



**KING EDWARD VI
CAMP HILL
SCHOOL FOR BOYS**



King Edward VI Camp Hill School for Boys

PHYSICS

Department Handbook

2026-27

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Department intent, implementation and impact:

Curriculum Intent:

- Introduce students to scientific investigations through experimentation and evaluation.
- Cultivate the use of academic terminology in the process of learning new knowledge to develop pupils' scientific literacy.
- Develop the ability to comprehend science through real-life observations, scientific principles, and logic.
- Build up channels for pupils to access the wider scientific world through the familiarisation of basic scientific principles.
- Apply and develop numeracy skills alongside scientific investigations and establish the key roles played by mathematics in building physical models.
- Develop students' independence and resilience when encountering complex concepts and solving challenging problems.
- Nurture and entrench scientific and critical thinking skills into the day-to-day learning routines.

Curriculum Implementation:

- The department delivers a large number of well-designed class practicals from Year 7 to Y11.
- The curriculum provides a wide breadth at KS3, as well as opens discussions for further investigations at KS4.
- The scheme of work is designed to suit our pupils' intellectual ability at various stages but also offers an opportunity to challenge the brightest.
- The understanding of complex physical concepts is built in sequence from basic experimental observations to in-depth mathematical calculations.
- The learning progress is monitored by regular assessments within the department.
- In a typical Physics lesson teachers will:
 - use modelling.
 - use clear and impactful demonstrations or explanations.
 - use a variety of strategies to check all students' understanding of key physical concepts, and adapt teaching accordingly.
 - stress the accurate use of key terminology in explanations and definitions.

Curriculum Impact:

- The percentage of the June 2026 GCSE cohort (of 120 students) achieving a grade 9 was 42.5%, grades 8/9 was 70.0% and grades 7-9 was 85.8%.
- Over the lifetime of the current GCSE Specification, first examined in 2018, and excluding COVID-19 years, the percentage of CHB students achieving a grade 9 were 57.6%, grades 8/9 were 78.8% and grades 7-9 were 91.2%.
- The percentage of the June 2026 A level cohort (of 67 students) achieving an A* was 39%, A*/A was 76% and A*-B was 91%.
- Over the lifetime of the current A level Specification, first examined in 2017, and excluding COVID-19 years, the percentage of CHB students achieving an A* were 27.2%, A/A* were 66.0% and A*-B were 83.1%.
- We have a large number of students who choose to study Physics at A Level in the sixth form, with many continuing to study Physics or Engineering related subjects at Oxbridge and Russell group universities.

Department admin and resources

Staffing:

Staff	Roles	email
Mrs Azra Khan	Head of Physics, Radiation Protection Supervisor	a.khan@chb.kevibham.org
Dr Tomas Munoz-Britton	Assistant Head (Teaching and Learning), Teacher of Physics	t.munozbritton@chb.kevibham.org
Mr James Oggelsby	Teacher of Physics	j.oggelsby@chb.kevibham.org
Mr Joseph White (PT)	Teacher of Physics	j.white@chb.kevibham.org
Mrs Jagminder Hundal	Teacher of Physics, Chemistry, Biology & PSHE	j.hundal@chb.kevibham.org
Mrs Wioletta Bartoszak	Head Technician, Deputy RPS	w.bartoszak@chb.kevibham.org
Mr Robert McQueen	Technician	r.mcqueen@chb.kevibham.org
Ms Patricia Crummay	Technician	p.crummay@chb.kevibham.org

Resources:

Laboratories and experimental resources:

Over the years the Physics department has built a large stock of apparatus to support practical work at all key stages. We are immensely proud that the department can offer our students a wide range of experiments in comparison to most state schools. In addition to the considerable number of experiments, students can generally work by themselves or in pairs, rather than sharing the apparatus between too many students.

The Physics department has three main labs, P1, P2 and P3 which are extensively used for practical lessons. Since we deliver a large quantity of practical lessons to our Key Stage 3 students, P1 and P2 are equipped with frequently used class-set apparatus for kinematics, dynamics, thermal and electricity practical's. This arrangement enables teachers to be able to get most of the key apparatus directly from the labs.

For KS4 and KS5 practical lessons, teachers and students may use Room 3 and Room 4 with all equipment delivered to the room by our technicians.

Textbooks:

The department has always produced booklets tailored to our cohort for KS3 and KS4.

In KS4 we also offer students *CGP Grade 9-1 Revision Guide* for further assistance.

In KS5 we offer *CGP A-Level Year 1 and Year 2 Physics – The Complete Course for AQA* as well as the *CGP AQA Revision Guide*. In addition students are also given online access through Kerboodle, to the *OUP A level AQA Physics textbook*.

Teaching Resources:

In the departmental team OneDrive, we share a set of very rich teaching resources, which are always evolving as each member of the department contributes new resources or updates the existing ones.

The department has also spent a great effort to create our own assessment materials, similar to the textbooks, we feel some of the worksheets widely available on the internet do not always suit the ability of our students. The assessment material we write is often more targeted to focus on our own curriculum intent, and most importantly, this offers an opportunity ask some challenging questions for the most able students.

CPD:

Members of the department are encouraged to attend external CPD in need of delivering certain topics or practical activities. In departmental meetings feedback from external CPD is shared within the department. However, CPD activities is not limited to Physics; members of the department have also attended CPD to support UCAS applications, supervising EPQs, sports coaching, NPQs and other areas.

New Staff Information

The department seeks to implement the whole school policy for the induction of new members of staff.

The department will provide support and assistance through:

- information about the departmental resources, SoW, KS4 and KS5 specifications.
- training on delivering experiments that the new members of the staff are not familiar with.
- regular meetings with teachers who teach the same year group.
- CPD within the department as well as externally.
- opportunities to take responsibility for activities within the department.
- support to take wider roles within the school community.

Curriculum maps: KS3, 4 and 5

Year 7	Curriculum Content	Curriculum rationale
Autumn 1	Risks and equipment, averages + average mass practical, puzzle boxes, force's introduction, weight + weight calculations	The Year 7 physics curriculum blends the teaching of key physical concepts of Forces and Motion from the KS3 Program of Study for Science, with the development of scientific skills required of a practical physicist. Students' complete investigations at the same time as developing key skills such as risk analysis, averages, variables, graph drawing and significant figures.
Autumn 2	Introduction to friction, friction 1 practical, variables, friction 2 practical, introduction to speed, speed 1 & 2 practicals	
Spring 1	Drawing graphs including curved lines of best fit, introduction to springs, Hooke's law practical	
Spring 2	Significant figures, relative motion, distance-time graphs, cupcake case practical, parachute jump, moments	
Summer 1	Density, density of regular objects practical, density of irregular objects practical, buoyancy, pressure, revision	
Summer 2	EOY exam and debrief, pressure in liquids, atmospheric pressure, pendulum investigation	

Year 8	Curriculum Content	Curriculum rationale
Autumn 1	Shadows, eclipses, reflections, images in plane mirror, refraction through rectangular and semi-circular block, ray diagrams, refraction through prism, introduction to colour theory	In Year 8, whilst there is still a heavy emphasis on practical work, the primary focus shifts to understanding key concepts of Waves and Electricity & Electromagnetism from the KS3 Program of Study for Science. Students continue to develop key skills in parallel to carrying out scientific investigations that are designed to develop their understanding.
Autumn 2	Colour filters, observing waves, waves and energy, the wave equation, introduction to sound, similarities and differences between light and sound, echo location	
Spring 1	Electric charge, simple circuits, current and voltage, fruit battery, resistance and Ohms Law applied to simple circuits	
Spring 2	Resistors in series and in parallel, ohmic conductors, resistance of bulb	
Summer 1	Revision for EOY exam, EOY exam and debrief	
Summer 2	Magnetism introduction, field patterns, domain theory, electromagnets and their uses	

Year 9	Curriculum Content	Curriculum rationale
Autumn 1	Energy stores & changes, energy conservation & dissipation, work done, GPE, EPE & KE, power & efficiency	The Year 9 curriculum transitions from KS3 to KS4 content. Students complete the Physics content from the KS3 Program of Study for Science, namely of Energy, Matter and Space. Meanwhile, the GCSE AQA Physics (8463) content of topics 1- Energy, 3- Particle model of matter and 4- Atomic Structure are delivered at the same time.
Autumn 2	Electricity generation and fossil fuels, renewable resources & energy demands, density including RP	
Spring 1	Particle model of matter & states of matter, Internal energy, SHC including RP, SLH, heat transfer, Insulation methods including RP	
Spring 2	Gas pressure, temperature and volume, models of the atom, radioactive decay, decay equations	
Summer 1	Half-life and activity, background radiation, uses of radioactivity, fission and fusion, revision	
Summer 2	EOY Exam & debrief, solar system, days, years, seasons, eclipses, stars including the sun, galaxies	

Our current Y10 and Y11 students studied Forces and Energy whilst in Year 9, so their continued GCSE studies are slightly different to the pathway that will be followed by current Year 9.

Year 10	Curriculum Content	Curriculum rationale
Autumn 1	Wave nature and wave properties, waves RP, reflection and refraction, refraction RP, how do we hear sounds	In Year 10, students continue to study the GCSE AQA Physics (8463) content of topics 6- Waves and 3- Particle model of matter before the end of year exams at the start of the Summer term. This assessment covers both content from Y9 & Y10. Students finish Year 10 by completing topic 4- Atomic Structure.
Autumn 2	Ultrasound and seismic waves, lens diagrams, colour, EM spectrum and it's uses, black body radiation including RP	
Spring 1	Density including RP, particle model of matter, states of matter, internal energy, SHC including RP, SLH	
Spring 2	Gas pressure, temperature and volume, heat transfer, Insulation methods including RP	
Summer 1	Revision for EOY exam, EOY exams and EOY exam debrief Models of the atom, radioactive decay	
Summer 2	Decay equations, half-life & activity, background radiation & uses of radioactivity, fission and fusion	

Year 11	Curriculum Content	Curriculum rationale
Autumn 1	Resistance RP, I-V Characteristics RP, electricity in the home, electrical power & w.d, energy transfers, national grid, static electricity, electric fields	In Year 11, students finish studying the GCSE AQA Physics (8463) content covering topics 2- Electricity, 7- Magnetism & Electromagnetism and 8- Space by the end of the Spring term at the latest. The focus then shifts to revision and exam technique. The December mock exams cover topics 1-6.
Autumn 2	Magnetic fields, electromagnets and uses in devices, motor effect, uses in motors, generator effect, Mock exams	
Spring 1	Mock exams debrief, transformers and use in national grid. Solar system and its formation, life cycle of stars	
Spring 2	Planets, satellites and orbits, start and end of universe Revision/ exam technique	
Summer 1	Revision/ exam technique	
Summer 2		

AQA A level Physics (7408)

Year 12 Physics:

- Waves
 - Progressive and standing waves
 - Diffraction and interferences
- DC electricity
 - Mixed circuit calculations
 - EMF and internal resistance
 - Resistivity and super conductivity
 - I-V characteristics
 - Energy and power
- Mechanics
 - Uniform accelerations
 - Newton's laws
 - Energy and work done
 - Moments
 - Momentum and conservation of momentum
 - Circular motion
 - SHM and damping
- Particle physics and quantum phenomena
 - Classification of particles
 - Spectra of light
 - Wave particle duality
 - Matter and antimatter
 - Photoelectric effect

Year 13 Physics:

- Thermal physics
 - SHC and SLH
 - Gas laws
- Fields and their consequences
 - Gravitational field
 - Electric field and capacitance
 - Magnetic field and particle accelerators
 - EM inductions
 - Transformers and AC circuits
- Nuclear Physics
 - Alpha beta and gamma radiations
 - Nuclear decay and half life
 - Stable and unstable nucleus
 - Binding energy
 - Nuclear powers
- Option:
 - Astrophysics option

Assessment and marking

Each individual member of the department has their own mark book to monitor pupil progress, and the department's marking policy is in line with the whole school assessment policy. The department aims to provide pupils with regular feedback through a combination of formative and summative assessment.

The Physics department also has a whole school tracking sheet to monitor pupils' progress at key points throughout the year. In KS4 and KS5 pupils complete the same assessments, and the results are used to identify students who may need immediate intervention as well as the very gifted and talented students who would benefit further challenge. The frequency of whole-cohort assessment is also intended to reduce teachers' marking load yet provide more reliable information on pupils' progress.

Homework

We endeavour to comply with the whole school policy on homework but with the additional interpretations below:

Y7 & Y8 – a 20 minute activity roughly every 2 lessons. This will broadly alternate between an activity from their workbook or uploaded to their team, and self-marking quizzes through Educake.

Y9 – a 20 to 30 minute written or online activity weekly. A mix of written questions and using online platforms such as Educake and Isaac.

Y10 and Y11 – a 30 to 45 minute written or online activity every 2 lessons. A mix of written questions and using online platforms such as Educake and Isaac.

Y12 and Y13 – our expectation is that students will put in at least 5 hours of independent work per week. This will be supported with a variety of directed homework (1.5 to 2 hours per week) using a mix of written questions and online activities (e.g. Isaac, past paper questions)

Closing the gap and SEND pupils

All pupil premium and SEND pupils are highlighted in teachers' mark book as well as the seating plans. All lesson plans are adapted to suit the need of SEND pupils' present. The Physics department uses the regular homework and classwork assessments as well as the whole-cohort assessments to identify pupils who need short term or medium-term interventions.

Interventions:

- Appropriate self-study resources are signposted to the students by their teachers.
- Teachers may ask pupils back at lunchtime or breaktime to address any incomplete work or poor-quality work.
- Teachers may email parents for repeated late or missing homework, and poor-quality homework or classwork.
- If students show little improvement on the quality of work after multiple interventions by the classroom teacher, then the Head of Department will put in place an appropriate intervention.
- All Year 7 and 8 lessons will have a Y12 Physics ambassador supporting the pupils.

- Lower school pupils who require additional support with classwork or homework can get help from the Y12 Physics ambassadors during lunchtimes on Tuesday, supervised by JKH.
- Lunchtime and after school revision sessions may be offered for exam group students who struggle to achieve their targeted grades.
- The physics department also fully support any whole school intervention strategies.

Gifted and Talented

The department keeps a register of pupils considered gifted at Physics which is reviewed annually. These pupils are identified in staff and departmental mark books, and their progress is monitored through the departmental examination results and departmental SEF.

Activities set out in the departmental SoW are designed to provide these students which appropriate stretch and challenge. The department offers additional extracurricular activities outside of lessons to provide additional breadth and depth. Information about these can be found in the departmental super curricular booklet and SEF.

Equality, Diversity and Inclusion

Our School is both creative and diverse where all are welcome, equal and included. We believe that Equality, Diversity and Inclusion, (EDI) is fundamental to a supportive, progressive and successful Department. The Physics Department provides an open and inclusive workplace and study culture where everyone is treated with dignity and respect. We are responsible for promoting best practice in everything we do, and every member of our community should feel free to grow and progress without barriers.

British Values and SMSC education

British values are defined as including:

“democracy, the rule of law, individual liberty and mutual respect and tolerance for those with different faiths and beliefs”

Tolerance and respect characterise effective learning as set out in the Equality Act and where those with protected characteristics receive fair treatment so that all are treated equally. Individual colleges and providers will capture these expectations in their Mission and Values statements and in codes of conduct for students. In implementing these standards teachers, tutors and lecturers will be exemplifying and promoting British Values.

Many learning opportunities in Physics will be framed by complying with Health and Safety legislation. This will include the role of risk assessments in defining and addressing risks. Opportunities will arise to discuss British law in this context.

There are a diverse range of topical scientific issues at GCSE level that will allow students to explore the nature of scientific evidence and the interplay between scientific communities, the media, politicians and policy makers. Students will find it necessary to distinguish between opinion based on valid, repeatable and reproducible evidence and opinion based on non-scientific ideas (for example prejudices, or hearsay).

Health and Safety

General

Staff in the Physics department will follow the code of practice laid down in the school's Health and Safety Policy.

Staff will not embark on an activity without assessing the possible risk to health and safety. If there is any doubt, the member of staff should consult the Head of Physics. If the Head of Physics considers the activity unsafe then it will not take place.

Pupils should be instructed in safe practice. It is important that the pupils do not become afraid of the substances and equipment that they use but become aware of the possible dangers if they do not use them safely. Staff should be vigilant in the laboratories for instances of unsafe working or carelessness. If necessary, pupils should be prevented from doing practical work. When a pupil deliberately indulges in dangerous practice, they will be referred to the Head of Physics.

No pupil may enter a laboratory or preparation area without a member of staff being present.

Chemicals

A safety assessment should be made before using or making any substance which may be hazardous. Pupils should be made aware of the hazard and told to inform the teacher immediately if spillages etc. occur. Safety assessments can be made by referring to CLEAPSS.

A spillage kit is available in all prep rooms. This will clear up spillages of acids, alkalis and organic liquids.

The laboratories are all fitted with automatic gas cut-off switches. If a leak is serious the whole building should be evacuated as for a fire drill. The gas provider and fire brigade should be called after informing the school office. If there is a serious emission of toxic gas the laboratory should be evacuated and if necessary, the whole affected area.

Radioactive sources

Mrs Azra Khan is the current Radiation Protection Supervisor (RPS) with Mrs Wioletta Bartoszak as the Deputy RPS. The RPS will ensure compliance with all CLEAPSS guidance (L93) regarding the use, storage and disposal of radioactive materials.

Before a lesson

Staff should carry out a safety assessment for all lessons consulting the CLEAPSS Hazcards where necessary and order their requirements from the technicians in plenty of time.

Substances and equipment which are not hazardous to health (i.e. no hazard indicating toxic, harmful, corrosive or irritant and no occupational exposure limit assigned by the Health and Safety Executive) require no action other than their use as directed by the manufacturer. Substances which are hazardous to health, but used in very small quantities and in such ways that the risk to health is assessed as insignificant, require no further action other than to use as directed by the manufacturer. Substances which are hazardous to health and the risk to health could be significant should be used in accordance with the instructions given in the CLEAPSS Hazcards. The risk should be communicated to the pupils before they are used.

The technicians make every effort to supply materials and equipment in a safe manner. It is the teachers who has prime responsibility for safety in the laboratory and they should be alert to any deficiencies in equipment and take appropriate action.

Staff should know the location of:

- fire extinguishers and fire blankets in each laboratory
- gas cut off
- electricity cut off
- nearest telephone

All staff should be familiar with emergency exits, escape routes and those who are qualified to help if first aid is required.

During a lesson

Pupils should enter the laboratory in sensible manner, and discipline will be maintained at all times.

Pupil's bags should be stored in the laboratory under desks so that they present no danger. Jackets and bags should not be left on benches.

Pupils will wear safety glasses when:

- heating substances
- using hazardous materials
- a danger is involved in the view of the teacher