

# BIOLOGY

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

Head of Department: **Ms J York**

## 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.

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### Subject / Topic

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#### **Muscles and bones**

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

#### **Microbes**

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

#### **Lungs and gas exchange**

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

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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.

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### Subject / Topic

### Working scientifically for Lower 4

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#### 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

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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.

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### Subject / Topic

### Working Scientifically

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#### Electricity

- Potential difference
- Domestic electricity & power
- Static electricity

#### Waves

- Wave basics
- Sound waves
- Speed of sound
- Light waves
- Reflection & refraction

#### Applied forces

- Turning moments
- Levers
- Floating & sinking

#### Space

- The solar system
- The lives of stars
- Space travel

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.