Roadmap
GCSE Trilogy Science

N.B – At Ks4 classes are rotated between subject specialists and will study all the topics, but not necessarily in the order of the roadmap. We do this to ensure that the students receive the highest quality specialist teaching.

Options → Year 10 Science

Atmospheric Chemistry/Infection and response

EQ – Where could it all go wrong?

Students will begin by exploring how our atmosphere has evolved since its formation and discuss how humans are enhancing the greenhouse effect. They will then look at infectious disease, how pathogens spread and how our immune system defends/protects us from future infection.

Practical Skills
- Data analysis of historic/current climate data.
- Aseptic techniques in the preparation of streak plates.

Assessment
- Low stakes quizzes and formative assessment throughout.
- 60 mark assessment from AQA past papers.

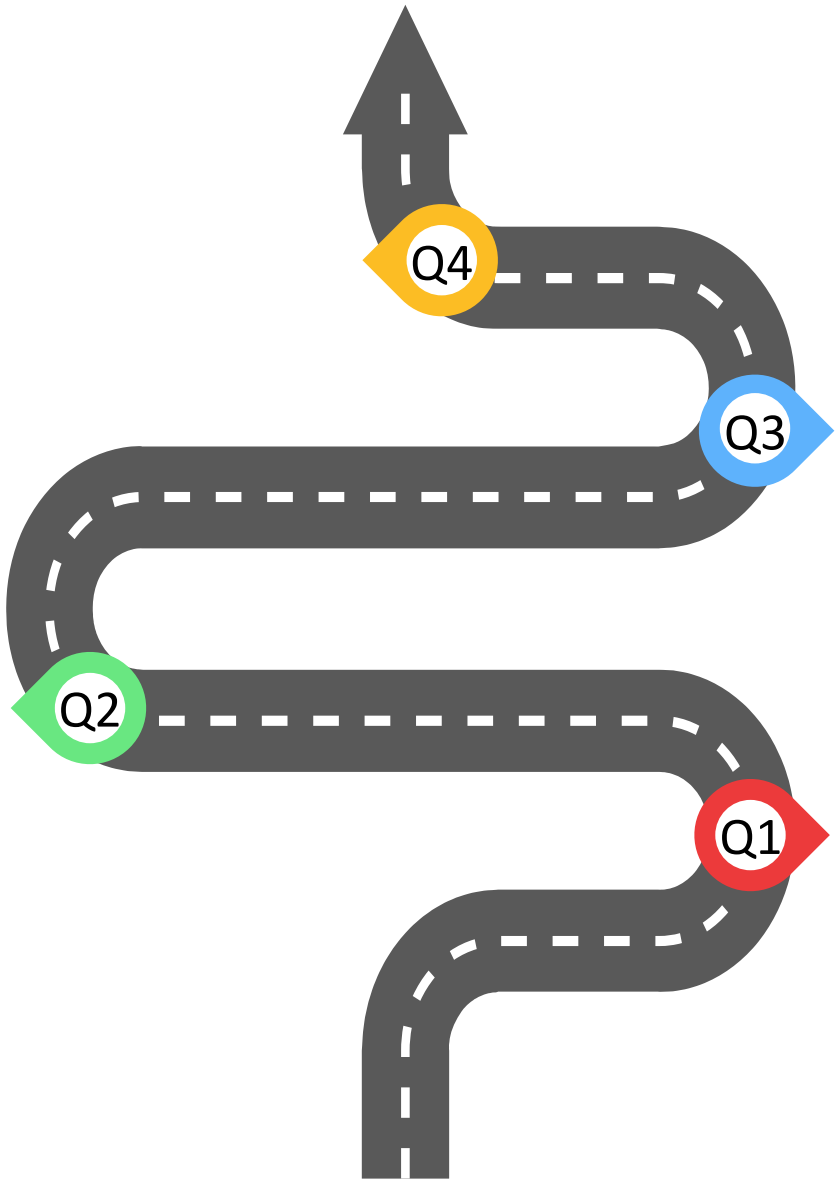
Cell Biology/ Organisation

EQ – How do you build an organism?

Students will explore how structural differences in cells enables them to perform specific functions within organisms when parts of tissues, organs and systems. They will also consider the ethical issues surrounding the use of stem cells and current scientific technology.

Practical Skills
- Using a microscope and calculating magnification.
- Testing foods for the presence of different food groups.
- Investigating osmosis in plant tissue.
- Investigating the effect of pH on amylase enzyme.

Assessment
- Low stakes quizzes and formative assessment throughout.
- 60 mark assessment from AQA past papers.



Year 9 Science

Particle Model of Matter/ Radiation

EQ – How many forms can a particle take?

Students will use the particle model to predict the behaviour or solids, liquids and gases; using knowledge of internal energy to explore temperature and state changes. They will then look at the nature of and hazards associated with ionising radiation.

Practical Skills
- Determine the density of regular and irregular shapes objects.

Assessment
- Low stakes quizzes and formative assessment throughout.
- 60 mark assessment from AQA past papers.

Atomic Structure/Bonding

EQ – How do atoms behave and bond?

Students will become familiar with the periodic table, linking physical and chemical properties to an elements position or a compounds bonding. They will explore the subatomic structure of atoms and how different types of bond from to achieve stability.

Practical Skills
- Make observations about the properties of different types of compound, based on a series of chemical and physical tests.

Assessment
- Low stakes quizzes and formative assessment throughout.
- 60 mark assessment from AQA past papers

Year 11 Trilogy

Chemical Change/Quantitative/Resources

EQ – How do we obtain resources from the Earth?

Students experiment with reactions, using the results to predict the products of various types of chemical reaction. They will then look at extraction techniques used to obtain elements from compounds. For these reactions students will determine the formulae of compounds and calculate reacting quantities and yield. Finally, students will study resources obtained from the environment and consider the environmental impact of industrial chemical processes.

Practical Skills
- Prepare a pure, dry sample of a soluble salt.
- Predict the products of the electrolysis of aqueous solutions.
- Analyse and purify samples of water from different sources.

Assessment
- Low stakes quizzes and formative assessment throughout.
- 60 mark assessment from AQA past papers.

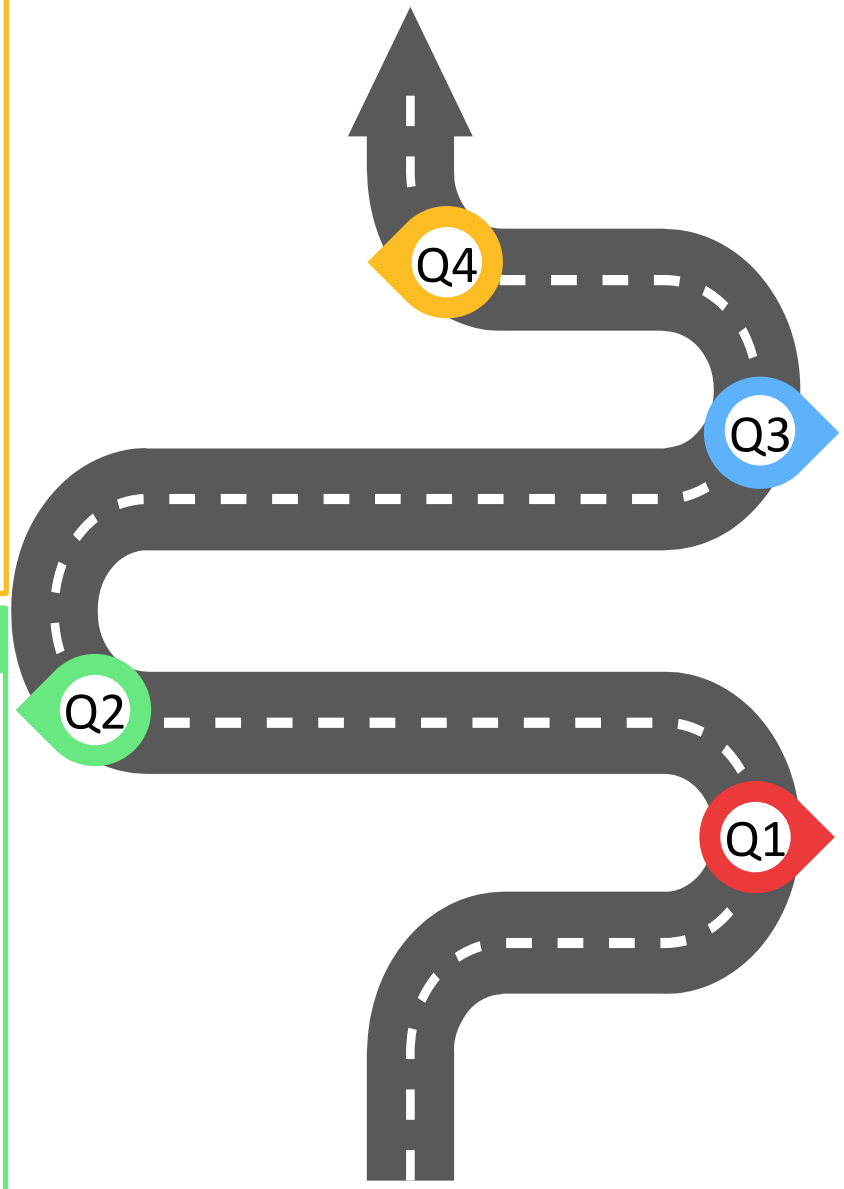
Homeostasis/Bioenergetics/Ecology

EQ – How do you achieve balance?

Students will first study how a consistent internal environment is maintained by a combination of nervous and hormonal processes. They will then appreciate how ecosystems depend on biotic and abiotic factors in order to maintain stable communities. The reactions that are part of these ecosystems (respiration and photosynthesis) will be looked at in detail, with a focus on the factors that will affect the rate of these biological reactions.

Practical Skills
- Investigate factors affecting the rate of photosynthesis.
- Plan an investigation into human reaction time.
- Use sampling techniques to study the distribution of common species.

Assessment
- Low stakes quizzes and formative assessment throughout.
- 60 mark assessment from AQA past papers.



Year 10 Trilogy

Energy (P)/Rates of Reaction/Energy Changes

EQ - How fast? How efficient?

Students explore the fundamental law of physics 'energy cannot be created or destroyed' and apply this to identify and calculate energy changes within systems. They will then link this to the transfers of energy due to the making and breaking of bonds. Finally, students will investigate the factors that can be manipulated to affect the rate of a reaction, explaining these observations using collision theory.

Practical Skills
- Determine the specific heat capacity of different materials.
- Investigate the variables that affect temperature changes in neutralisation reactions.
- Test a hypothesis - how concentration affects the rate of reaction

Assessment
- Low stakes quizzes and formative assessment throughout.
- 60 mark assessment from AQA past papers.

Electricity(P)/ Organic Chemistry/Chemical Analysis

EQ – What's fueling you?

Students will then study the chemistry of carbon compounds and how crude oil can be processed to obtain fuels and the precursor molecules of a variety of different substances. Finally students will develop their analytical techniques to qualitively detect the presence of specific chemicals.

Practical Skills
- Analyse a chromatogram to determine the Rf value.
- Set up electrical circuits to determine the resistance of components.

Assessment
- Low stakes quizzes and formative assessment throughout.
- 60 mark assessment from AQA past papers

GCSE Trilogy Examination

Exam Preparation

EQ – Am I prepared for my GCSE?

Students complete focused revision in preparation for their final GCSE examination.

Areas of focus
- Recall of knowledge
- Application of knowledge
- Exam Technique
- Practical Skills

Assessment
AQA Trilogy GCSE external examinations

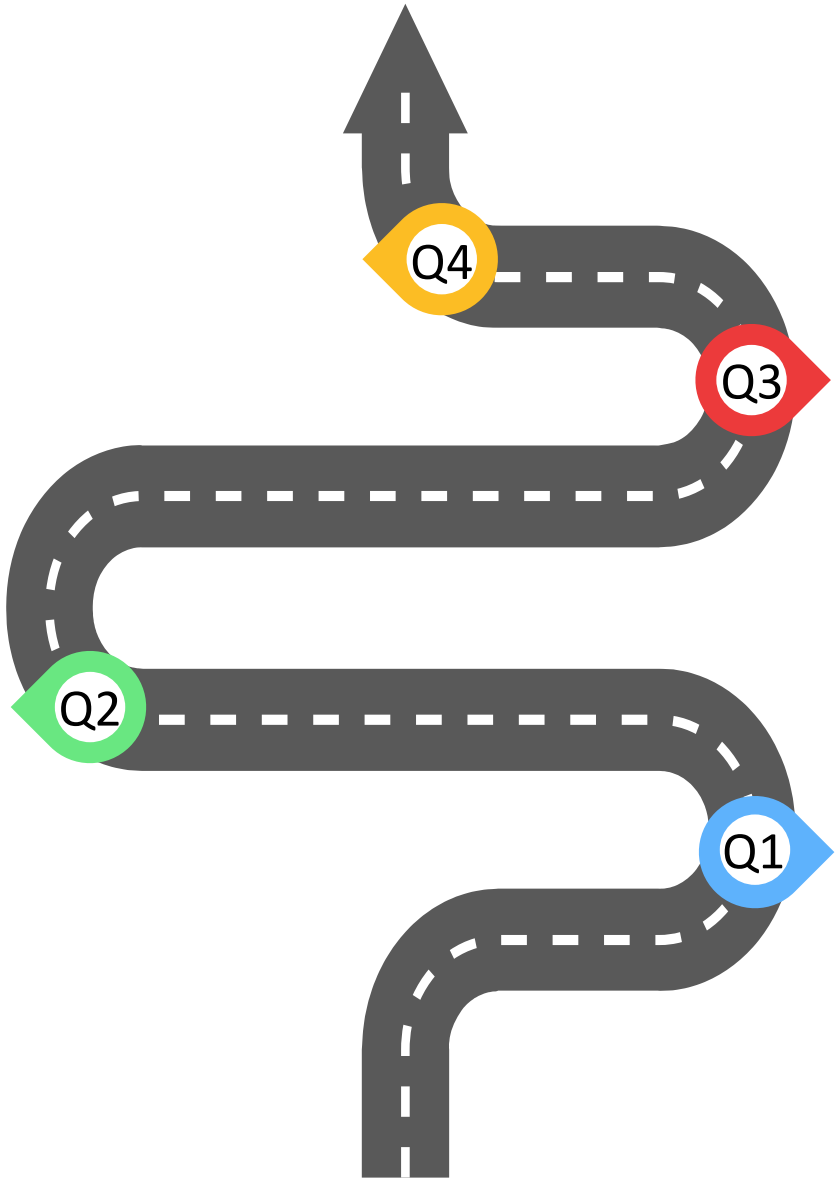
Inheritance, Variation & Evolution

EQ – Where did we come from? Where are we going?

Students will discover how the inheritance of genetic material stored within the nucleus of cells contributes to the way we look, grow and develop. Within populations differences in DNA cause variation, which can also be influenced by the environment. They will then explore the evidence for natural selection as the driver for the evolution of species.

Practical Skills
- Extract and observe DNA from plant material.

Assessment
- Low stakes quizzes and formative assessment throughout.
- 60 mark assessment from AQA past papers.



Year 11 Trilogy

Exam Preparation

EQ – How do I prepare for my mock examinations?

This quadmester students will complete 2 sets of mock examinations. Paper 1 subjects will be assessed in November and Paper 2 in February. Each set of mocks provides feedback for the students to reflect on and determine their next steps.

Assessment
Mock 1 - 3 x 75 mark assessments, full AQA Trilogy paper.
Mock 2 - 3 x 75 mark assessments, full AQA Trilogy paper.

Forces/Magnetism and Electromagnetism/Waves

EQ – How strong is the force?

Students begin by studying fundamental forces and their interactions. They will apply Newtons laws of motion to explain the effect when forces act on objects; causing a change in motion or shape. Next, they will look at how magnetism and electromagnetism are used in a variety of devices. Finally, students will explore the properties of waves and how different parts of the electromagnetic spectrum can be potentially useful or harmful.

Practical Skills
- Investigate the relationship between force and extension of a spring.
- Investigate the effect of force on the acceleration of objects.
- Evaluate available methods to obtain data on waves.
- Investigate the emission and absorption of IR radiation.

Assessment
- Low stakes quizzes and formative assessment throughout.
- 60 mark assessment from AQA past papers.