



Sandbach School Science Curriculum: Physics Combined Implementation

Impact

Intent

A - Level

The curriculum intent of the Physics course is to inspire students to develop an interest in and enthusiasm for the subject, including developing an interest in further study and careers associated with Physics. The course will prepare students to progress into further education, to follow courses in physics, engineering, one of the other sciences or related subjects, or to enter employment where a knowledge of physics would be useful. It will encourage learners to:

- develop essential knowledge and understanding of different areas of the subject and how they relate to each other
- develop and demonstrate a deep appreciation of the skills, knowledge and understanding of scientific methods
- develop competence and confidence in a variety of practical, mathematical and problem solving skills
- develop their interest in and enthusiasm for the subject, including developing an interest in further study and careers associated with the subject
- understand how society makes decisions about scientific issues and how the sciences contribute to the success of the economy and society

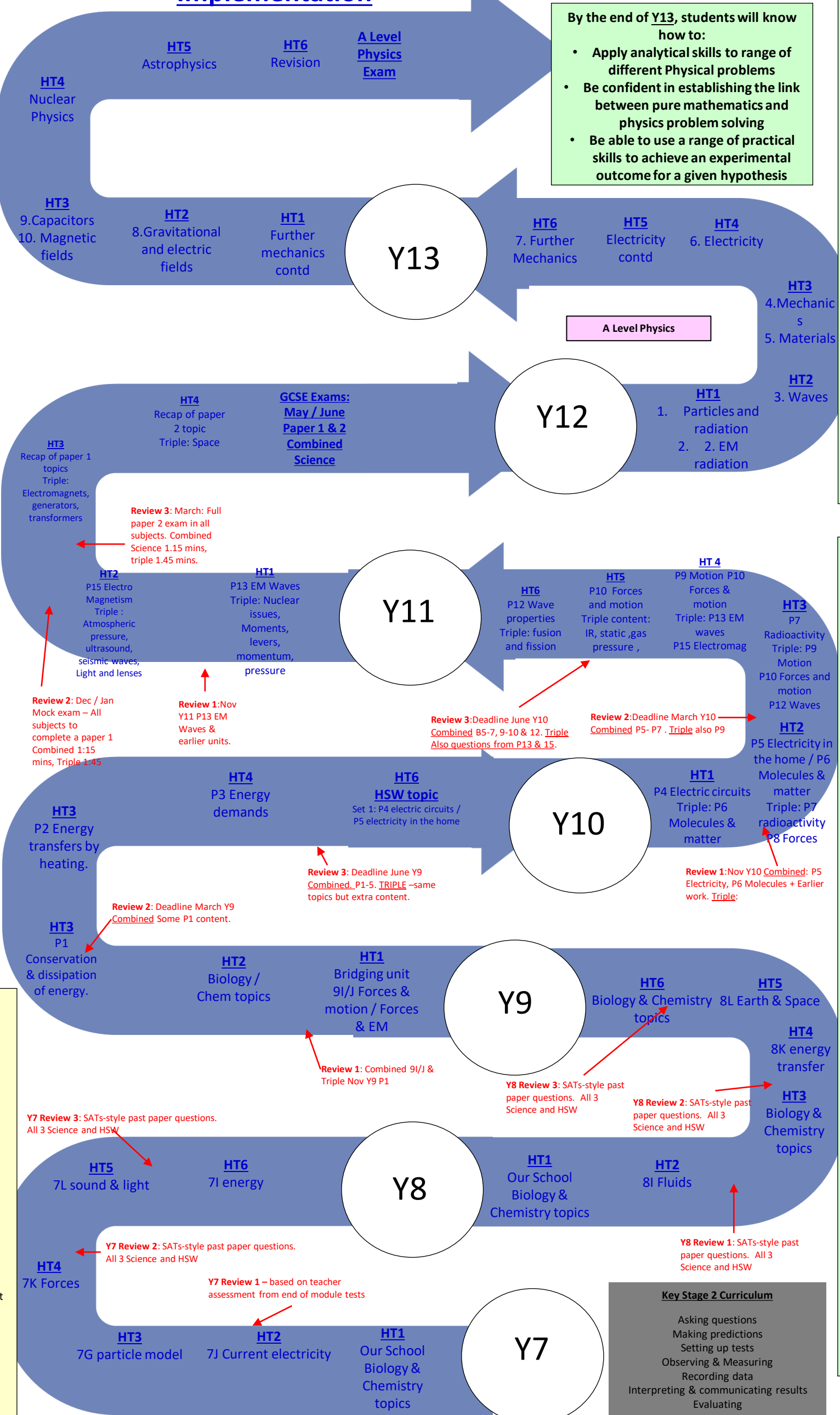
Y9-11:

To make sure students learn subject content relevant to the qualifications phase 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 Science Curriculum.

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



By the end of **Y13**, students will know how to:

- Apply analytical skills to range of different Physical problems
- Be confident in establishing the link between pure mathematics and physics problem solving
- Be able to use a range of practical skills to achieve an experimental outcome for a given hypothesis

By the end of Y11, students will know: The complex and diverse phenomena of the natural and man-made world can be described in terms of a small number of key ideas in physics. These key ideas are of universal application, and we have embedded them throughout the subject content. They underpin many aspects of the science assessment and will therefore be assessed across all papers.

Key ideas in physics:

- the use of models, as in the particle model of matter or the wave models of light and of sound
- the concept of cause and effect in explaining such links as those between force and acceleration, or between changes in atomic nuclei and radioactive emissions
- the phenomena of 'action at a distance' and the related concept of the field as the key to analysing electrical, magnetic and gravitational effects
- that differences between pressures or temperatures or electrical potentials, are the drivers of change
- that proportionality, for example between weight and mass of an object or between force and extension in a spring, is an important aspect of many models in science
- that physical laws and models are expressed in mathematical form.

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

Key Stage 2 Curriculum

- Asking questions
- Making predictions
- Setting up tests
- Observing & Measuring
- Recording data
- Interpreting & communicating results
- Evaluating