Science Curriculum Intent:
At QEGS, our Science Curriculum aims to provide engaging lessons and promotes teaching for understanding whilst covering the National Curriculum programmes of study. The Key Stage 3 content covers learning objectives in a logical order to lay strong foundations and to equip students for success at GCSE. To support all students toward fulfilling their potential, the KS3 courses balances the examined content with a mastery of ideas and skills. Students are then equipped to develop their knowledge, from understanding to application at GCSE.

Biology Year 9 Curriculum:
There are 4 main areas of Biology that will be covered in Year 9:**Photosynthesis: –** Chemical reaction, dependence of life on photosynthesis, testing for starch, leaf adaptations for photosynthesis, plant biomass, root structure and mineral absorption; **Nutrition and digestion**: –Components of a healthy diet, energy requirements, standard food tests, consequences of imbalances in the diet, structure and function of the human digestive system, bacteria in the digestive system; **Cellular respiration:** - aerobic and anaerobic respiration, fermentation in microbes; **Genetics and evolution**:- heredity, scientists involved in the development of the DNA model, variation between and across species, extinction, importance of biodiversity and gene banks.

Autumn Term:

1. Photosynthesis equation
2. Dependency on photosynthesis
3. Testing a leaf for starch
4. Rates of photosynthesis
5. Adaptations of leaves for photosynthesis
6. Plant biomass
7. Root structure
8. Mineral absorption
9. Components of a healthy diet
10. Calculation of energy requirements
11. Food tests
12. Unbalanced diets
13. Human digestive system
14. Digestive enzymes
15. Bacteria in the digestive system

Key Objectives Autumn Term - To be able to:

1. Construct word and chemical equations for photosynthesis
2. Describe the interdependence of all life on Earth on photosynthesis
3. Implement the test for starch
4. Design experiments to measure the rate of photosynthesis
5. Draw and annotate the cross-section of a leaf
6. Consider how ideas about plant growth have changed over time
7. Describe how roots are adapted to absorb water
8. State the minerals required for plant growth and their specific uses by plants generally.
9. Identify and describe the uses of the seven components of a healthy diet
10. Use the BER calculation and describe how different people have different energy requirements
11. Implement the standard food tests for starch, lipids, protein and simple sugars
12. Describe the effects of unbalanced diets i.e. obesity, starvation and deficiency diseases
13. Identify the structures of the digestive system and describe how they function
14. State the three major digestive enzymes groups; naming their respective substrates and products
15. Describe the importance of bacteria in the human digestive system.

Spring Term:

1. Aerobic respiration
2. Anaerobic respiration
3. Fermentation
4. Heredity
5. Types of variation
6. Variation between species
7. Extinction
8. Biodiversity and gene banks

Key Objectives Spring Term - To be able to:

1. Describe the process of aerobic respiration, write the word and chemical equations and analyse results from respiration experiments
2. Describe the process of anaerobic respiration in humans; write the word equation and state where and when this process occurs
3. Describe the process of fermentation in micro-organisms
4. Define the terms chromosomes, genes and DNA; discuss Watson and Crick DNA model and the involvement of Franklin
5. Understand the differences between continuous and discontinuous variation
6. Explain how a species can change over time via the process of natural selection
7. Describe a range of possible causes of species extinction
8. Explain why it is important to preserve as many species as possible on the planet

Summer Term:
GCSE

Key Objectives Summer Term – Knowledge of AQA GCSE topic "Adaptations, interdependence and competition"
16.1-16.8 inclusive.

Key Performance Standards

1. Construct word and chemical equations for photosynthesis
2. Implement the test for starch in leaves
3. Design experiments to measure the rate of photosynthesis
4. Describe how plants are adapted to absorb light and water
5. Identify and describe the uses of the seven components of a healthy diet
6. Describe the effects of unbalanced diets i.e. obesity, starvation and deficiency diseases
7. Identify the structures of the digestive system and describe how they function
8. Describe the process of aerobic respiration in living organisms
9. Describe the process of anaerobic respiration in humans
10. Describe the process of fermentation in micro-organisms
11. Define the terms chromosomes, genes and DNA
12. Explain the process of natural selection
13. Describe the possible causes of extinction
14. Explain why it is important to preserve as many species as possible on the planet.