



# Sandbach School Science Curriculum: Biology Combined

## Impact

## Intent

### A - Level

To encourage students to question and develop themselves beyond simply being able to answer exam questions in the subject. The Biology course uses the principles in science to build student's wider subject knowledge and understanding thereby helping them create the appropriate links across the discipline to better articulate their understanding.

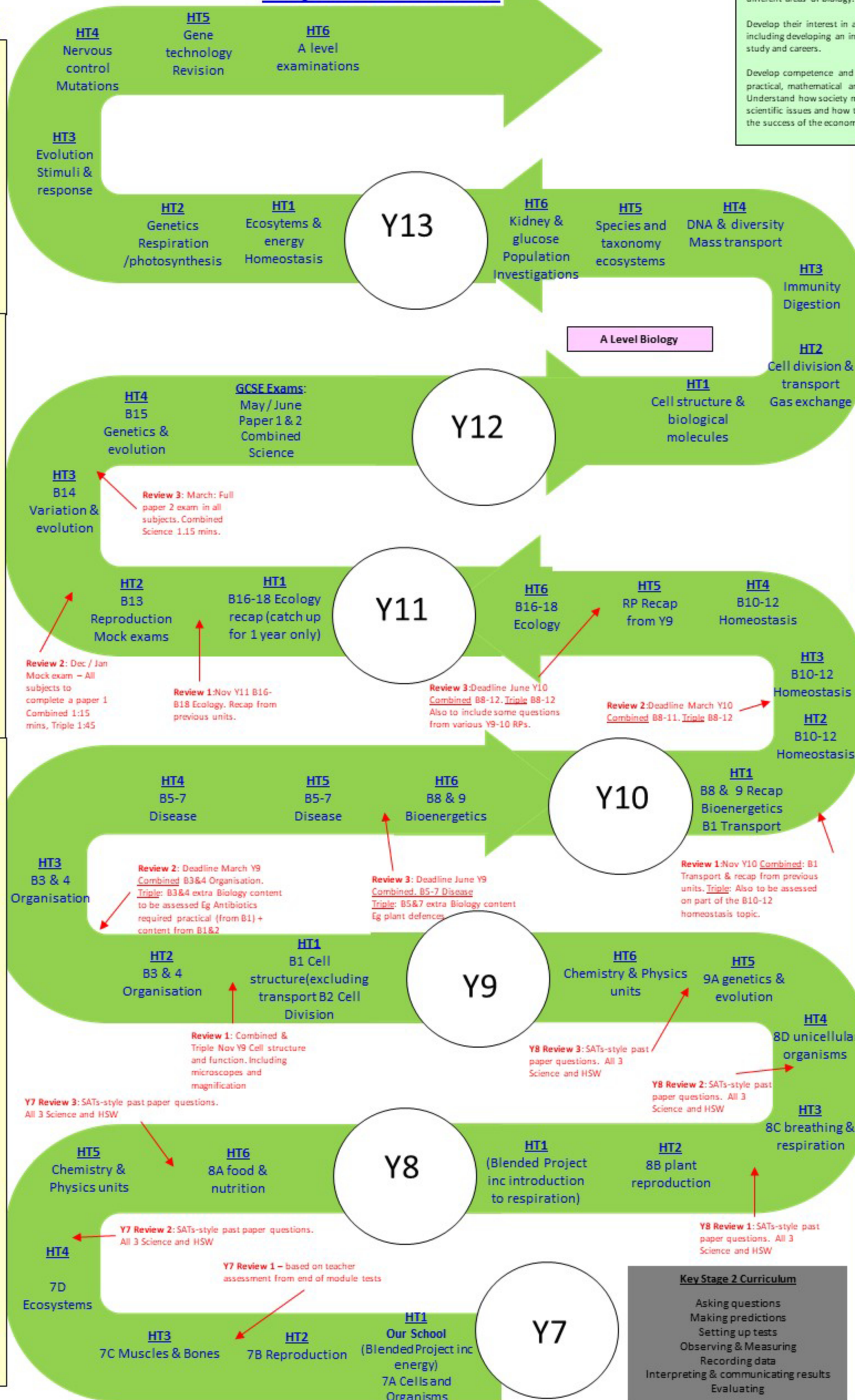
### Y9-11

To make sure students learn subject content relevant to the qualifications phase exams and community life. To strengthen student confidence in applying their knowledge to exam questions and new situations and being sufficiently adept in transferring of those skills that adequately reflects their understanding of subject and topic content. The qualification phase science curriculum has been structured for the purpose of reinforcing and building upon vocabulary, concepts and visual models studied in the Transition phase.

### Y7-8 Transition phase

- Pupils will be taught to:
- Develop an awe and wonder of science
  - Develop a confident recall of scientific knowledge and an ability to apply scientific concepts
  - Develop the ability to question the credibility of reported science
  - Develop confident and independent scientists through individual and collaborative work
  - Allow students to have informed and ethical opinions about the big scientific questions facing society
  - Develop a sense of responsibility for our planet and the knowledge to be able to best care for it
  - The development of a curiosity for what else we can learn about the world through science
  - Develop transferable and employability skills

## Implementation



By the end of **Y13**, students will:

- Develop essential knowledge and understanding of different areas of Biology.

- Develop their interest in and enthusiasm for Biology, including developing an interest in further study and careers.

- Develop competence and confidence in a variety of practical, mathematical and problem solving skills
- Understand how society makes decisions about scientific issues and how the sciences contribute to the success of the economy and society.

### By the end of **Y11** :

Students should have a basic understanding of the following biological principles and be able to apply them:

- The structure and functioning of cells and how they divide by mitosis and meiosis from sections Cell biology and Meiosis.
- That variation occurs when gametes fuse at fertilisation from section Sexual and asexual reproduction.
- The two essential reactions for life on Earth: photosynthesis and respiration from sections Photosynthetic reaction and Aerobic and anaerobic respiration.
- Metabolism is the sum of all the reactions happening in a cell or organism, in which molecules are made or broken down from section Metabolism.
- All molecules are recycled between the living world and the environment to sustain life from section How materials are cycled. Students should be able to recall and use this knowledge in questions that link different areas of the specification to develop coherent arguments and explanations.

### By the end of transition phase, students will know how to :

Understand that scientific methods and theories develop as earlier explanations are modified to take account of new ideas.

Evaluate risks

Make predictions using scientific knowledge and understanding

select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variable

Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety

Make and record observations and measurements using a range of methods

Evaluate methods and suggest possible improvements

Apply mathematical concepts and calculate results

Present observations and data using appropriate methods,

Interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions

Present reasoned explanations, including explaining data in relation to predictions and hypotheses

Evaluate data, showing awareness of potential sources of random and systematic error

Identify further questions arising from their results

Understand and use SI units and IUPAC (International Union of Pure and Applied Chemistry) chemical nomenclature