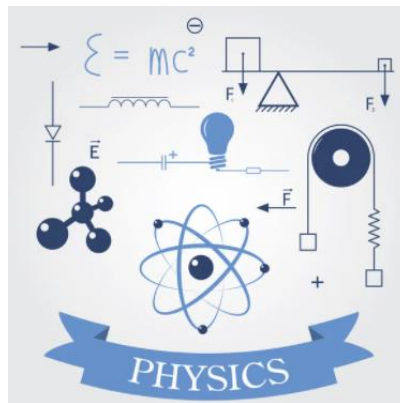


Physics at The Bridge



Aims and Objectives.

At The Bridge we pride ourselves on putting the interests of each individual pupil first and foremost and in partnership with pupils we strive to add value to attainment potential.

Physics GCSE counts as a 'separate science' at GCSE and provides a firm foundation for studying the subject at AS and or A level. The GCSE course aims to stimulate interest and enthusiasm for science whilst at the same time being an excellent grounding for further progression. The course specifications have an emphasis on scientific knowledge, the application of science, the scientific process and practical science and there is a broad range of scientific topics that are designed to be engaging and to stimulate interest for the subject whilst also underpinning those required for further study at 'A' level.

Specifically at The Bridge our intent is to:

- Develop students understanding of the scientific process of verification through experimentation, discussion and logic, allowing them to **critically assess the world** through an informed knowledge base and understanding. Linked with this aim is the challenge to develop students' awareness encouraging pupils to apply their learning and understanding to day to day domestic and commercial applications.
- To provide opportunities which support students in their journey of becoming **independent, accurate and safe practical enquirers**. An investigative approach engages students, helping them to develop important skills whilst establishing a broad understanding of physics and engineering concepts.
- To develop confidence and a **secure knowledge base** in students so that they are able to **apply physical concepts to novel situations**
- Teaching and encouraging students to be conscious and deliberate in their **use of scientific language** in the search for new knowledge and through this develop their scientific literacy
- Embedding the importance of **numeracy skills** throughout the process of teaching and learning; providing opportunities where students are challenged to make sense of trends in data, supporting them to develop a grasp of validity and errors within results and the detection of bias before drawing conclusions

Teaching and learning styles

At the Bridge a wide range of teaching and learning styles are employed to deliver a 'knowledge rich' Physics curriculum. These include:

- Interactive presentations
- Debates and discussions
- Small group work
- Whole class, teacher-led delivery involving Q&A sessions
- Practical investigative work
- Interleaving, a teaching and learning strategy that involves switching between topics or ideas, which has been shown to improve long-term learning relative to blocking study of the same idea or topic. This is reflected in the development of a spiral curriculum.

Physics planning

The development of the Schemes of Learning within Physics involve an element of a 'Spiralling curriculum'; a course of study in which students will see the same or connected topics throughout their school career, with each encounter increasing in complexity and reinforcing previous learning. Curriculum planning also takes into account the school's Unique Me principles for each half term.

Units of learning covered are:

Year 10:

1 Conservation and Dissipation of Energy

2 Energy Transfer by Heating

3 Energy Resources

4 Electric Circuits

5 Electricity in the Home

6 Molecules and Matter

7 Radioactivity

8 Forces in Balance

9 Motion

10 Force and Motion

11 Force and Pressure

Year 11:

12 Wave Properties

13 Electromagnetic Waves

14 Light

15 Electromagnetism

(Note that the above is subject to change depending on when students are enrolled at The Bridge and prior learning)

Teaching Physics to students with special needs

Teaching and learning approaches at The Bridge match individual students' needs. This may be through differentiated worksheets and tasks, scaffolding support for weaker students and challenge tasks to move the higher attaining students on in their learning. When planning and delivering Physics and providing feedback to students, any EHCP (Educational, Health and Care Plan) IEP (Individual Educational Plan) and SEND (Special Educational Needs and Disabilities) are taken into account.

Assessment and recording

Assessment is on-going throughout the entire course and at each stage informs future planning and learning. Following the completion of each unit of work a test is completed by all students. Analysis of students' responses will guide the next stage in their learning, where common misconceptions and areas of weaknesses will be revisited. These written assessments, alongside progress made in the classroom and homework assignments, will inform the half termly data drops which are kept on a central database. There will be end of year examinations testing a wider breadth of content, these too will be analysed to identify student weaknesses and provide appropriate therapy. Assessment of class/homework assignments will involve a mix of teacher, peer and self-assessment. Post cards are routinely sent out to those parents/carers whose children have made a particularly impressive effort and/or are displaying a commendable level of attainment. Subject teachers will also call parents when the need arises and report formally to parents twice yearly in December and July.

Resources

There exists at The Bridge a wide range of resources to match individual teaching needs. These include:

- Twinkl subscription. This provides instant access to inspirational lesson plans, schemes of work, assessment, interactive activities, resource packs, PowerPoints, and suggestions for teaching approaches
- Schemes of Work which have hyperlinks to informative video clips/podcasts/required practical support
- Course textbooks for class use and revision guides for use at home.
- We are hoping to purchase a subscription to ClickView. ClickView is the leading video content resource for secondary schools and further education settings. Visually stunning, curriculum-aligned video content and teacher resources can be accessed, plus contextual on-demand TV, video library and interactive question layers for formative assessment.
- The Bridge continues to develop a wide variety of resources to ensure students can take part in practical investigative work.

Where possible throughout the two years, students will complete a series of required practical experiments which are designed to improve problem solving, observation, analysis and interpretation of data.

Students will record all experiments formally in the style of traditional lab reports at the request of higher educational institutions.

How will I be assessed?

These specifications have no 'Controlled Assessment' thereby leaving time for a more detailed study of scientific knowledge and the development of scientific enquiry and practical work skills essential for further study in this subject.

Students' understanding of scientific investigations and practical work is assessed through two written papers.

Students will complete 2 exams at the end of Year 11, each one lasting for 1 hour and 45 minutes.

Paper 1: Energy, electricity, particle model of matter, atomic structure - written examination.

Multiple choice, structured, closed short answer and open responses. 1hr 45mins, weighting 50%

Paper 2: Forces, waves, magnetism and electromagnetism, space physics - written examination.

Multiple choice, structured, closed short answer and open responses. 1hr 45mins, weighting 50%

There is no coursework attached to the GCSE, meaning all marks come from these two exams.

Comprehensive performance reviews take place twice a year following mid- and end-of-year internal, standardised examinations, and these are in addition to topic-based, in-class or prep time, written or web-platform assessments.

Details of the above courses can be obtained from the AQA web sites at

<http://www.aqa.org.uk/subjects/science/gcse/physics-8463/introduction>

<https://www.aqa.org.uk/subjects/science/gcse/physics-8463>

Monitoring and review

The Bridge Teaching and Learning coordinator (Maria Jackson) is responsible for monitoring the standard of student work and quality of teaching.