs & interpreting observations to draw conclusions.
- Presenting explanations and suggesting further questions arising from their data.
- Evaluating the validity of experiments and suggesting improvements.

PHYSICS

Student year: **Lower 4 (Yr 8)**

Head of Department: **Mr C Ridler**

SUBJECT OVERVIEW

This is the second year of a 2 year Key Stage 3 course. Students learn the knowledge and skills that give a sound foundation for studying Physics to GCSE. The course is divided into topic-based units and students develop and apply 'working scientifically' skills throughout the year.

Subject / Topic	Working Scientifically
<p>Electricity</p> <ul style="list-style-type: none">• Potential difference• Domestic electricity & power• Static electricity <p>Waves</p> <ul style="list-style-type: none">• Wave basics• Sound waves• Speed of sound• Light waves• Reflection & refraction	<p>Students will learn the following skills in the contexts of the topics studied in Lower 4:</p> <ul style="list-style-type: none">• Understanding how the scientific community uses evidence.• Planning and carrying out experiments to test predictions.• Applying mathematical concepts in data analysis.• Using tables and graphs & interpreting observations to draw conclusions.• Presenting explanations and suggesting further questions arising from their data.• Evaluating the validity of experiments and suggesting improvements.
<p>Applied forces</p> <ul style="list-style-type: none">• Turning moments• Levers• Floating & sinking	
<p>Space</p> <ul style="list-style-type: none">• The solar system• The lives of stars• Space travel	