

Our whole School curriculum intent believes:

At Ercall Wood Academy our students experience a highly personalised, challenging curriculum, rich in variety and diversity, yet underpinned by our whole academy traditional values.

Empower

Respect

Aspire

Our curriculum is designed to help to address social injustice by providing all our students with the essential knowledge and skills that are commonly possessed by successful citizens which will **empower** them to positively contribute to their community and the wider world. No child will be disadvantaged by our curriculum.

Our curriculum aims to engender equality and mutual **respect** in our students, their community, and the environment in which they are an integral part.

Our curriculum aims to unlock the potential of all our students and has high aspirations for everyone, regardless of their ability, gender, race, or background. Through our challenging curriculum we will instil a drive in them to **aspire** to excellence, to become the very best that they can be, thereby preparing them for success in life.

The key principles of our curriculum

- Our curriculum provides a broad, ambitious five-year curriculum journey for all students containing the essential knowledge, skills and experience that prospective employer demand from their candidates.
- Our curriculum is designed to enable accelerated progress so that all students can achieve success in literacy and numeracy.
- Our curriculum is coherently mapped and sequenced to reduce cognitive load for our students.
- Our curriculum is designed to support students in constructing rich connections and building schema, thereby deepening their understanding and their ability to remember.

- Our curriculum incorporates regular retrieval practice to strengthen memory and maximise cognitive development.
- Our curriculum is the progression model. Assessment measures students' ability to understand, retain, and recall the essential curriculum knowledge and skills they have been taught.
- Our curriculum provides frequent opportunities for targeted in-learning formative assessment to measure student knowledge retention and check for understanding.
- Our curriculum incorporates robust summative assessments mapped to the curriculum's essential knowledge which are used to benchmark students by identifying what students know and don't know. This provides key information for explicit teacher feedback and curriculum planning to reduce identified knowledge gaps.
- Our curriculum is inclusive and is based on equality of opportunity.
- Our subject Leaders are our curriculum experts and regularly review and update their curriculum through subject meetings to ensure that the curriculum mapping is constantly enhanced.
- Our curriculum explores and clarifies student beliefs and values and empowers them to learn to think and speak for themselves by developing critical and evaluative skills which enables them to be more socially mobile.
- Our curriculum develops skills for learning, life and work by making learning relevant and engaging, thereby helping students to apply lessons to their life beyond the classroom.

Enrichment Opportunities

We believe that opportunities to bring the curriculum to life should be integral. We passionately believe that our students should sample a wealth of exciting new experiences to broaden their horizons, open doors of opportunity, provide hope and aspiration for all, regardless of their circumstances. Our enrichment activities aim to further equip students with the knowledge and cultural capital they need to succeed in life.

Our intention for our curriculum is:

"Science is simply the word we use to describe a method of organising our curiosity" - Quote by Tim Minchin

At Ercall Wood Academy, our intent in the Science curriculum is to cultivate a deep understanding of the natural world, fostering a lifelong passion for scientific inquiry among students. We aim to provide a rigorous and engaging educational experience that develops critical thinking, problem-solving, and practical skills, ensuring all students achieve their fullest potential.

Our Science curriculum is designed with the following objectives:

1. **Knowledge Acquisition:** Students will develop a robust understanding of key scientific concepts across Biology, Chemistry, and Physics, promoting knowledge retention and application.
2. **Skills Development:** We aim to equip students with the necessary scientific skills, including practical experimentation, data analysis, and effective communication of scientific ideas.
3. **Real-World Connections:** Our curriculum connects scientific theories to real-life phenomena, helping students understand the relevance of Science in everyday life and societal issues.

At Ercall wood we have implemented a 5 year learning journey in Science, with pupils studying Biology, Chemistry and Physics topics in each year. The concepts taught within the curriculum repeat, broaden and expand over the 5 years, gaining in depth and detail as the students gain maturity within the subject to understand complex real world science.

KS3

Our Key Stage 3 Scheme of Learning is based on Springboard Science. Springboard has been developed to build, develop and sustain students' knowledge and understanding of science through evidence- and experience-based practice from evidence presented by educational and psychological researchers (e.g. Rosenshine 2012, Clark et al. 2012, Agarwal 2021 and Lemov 2021) In order for students to master new knowledge, our teaching involves explicit, explanations, extensive independent practice, constant checking for understanding and a coherent approach to long-term knowledge and retrieval practice.

The Springboard course is divided first into biology, chemistry and physics and then into units and topics. Conceptual progression and interleaving that are built into the scheme of learning. The course is based on the National Curriculum for KS3 and centres around core questions and concepts of learning are based around a general structure of:

General science quiz – Generally not related to the topic. This is about retrieval and retention over time.

Topic introduction and objective – An overview of what topic will be taught within the unit. Learning objectives are clear and concise and in student language.

Knowledge check – Are there any holes in previous knowledge that need to be retaught before starting new learning. This is mainly covered on MWB.

Guided explanation – Teacher talking through a particular concept with a diagram.

Check for understanding – After new knowledge is delivered, understanding is checked through whole class checking for understanding.

Independent practice – Practicing the skills / knowledge that they have learned. The questions are progressive and interleave different topics.

Review – Have they retained the new knowledge and understanding before we move onto to another concept.

KS4

Our Ks4 Scheme of learning is based around the EDEXCEL exam board specification. Students start the content in year 9 to give them time to fully understand and absorb the content needed to be successful in their GCSEs.

In year 10, options are chosen between combined Science and Triple Science. This is a free choice for students.

The format of the lessons follows a similar format to ks3 with Knowledge checks, Guided explanations and independent practice embedded through all lessons.

Assessment

In lessons we use mini-Stop and check assessment task to ascertain whether key concepts have been correctly learnt. These are marked by a mixture of peer / self and teacher assessment with the teacher always looking over the tasks at the end to see what concepts need to be taught or if learning can continue.

At the end of a topic, we have a larger targeted assessment piece which is to make sure within the topic whether concepts have been learn and understood. These are teacher marked with targets to improve and a feedback lesson give.

3 times a year we have larger summative assessment which looks at performance in Biology, chemistry and Physics over time and are used to measure progress.

Linking our curriculum intention to our local community and real-life links to content:

The curriculum, through enrichment and real-life experiences during the school day and within enrichment opportunities, will maximise the use of the local area. We will link our curriculum to the following:

- Real-world applications of science such as health, energy use and climate change
- Using information to make decisions, especially in when benefits must be compared to risks, such as when considering medical procedures.
- Using information when making ethical decisions
- Practical uses of science by linking with businesses and taking part in competitions, especially for STEM
- Practical uses of science linked to programming,
- Taking part in Science Week each year by introducing activities to KS3 lessons linked to the national theme.

Year 7 Curriculum implementation

Introduction to Biology going from cells into tissue and then into organ systems and looking specifically at 3 different examples; the muscular system, the respiratory system and the digestive system. By the end of this year students should have a good grasp of cells, how to look at them, how tissues and organs work together for a particular function and the effect of lifestyle factors on the functioning of these systems.

In terms of skills, the pupils should gain greater mastery in simple graphical skills and data analysis. They should also meet the basics of how to set up an investigation looking at identifying variables.

1	2	END POINT TEST & THERAPY	3	4	END POINT TEST & THERAPY	5	6	END POINT TEST & THERAPY
B1 – Cells This unit focuses on the basics of life and its building blocks and how we see it. This includes: • Microscopes • Cell Structure • Magnification • Diffusion • Specialised Cells Skills within this unit include: • How to use a formula in magnification • How to use a microscope • How to make microscope slides • How to calculate total magnification			B2 – Skeleton This unit focusing on building on our knowledge of cells into tissues and organs. This includes: • The skeleton • Biomechanics • Principles of organisation Skills within this unit include: • Testing muscle strength • How to draw a graph			B3 – Nutrition and digestion This unit focus' on how our lifestyle can affect our organ systems in our digestive system and what a healthy diet looks like and the consequences of a bad diet. Including: • healthy diet, energy requirements and dietary imbalance • Digestive organs • Gut bacteria Skills within this unit • Graph skills • Understanding food labels B4 – Gas Exchange This unit again focus' on the human body and a different organ system of the respiratory system and the effect of exercise, smoking and asthma on them. This includes: • Ventilation • Gas Exchange • Exercise, asthma and smoking. Skills within this unit • The use of modelling in science • Taking accurate measurements		

Year 8 Curriculum implementation

Year 8 focuses on another organ system building on the previous year 7 knowledge. It then goes onto expand on the energy releasing process of respiration, which powers all life within an organism. The learning then comes out of a single organism to look at the effect of organisms on the environment and how all relate to each other. The last unit is about how all of this life came to be with the idea of inheritance and natural selection. By this point students should have a good grounding in all of the key areas of Biology.

In terms of skills, again a big emphasis on graph skills, gaining more mastery with more complicated data. Patterns in data are recognised and analysed and a wide range of data is seen in many different forms. A greater emphasis on conducting investigations accurately, looking at potential sources of error.

1	2	END POINT TEST & THERAPY	3	4	END POINT TEST & THERAPY	5	6	END POINT TEST & THERAPY
B5 – Reproduction This unit focus’ on how life starts, both in plants and animals and the male and the female reproductive system. This includes: • Sexual reproduction and the reproductive organs • Fertilisation • Foetal Development • The menstrual cycle Skills within this unit • Data collection • Drawing tables • Using date charts for estimating fertility B6 Photosynthesis – continues into term 2 This unit moves away from animals and into plant biology. Its focus’ on the key themes of specialist cells and organ systems, but in a different context enabling students to see the differences and similarities between organisms. This unit includes: • Photosynthesis • Leaf structure. Skills within this unit include:			B7 – Respiration This unit focus on the process of releasing energy through respiration and how this powers the whole of life’s processes both in plants and animals. This unit includes: • Aerobic respiration • Anaerobic respiration Skills within this unit • Investigating the rate of reaction • Errors in investigations •			B8 – Ecosystems This units are again focused on energy but how it cycles through ecosystems and how all life is interrelated and interdependent. This unit includes: • Food chains • Food webs and interdependence • Insect pollination and food security Skills within this unit • Using quadrats • Sampling techniques • Drawing tables • Calculating area • Estimating abundance •		

• Using reagents to test for starch • Scientific drawings • Following a detailed method		
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Year 9 Curriculum implementation

The curriculum is spiralled to focus again on cells before looking at yet another organ system of the nervous system. The basics of genetic differences is looked at which builds on the Ks3 topic of inheritance.

Pupils are beginning to gain mastery in a number of different practical techniques, including the use of different biological equipment and calculating of rates.

Investigations are completed with increasing complexity.

1	2	END POINT TEST & THERAPY	3	4	END POINT TEST & THERAPY	5	6	END POINT TEST & THERAPY
B1 – Cells We again meet the importance topic of cells, digestion and diffusion again to recap on Ks3 and extend learning with more knowledge including Prokaryotic and eukaryotic cells, enzymes and osmosis and active transport. This includes: • Microscopes • Cells • Specialised cells • Bacterial cells • Enzymes in digestion • Enzyme action • Enzyme activity • Diffusion • Active transport • Osmosis Skills within this unit • Making and viewing onion slides • Making and viewing cheek cell slides • Using microscopes • Making scientific drawings • Calculating Magnification and total magnification			B1 – Continued •			B2 – Cells and Growth Looking at how cells grow and how they specialise in both plants and animals. This then leads into plant and animal growth, the importance of percentile charts and the medical use of stem cells. The unit then goes on to look at a specific type of specialised cell, the neurone and how it is adapted to send signals in the nervous system, looking at a new organ system (the nervous system) in great detail. This includes: • Mitosis • Growth in plants • Growth in animals • Stem cells • The nervous system • The neurone • Reflex arcs • Synapse Skills within this unit • Measuring reflex actions • Sources of error		

• Disposing of Biological samples safely • Rate calculations • Calculating percentage gain / loss • Accurate measuring and sources of error • Identifying hazards in practical's		• Choosing a fair sample in investigations Debating issues using both sides of an argument •
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Year 10 Curriculum implementation

In year 10, there is a big emphasis in the units of the effects that humans have both on controlling the way in which organisms reproduce and on their own health. This year includes the ethical issues associated with this control.

The data analysis in this year is increasingly complex with multiple different variables being looked and the difference between correlation and causation. This sets pupils up to look at data in the real world with an analytical eye.

1	2	END POINT TEST & THERAPY	3	4	END POINT TEST & THERAPY	5	6	END POINT TEST & THERAPY
B3 – Genetics Genetics builds on the Ks3 unit of inheritance looking in great detail about how traits are inherited, inherited diseases. Lessons includes: • Meiosis • Structure of DNA • Alleles • Monohybrid inheritance • Sex determination and pedigrees • Variation • Human genome project and mutations Skills include: • Extracting DNA from fruit • Modelling DNA • Calculating probabilities • Accurate measuring and identifying sources of variation.			B5 – Health and disease This unit give and in-depth view on what it means to be health and the causes and effects of communicable and non-communicable diseases. It also looks in great detail about the defences that we have against disease both inside our body and in terms of medicines and vaccinations. This includes: • Health • Pathogens and their spread • Sexually transmitted diseases • Physical and chemical barriers I the body • The immune system • Vaccinations • Development of medicine and drug trials • Non communicable diseases • Causation and correlations • BMI and obesity • Alcohol			B6 – Photosynthesis This unit builds on the concepts started in Ks3 of photosynthesis but looks in greater detail about how different factors affects the rate of photosynthesis and how these effects commercial applications of how plants grow. This includes: • The photosynthetic reaction • Limiting factors • Transpiration • Translocation Skills in this unit include: Measuring rates Measuring the rates of transpiration Analysis how rates affect growth. Identifying variables to investigate Identifying sources of error •		

Evaluating the benefits and risks of the human genome project B4 – Evolution and genetic engineering This unit builds both of the Ks3 topic on inheritance and the previous topic on genetics. It looks at how life has evolved and how it is classified and the ways in which humans can now control inheritance. This includes: • Natural Selection • Human evolution • Classification • Selective breeding • Genetic engineering Skills in the unit include: • Analysis of evidence for evolution • Using classification keys • Using evidence from text to identify the advantages and disadvantages of selective breeding and genetic engineering • Debating the ethics of both genetic engineering and selective breeding	• Smoking • Treatments of cardiovascular diseases. Skills include: • Analysis of health data and trends • Evaluation of different ways of preventing and treating disease • Evaluation of evidence for the use of vaccines and other drugs • Data analysis of causation and correlation • Calculating BMI • Evaluating health risks	
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Year 11 Curriculum implementation

Year 11 finish our implementation of the biology curriculum at Ks4 looking again at organ systems and systems within the ecosystems. These units contain synoptic links with the previous content covered in previous years brings pupils 5-year learning pathway in biology to a close

1	2	END POINT TEST & THERAPY	3	4	END POINT TEST & THERAPY	5	6
B7 – Homeostasis and hormonal control This unit looks at how the body controls the different conditions within the body and what happens when these controls go wrong. This unit builds on the reproductive unit in Ks3 and also the health and disease unit in Ks4. This unit includes: • Hormones and glands • Homeostasis • The effect of Adrenaline • The effect of thyroxine on metabolic rate and negative feedback • The menstrual cycle • Hormonal control of the menstrual cycle • Controlling fertility • Blood glucose control • Diabetes Skills in the unit include: • Debating the social issue in both increasing and decreasing fertility • Analysis of health trends • Evaluation of health interventions of diabetes			B9 – Ecosystems and nutrient cycles In this unit we meet the environment again and expand on the concepts learnt in Ks3. We look in greater details about interdependence, how we measure environmental factors and humans' effect on the environment. This includes: • 0 Skills include. • Taking environmental measurements • Estimating abundance • Sampling in different environments • Evaluating the effects of human interactions with the environment • Graph skills • Analysis of environmental data				
B8 – Exchange in animals and transport This unit builds on the Ks3 topic of respiration and organ systems, looking at both the respiratory system and circulatory system in detail and ending in respiration. This includes: • Transporting substances • Surface area to volume ratio • The lungs and alveoli • The blood • Blood vessels							

• Structure of the heart • Aerobic respiration • Anaerobic respiration • Heart rate calculations Skills include. Calculating SA Calculating the rate of respiration Ethic involved in testing on live animals. Heart rate calculator Risk assessing practical's involving life subjects.			
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The overall aim of the curriculum is to develop confident, articulate scientifically literate young people as they ascend through Ercall Wood. We assess their progress in several ways:

In lessons, progress is monitored through short teacher-led quizzes, including specific retrieval practise tasks at the start of lessons, questioning and green-pen self and peer marking. Responses to this will enable teachers to identify gaps in learning and misconceptions and provide additional teaching to close any gaps. Feedback is crucial because it gives students confidence, they are making progress and allows teachers to plan to address misconceptions. It is provided through reviews of progress within lessons and through Feed Forward marking; work is marked against criteria and students can see which key points they have mastered, and which require further work. Mastery is achieved by revisiting key concepts in the short, medium and long term. Each lesson begins with a simple Retrieval task. As we progress through a unit of work, or even several units of work later, questions requiring recall of earlier learning are included to ensure students are encouraged to commit knowledge to long term memory. The units of learning themselves are designed to revisit earlier learning in a spiral pattern. The Big Ideas of Science, described at the top of this document are revisited many times, each time extending the depth of students' understanding.

Medium term learning is assessed through the use of topic tests and termly exams; the latter will include material from previous terms as well. Each year, but especially during key stage 4, students will sit tests and exam papers which require a broad knowledge of the recent and previous curriculum material in order to be successful. Before each test, retrieval practise tasks will be set as homework and feedback from this will be used to support students in closing the gaps in their learning. After each test and exam, we will work with students, using processes such as Smith Proforma, to identify strengths and weaknesses, providing intervention materials and sessions where appropriate.

Ultimately, we are striving to develop confident articulate students who can recall key scientific information and apply it to the cause of problem solving and forming opinions.

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- Practical uses of science linked to programming,
- Taking part in Science Week each year by introducing activities to KS3 lessons linked to the national theme.

Year 7 Curriculum implementation

Introduction to Chemistry starting at the particle model and then ending with chemical reactions. By the end of this year students should have a good grasp of how the arrangement of particles affect their properties and how particles are different in both pure and impure mixtures

In terms of skills, pupils will meet a range of scientific equipment and learn different separating techniques which are used further on in their journey. Pupils should gain greater mastery in simple graphical skills and data analysis. They should also meet the basics of how to set up an investigation looking at identifying variables.

1	2	END POINT TEST & THERAPY	3	4	END POINT TEST & THERAPY	5	6	END POINT TEST & THERAPY
C1 - The particle model The particles model is our first unit in chemistry, and it recaps on what the pupils should already know from ks2 about solids, liquids and gases and focuses in on the atomic world of particles and how they affect the properties of different substance. This includes: • Simple particle model • Properties of different states of matter • Changes of state • Gas pressure Skills within this unit • Taking accurate temperature measurements • Reading scales • Risks during practical's			CC2 – Atoms, Elements and compounds This unit builds on the concepts of particles introduced in C1 and looks at the differences between elements and compounds. It also introduces pupils to symbols and formula which show exactly what is in an element compound or molecule. This includes: • The atomic model • Symbols and formulae • Elements and compounds Skills within this unit • Looking at why we use models. • Ratios of atoms and counting atoms • Observational skills in science • Testing properties and making conclusions • Deducing states of matter from melting and boiling points Making 3D atoms			C4 – Chemical reactions As the pupils have already learnt about the different elements and compounds and how their particles are made up, we now look at how they are separate chemically and then rearranged into new products in a chemical reaction. This unit introduces the main type of chemical reactions that pupils will see during their 5-year chemical journey. This includes: • reactions, Conventions and sign that a reaction has occurred. • Combustion, thermal decomposition, Oxidation and displacement • Conservation of mass • Acids, Alkalis and pH • Reactions of acids with metals and alkali Skills within this unit • Observation techniques • Graph skills • Predicting information from graphs		

C3 – Pure and impure

Again, building on the behaviour of particles, we look at the movement of these particles in a liquid and a gas with diffusion. We also compare elements and compounds with mixtures and then learn how we can separate these different mixtures with different separation techniques.

This unit introduces a lot of the practical techniques used in GCSE chemistry. This includes:

- Diffusion
- Pure and impure
- Separation

Skills within this unit

- Using Scientific equipment safely
- Reduce risk in practicals.
- Filtration techniques
- Crystallisation techniques
- Distillation techniques
- Chromatography techniques
- Writing methods

- Variables including control variables.
- Word equations
- Testing gases
- Symbol equations

Year 8 Curriculum implementation

This year we look at energy changes in reactions and how this affects heating and cooling. We also look at the basics of how to use the periodic table which is a skill needed for the rest of chemistry. The last topics look at the practical applications of the chemistry that has been taught so far with an emphasis on materials and how their function is related to their properties before looking at the earth, the source of all the material on earth and the effect that we are having on it.

At the end of this topic pupils should have gained a competent range of investigation techniques with variables, results and graphs coming up a lot within this unit.

1	2	END POINT TEST & THERAPY	3	4	END POINT TEST & THERAPY	5	6	END POINT TEST & THERAPY
C4 – continued C4 – Chemical reactions As the pupils have already learnt about the different elements and compounds and how their particles are made up, we now look at how they are separate chemically and then rearranged into new products in a chemical reaction. This unit introduces the main type of chemical reactions that pupils will see during their 5-year chemical journey. This includes: • reactions, Conventions and sign that a reaction has occurred. • Combustion, thermal decomposition, Oxidation and displacement • Conservation of mass • Acids, Alkalis and pH • Reactions of acids with metals and alkali Skills within this unit • Observation techniques • Graph skills • Predicting information from graphs • Variables including control variables. • Word equations • Testing gases • Symbol equations •			C5 – Energy changes With the learning from the previous unit, this short unit looks at the energy changes that occur within both chemical and physical reactions and how we can tell which reaction is which. This includes: • Changes of state • Endothermic and exothermic reactions Skills within this unit • Completing tables of results • Calculating a mean • Anomalous results • Plotting a graph and deciding scales • Hazards and risks			C6-7 – The periodic table The students would have met and used the periodic table in C2, but now we are looking at how the periodic table itself was developed and the patterns within it. This unit provides the fundamentals of learning how to use the periodic table as an information sheet and is fundamental to GCSE chemistry. This includes: • Properties of metals and non-metals • Groups, periods, metals and non-metals Skills within this unit • Comparing observations and making conclusions • Looking at sources of information to find patterns C7 – Materials – Christmas project Having met the idea of different reactivities in the previous topic, this practical unit looks at how we measure reactivity and how we use the ideas about reactivity in modern life with the extraction of metals from their ores and how different materials are used due to their different properties. This unit includes: • Metal Reactivity • Metal extraction with Carbon • Ceramic, polymers and composites Skills within this unit		

		• Safety precautions and risk assessments • Making conclusions from observations • Using glassware safely
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Year 9 Curriculum implementation

In year 9 we extend our learning in particles by looking at them as atoms and how these are structured. This leads to key learning about bonds and bonding and the effect that these have on both structure and properties of different materials.

In terms of skills, we look at how different scientific models have changed over time and the benefits and weaknesses of different models.

1	2	END POINT TEST & THERAPY	3	4	END POINT TEST & THERAPY	5	6	END POINT TEST & THERAPY
C1 – States of matters Here we consolidate our learning on the 3 states of matter. This extends the learning by looking at the forces between the particles and what happens to energy levels during changes of state. This includes: • Solids, liquids and gases • Changes of state • Cooling curves Skills within this topic • Heating safely and correct use of glassware • Accurate measuring • Classifying materials based on their properties. • Identifying variables • Controlling variables			C2 – Separation techniques. Continued C3 – Atomic Structure Having learnt a lot about particles in Ks3, this unit looks at what is inside the atom and how this was discovered using evidence from observations. This unit is where pupils start to understand the structure of element which will then affect how substances react. This includes: • Atoms over time • Structure of an atom • Isotopes • Relative atomic mass (Higher) Skills within this unit • Looking at evidence to identify patterns and conclusions • How scientific theories change over time. • Calculating Relative atomic mass from percentage of isotopes			Static KS3 topic This unit explains what static is and how different charges repel and attract and what they can be used for. This then leads into charge within bonding in the next unit. This unit includes: • Charges and where they come from • How they interact with each other • Uses and dangers		
C2 – Separation techniques. This unit again looks at separation techniques that were met in Ks3 and looks at how we use these techniques to gain and separate useful chemicals and supplies, bringing this unit together with how we obtain clean drinking water. This includes: • Pure • Filtration and crystallisation • Distillation • Fractional distillation • Chromatography • Potable Water Skills within this unit • Using heating apparatus safely • Risk assessment			C4 – The periodic table In Ks3 the pupils learnt how to use the periodic table. In Ks4, then look in greater details about how it was developed and how Scientist use evidence to make theories. This unit includes: • Development of the periodic table • The modern periodic table • Electron structure Skills include.			C5-6 – Ionic and covalent bonding This unit explain how and why different elements react to form molecules and compounds and the different ways in which we represent these. This unit includes. • Ions • Ionic bonding • Ionic formula • Covalent bonding • Dot and cross diagrams Skills in this unit includes: • Word equations • Symbol equations • Deducing formulas		

• Applying practical techniques to real world situations • Choosing practical techniques depending on mixtures given	• Using the periodic table as an information source • How Scientific theories change over time based on evidence. • Peer reviews •	
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Year 10 Curriculum implementation

In year 10 chemistry we recap on the important concept of structure and bonding before applying this learning to specific chemical changes including acid and alkali and electrolysis. This gives real world applications to the knowledge acquired earlier in the year.

Practical skills include in depth use of methods to create and test different chemicals and the scientific investigation skills needed to conduct these investigations reliably.

1	2	END POINT TEST & THERAPY	3	4	END POINT TEST & THERAPY	5	6	END POINT TEST & THERAPY
C7 Types of substances This unit includes applying what they have learnt about the structure of different materials to what its properties are like. This unit includes a recap of: • Properties of ionic compounds • Properties of simple covalent compounds • Giant Covalent structures • Allotropes of carbon • Polymers • Metals • Bonding models Skills in this unit includes: • Word equations • Symbol equations • Deducing formulas • Classifying material based on their properties. • Evaluating different models C8 – Acids and Alkalis Acid reactions was covered in Ks3 and is recovered here now that pupils have the conceptual learning to understand what is happening at an atomic level. This unit also bring together the separation techniques learnt in C2 to be able to make, separate and purify different bases based on their properties. This unit includes: • Acids, Alkali and Indicators • Concentration and log scale • Strong and weak acids			C9 – Calculations involving mases. When reacting together chemicals we need to know quantitatively how much to use to be efficient. This unit is all about the maths in Chemistry and introduces us to the Mole as a unit. This includes: • Relative formula mass and % of elements • Deducing formula from reacting masses • Empirical formula • Conservation of mass • Calculating masses from balanced equations • Concentration • Moles • Stoichiometry Skills within this unit • Unit conversion • Using equations • Rearranging equations • Percentages • Ratios C10 – Electrolysis This unit builds upon the knowledge gained in both acids and alkalis and in ionic compounds and is all about separating ionic compounds to obtain useful chemicals. This unit includes: • Electrolysis • Movement of ions • Products of molten compounds			C11 – Obtaining and using metals. This unit introduces another separation technique of reduction by carbon for obtaining pure metals and looks at the rationale for choosing which process to use based on their reactivity. It also looks at the implications of the us of materials on the environment and what we can do to reduce the environmental costs of metal extraction. This unit includes: • Metal reactivity practical's • Displacement • Reactivity series • Oxidation and reduction • Extracting metals from their ores • Biological extraction methods • Recycling • Life cycle assessments Skills within this unit include: • Classifying extraction techniques based on suitability. • Evaluating environmental consequences • Half equations • Balancing equations • Word equations C12 – Reversible reactions and equilibria Not all reactions go one way, some go in both directions. In this unit we look at reversible reactions and how we can control the environment in which		

• Bases • Neutralisation • Salts • Solubility rules • Safe testing of gases Skills within this unit: • Use of indicators to determine pH • Accurate measurements • Safe use of separation technique to obtain salts • Inferring salt identity based on properties. • variables • Risks and sources of error during practical's • Balancing equations	• Products from aqueous solutions • Half equations • REDOX • Purifying copper Skills within this unit include: • Setting up and using electrolysis circuits • Safe testing of gases • Risk assessment • Deducing half equations • Balancing equations	reactions occur in to get the yield and the products that we want. This unit includes: This unit. • Reversible reaction • Dynamic equilibria • Harber process Skills within this unit • Analysis cost of different conditions • Balancing equations
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Year 11 Curriculum implementation

Year 11 finish our Chemistry journey at CSE with a look at rates of reactions and fuels, both practical applications of the learning so far. We also look at the effect that these fuels have on our atmosphere and what we can do to mitigate their effects.

Skills focus on consolidating the pupil's knowledge and making sure that their practical techniques and theories are secure to enable them to succeed both in their GCSEs but also on their further scientific journey

1	2	END POINT TEST & THERAPY	3	4	END POINT TEST & THERAPY	5	6
C13 – Groups in the periodic table Having met the periodic table in C3 and how it was developed. This unit is an in depth look at 3 of the most important groups within the periodic table, how they react and how their properties relate to their uses. This includes: • Group 1 • Group 7 • Group 0 Skills within this unit • Identifying chemicals based on their properties. • Risk assessment • Equations C14 – Rates of reaction A lot of chemistry is talking about reactions. This unit is both a practical and mathematical one where we look at measuring and calculating rates of reactions. This includes: • Measuring rates of reaction • Collision theory • Temperature • Concentration • Surface area • Catalysts Skills within this unit • Identifying best equipment to measure rate • Resolution of equipment			C16 – Fuels Our whole economy and lifestyle are based on our use of fuels and in this day and age it is a hot topic. In this unit we look at how these fuels are obtained and purified and the effect that they can on our environment in terms of air pollution. This includes: • Crude oil • Fractional distillation • The fractions of crude oil • Alkanes • Combustion • Air pollutants • Hydrogen as a fuel • Cracking Skills within this unit • Balancing equations • Evaluating different fuels uses C17 – The Atmosphere The last topic of GCSE chemistry focuses on how our atmosphere has changed over time and how it is still changing today due to human activities. Will this end badly, or do we have enough understanding on science and will power to change? This unit includes: • Early earth's atmosphere • Greenhouse effect • Climate change and its effects Skills within this unit • Evaluating evidence				

• Calibration of equipment • Source of measurement error • Calculating rates of reaction • Tangents • Changing scales • Unit conversion C15 – Energy changes Energy changes was covered in Ks3 but is recovered here in greater detail where we look at how the different bonds within reactants and products determine whether a reaction either gives out or takes in energy. This includes: • Exothermic reactions • Endothermic reactions • Reaction profiles • Bond energies Skills within this unit • Measuring temperature • Writing methods • Identifying variables and controlling them • Making conclusions • Making conclusions based on evidence	• Graph analysis		
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Ultimately, we are striving to develop confident articulate students who can recall key scientific information and apply it to the cause of problem solving and forming opinions.

Our whole School curriculum intent believes:

At Ercall Wood Academy our students experience a highly personalised, challenging curriculum, rich in variety and diversity, yet underpinned by our whole academy traditional values.

Empower

Respect

Aspire

Our curriculum is designed to help to address social injustice by providing all our students with the essential knowledge and skills that are commonly possessed by successful citizens which will **empower** them to positively contribute to their community and the wider world. No child will be disadvantaged by our curriculum.

Our curriculum aims to engender equality and mutual **respect** in our students, their community, and the environment in which they are an integral part.

Our curriculum aims to unlock the potential of all our students and has high aspirations for everyone, regardless of their ability, gender, race, or background. Through our challenging curriculum we will instil a drive in them to **aspire** to excellence, to become the very best that they can be, thereby preparing them for success in life.

The key principles of our curriculum

- Our curriculum provides a broad, ambitious five-year curriculum journey for all students containing the essential knowledge, skills and experience that prospective employer demand from their candidates.
- Our curriculum is designed to enable accelerated progress so that all students can achieve success in literacy and numeracy.
- Our curriculum is coherently mapped and sequenced to reduce cognitive load for our students.
- Our curriculum is designed to support students in constructing rich connections and building schema, thereby deepening their understanding and their ability to remember.

- Our curriculum incorporates regular retrieval practice to strengthen memory and maximise cognitive development.
- Our curriculum is the progression model. Assessment measures students' ability to understand, retain, and recall the essential curriculum knowledge and skills they have been taught.
- Our curriculum provides frequent opportunities for targeted in-learning formative assessment to measure student knowledge retention and check for understanding.
- Our curriculum incorporates robust summative assessments mapped to the curriculum's essential knowledge which are used to benchmark students by identifying what students know and don't know. This provides key information for explicit teacher feedback and curriculum planning to reduce identified knowledge gaps.
- Our curriculum is inclusive and is based on equality of opportunity.
- Our subject Leaders are our curriculum experts and regularly review and update their curriculum through subject meetings to ensure that the curriculum mapping is constantly enhanced.
- Our curriculum explores and clarifies student beliefs and values and empowers them to learn to think and speak for themselves by developing critical and evaluative skills which enables them to be more socially mobile.
- Our curriculum develops skills for learning, life and work by making learning relevant and engaging, thereby helping students to apply lessons to their life beyond the classroom.

Enrichment Opportunities

We believe that opportunities to bring the curriculum to life should be integral. We passionately believe that our students should sample a wealth of exciting new experiences to broaden their horizons, open doors of opportunity, provide hope and aspiration for all, regardless of their circumstances. Our enrichment activities aim to further equip students with the knowledge and cultural capital they need to succeed in life.

Our intention for our curriculum is:

"Science is simply the word we use to describe a method of organising our curiosity" - Quote by Tim Minchin

At Ercall Wood Academy, our intent in the Science curriculum is to cultivate a deep understanding of the natural world, fostering a lifelong passion for scientific inquiry among students. We aim to provide a rigorous and engaging educational experience that develops critical thinking, problem-solving, and practical skills, ensuring all students achieve their fullest potential.

Our science curriculum is designed with the following objectives:

1. Knowledge Acquisition: Students will develop a robust understanding of key scientific concepts across Biology, Chemistry, and Physics, promoting knowledge retention and application.
2. Skills Development: We aim to equip students with the necessary scientific skills, including practical experimentation, data analysis, and effective communication of scientific ideas.
3. Real-World Connections: Our curriculum connects scientific theories to real-life phenomena, helping students understand the relevance of Science in everyday life and societal issues.

At Ercall wood we have implemented a 5-year learning journey in science, with pupils studying Biology, Chemistry and Physics topics in each year. The concepts taught within the curriculum repeat, broaden and expand over the 5 years, gaining in depth and detail as the students gain maturity within the subject to understand complex real-world science.

KS3

Our Key Stage 3 Scheme of Learning is based on Springboard Science. Springboard has been developed to build, develop and sustain students' knowledge and understanding of science through evidence- and experience-based practice from evidence presented by educational and psychological researchers (e.g. Rosenshine 2012, Clark et al. 2012, Agarwal 2021 and Lemov 2021) In order for students to master new knowledge, our teaching involves explicit, narrative-driven explanations, extensive independent practice, constant checking for understanding and a coherent approach to long-term knowledge and retrieval practice.

The Springboard course is divided first into biology, chemistry and physics and then into units and topics. Conceptual progression and interleaving that are built into the scheme of learning. The course is based on the National Curriculum for KS3 and centres around core questions and concepts of learning are based around a general structure of:

General science quiz – Generally not related to the topic. This is about retrieval and retention over time.

Topic introduction and objective – An overview of what topic will be taught within the unit. Learning objectives are clear and concise and in student language.

Knowledge check – Are there any holes in previous knowledge that need to be retaught before starting new learning. This is mainly covered on MWB.

Guided explanation – Teacher talking through a particular concept with a diagram.

Check for understanding – After new knowledge is delivered, understanding is checked through whole class checking for understanding.

Independent practice – Practicing the skills / knowledge that they have learned. The questions are progressive and interleave different topics.

Review – Have they retained the new knowledge and understanding before we move onto to another concept.

KS4

Our Ks4 Scheme of learning is based around the EDEXCEL exam board specification. Students start the content in year 9 to give them time to fully understand and absorb the content needed to be successful in their GCSEs.

In year 10, options are chosen between combined Science and Triple Science. This is a free choice for students.

The format of the lessons follows a similar format to ks3 with Knowledge checks, Guided explanations and independent practice embedded through all lessons.

Assessment

In lessons we use mini-Stop and check assessment task to ascertain whether key concepts have been correctly learnt. These are marked by a mixture of peer / self and teacher assessment with the teacher always looking over the tasks at the end to see what concepts need to be taught or if learning can continue.

At the end of a topic, we have a larger targeted assessment piece which is to make sure within the topic whether concepts have been learn and understood. These are teacher marked with targets to improve and a feedback lesson give.

3 times a year we have larger summative assessment which looks at performance in Biology, chemistry and Physics over time and are used to measure progress.

Linking our curriculum intention to our local community and real-life links to content:

The curriculum, through enrichment and real-life experiences during the school day and within enrichment opportunities, will maximise the use of the local area. We will link our curriculum to the following:

- Real-world applications of science such as health, energy use and climate change
- Using information to make decisions, especially in when benefits must be compared to risks, such as when considering medical procedures.
- Using information when making ethical decisions
- Practical uses of science by linking with businesses and taking part in competitions, especially for STEM
- Practical uses of science linked to programming,
- Taking part in Science Week each year by introducing activities to KS3 lessons linked to the national theme.

Year 7 Curriculum implementation

The year 7 topic in physics cover the basic scientific concepts of energy, forces and pressure and how both these make our world work. These are keystone topic in physics with their understanding of them being able to carry pupils through their journey in the subject.

How to conduct a practical investigation is covered in this unit as well as an introduction into graphs and equations. We spend a lot of time understanding both of these to help with further use within the curriculum

1	2	END POINT TEST & THERAPY	3	4	END POINT TEST & THERAPY	5	6	END POINT TEST & THERAPY
P1 – Energy This is our first topic of KS3. Pupils would have met the idea of energy before, but we look in detail about different energy sources and transfer and how we quantify these. This topic also includes the first equations in physics with the power and efficiency being calculated. This includes: - Fuels and energy stores - energy stores and transfers - Power - Energy resources Skills include: - Looking at different units and unit conversions - Using a formula - Discussing the advantages and disadvantages of different fuels Enrichment - Science Career: Renewable energy Consultant - Science story: James Joule - Whoosh bottle - Energy circuits P2 – Speed This second unit introduces the idea of quantifying speed and looking at how we interpret this information on graphs. - Speed			P2 – Continued P3 – Forces At Ks3, pupils would have met the idea of forces as a push or a pull. Here we extend these ideas and look at specific examples of different forces and how they interact with each other. The whole unit looks at practical examples of how forces are used in real life situations. This includes: - Basic forces and diagrams - Naming and categorising forces - Stretching and squashing forces - Hooke's law and work done. - Moments and simple machines - Balanced forces - Forces and motion Skills in this unit - Line of enquiry in practical's - Taking accurate measurements - Describing relationships - Plotting graphs - Predicting with graphs - Using tables with multiple datasets - Unit conversions Enrichments - Science career: Structural engineer - Science story: Isaac Newton - Forces circus			P3 – Continued P4 – Pressure This unit builds on the idea of forces and links to the real-world examples of the effects that pressure has on us. This includes: - Pressure in liquids - Atmospheric pressure - pressure calculations Skills in this unit - Equations - Unit conversions Enrichment - Science career: Meteorologist - Science story: Zheng He - Water rockets - Cartesian divers - Film canister rockets.		

- Distance time graphs. - Relative motion Skills include: - Equations - Unit conversions - Drawing results tables - Variables - Predictions - Selecting the correct equation - Describing graphs Enrichment - Science Career: Air traffic controller - Science story: Mae C. Jemison - Walking a distance time graph - Measuring speed on ramps	- Spring cannons	
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Year 8 Curriculum implementation

In year 8 we look at how energy is transferred in a number of different scenarios including sound, light, electric circuits and the particle model. Key skills within this unit include rearranging of equations and looking in detail at graphs and what their data is telling us. We have a range of practical work looking at investigation skills making sure that this is consolidated for further study.

1	2	END POINT TEST & THERAPY	3	4	END POINT TEST & THERAPY	5	6	END POINT TEST & THERAPY
P5 – Sound This topic introduces the idea of different types of waves with both longitudinal and transverse waves covered. It again also looks at how we use these waves in modern life with examples of ultrasound and microphone. This includes: • Types of waves • Sound waves • Microphones and ultrasound Skills within this unit • Taking multiple readings • Calculating a mean • Using equations • Writing a method • Analysing trends in data • Anomalous results			P7 – Electricity and circuits Simple circuits are again covered in Ks2 but are recovered here with explanation of what is actually happening in the circuit in terms of current, voltage and resistance. We also learn how to represent circuits in diagrams. This includes: • Conductors and insulators • Circuit, current, potential difference, and resistance • Series and parallel circuits Skills within this unit • Finding errors in circuits • Constructing circuits from diagrams • Variables • Describing relationships from tables • Rearranging equations			P9 – Magnets Magnets are all around us and are found in all walks of modern life. This unit looks at a magnetic field, both around magnets and around the earth and how we can use these magnets. This includes: • Magnets and magnetic fields • Earth's magnetism • Electromagnets and motors Skills within this unit • Variables • Using tables with multiple data • Drawing conclusions • Precision		
P6 – Light As with the previous unit, this would have been a concept that pupils would have met at Ks3, but it is extended to how light behaves in different materials and how we make use of these properties. This includes: • Light and ray models • Interactions of light waves with materials • Mirrors, Pinhole camera and the eye • Detecting light and colour Skills within this unit • Measuring angles with a protractor			P8 Static is in year 9			P10 – Particle model This crossover unit with chemistry looks at the idea of how particles move and how this affects their density. We also look at the equation for density and how we measure it in a practical situation. • Particle motion and density • Energy and matter Skills within this unit • Drawing tables • Measuring density of regular objects • Measuring density of irregular objects • Calculating Area		

• Describing trends in data • Anomalous results • Errors		
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Year 9 Curriculum implementation

In year 9 we meet the idea of forces and energy again but this time looking at how these are calculated and a look at why this information is useful in real life. In terms of skills, we carry on with our focus on equations with them becoming increasingly more complicated. We also look at how energy use and power is calculated and apply this to energy bills, a hot topic at the moment.

1	2	END POINT TEST & THERAPY	3	4	END POINT TEST & THERAPY	5	6	END POINT TEST & THERAPY
P1 Motion This unit consolidates learning on speed and distance speed graphs before continuing and extending to include acceleration and velocity line graphs. This topic uses many real-world examples. This includes: • Vectors and scalars • Speed • Distance Speed graphs. • Acceleration • Velocity time graphs Skills within this unit • Measuring Speed • Analysis of line graphs • Using equations • Changing the subject of formula • Unit conversions • Using equations from line graph information • Understanding variables • Following a method • Reliability of data P11 – Space – Ks3 christmas topic Our last topic of Ks3 leads us to look outside of the earth and into our solar system. This looks at how physics and the concepts learn throughout Ks3 relate to our planet as a whole. This includes: • Stars, planets and galaxies • The seasons • Weight Skills in this unit			P2 – Forces and motion Having looked at how things move in P1, P2 builds on this information when we talk about Newtons laws and the forces behind movement. This unit culminates into the science behind collisions and how we can use this knowledge to increase safety in vehicles. • Newtons first law • Newtons second law • Weight and mass • Circular motion • Inertia • Momentum • Collisions • Stopping Distances Skills within this unit • Using different equations • Rearranging equations • Obtaining information from diagrams • Unit conversion			P2 Continued – Newtons 3 rd law and crashes		

• Plotting graphs • Lines of best fit • Calibration curves • Accuracy • Equations and rearranging Enrichment • Science career: PHD student • Science story: Hidden figures Toilet roll solar system. •		
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Year 10 Curriculum implementation

In year 10 we again look at the ideas around the Electromagnetic spectrum that leads into radiation and then a look at the practical applications of circuits and electricity and how these are used in real life.

Skills within this unit include calculating half-life, safety of scientific applications and how to test circuits.

1	2	END POINT TEST & THERAPY	3	4	END POINT TEST & THERAPY	5	6	END POINT TEST & THERAPY
P3 – Conservation of energy The next topic in Physics relates to how we get things to work and that hard to define concept of energy. We know it is there and we know how it affects things, but what is it? In this unit, we look at different energy stores and how this energy is transferred and then apply this knowledge to everyday life such as calculating electricity builds, efficiency and which type of resource we should use to power our world. This includes: • Gravitational potential energy • Kinetic energy • Energy transfer diagrams • Wasted energy. • Unwanted energy transfers • Thermal conductivity • Efficiency • Fossil fuels • Renewable energy Skills in this unit include: Using formula Rearranging formulas Converting units Analysing data to make household decisions Evaluating different energy resources			P5 – EM Spectrum Havin looked at waves in Ks3 and the previous topic at KS4, we now look at how all of these properties interact within the example of the Electromagnetic spectrum. This unit looks about how this information is absorbed and transmitted and the uses of these types of waves and the dangers that accompany their use. • Transverse waves • Electromagnetic spectrum • Absorption and transmission • Dangers of Em Spectrum • Uses of the EM spectrum • Radio waves Skills within this unit include: • Variables within an investigation • Method writing • Evaluating sources of error • Evaluating the advantages and disadvantages of different parts of the EM spectrum			P8 – Forces and their effects Again, this unit consolidates the previous units of P1 and P2 with a focus on how we draw the interactions between forces. This unit further extends the idea of forces actin in pairs and the effects that they have on movement. This includes: • Contact and non-contact forces • Vector diagrams • Free body diagrams • Resultant forces • Reducing energy transfers Skills within this unit • Using different equations • Rearranging equations • Obtaining information from diagrams • Unit conversion • Practical applications of efficiency and how it can be increased.		
P4 – Waves This topic on waves builds on the Ks3 topics of light and sound where we look again at the different wave			P6 – Radioactivity This topic again looks at the benefits and risks of an application of science with the example of radiation. We look at the different types of radiation and its uses and what type of precautions that we need to take when we are using them. We also look at how Science theories about the structure of an atom change over time based on experiments and evidence. This unit includes: • Atomic structure			P9 – Electricity and circuits This is a very practical unit with lots of circuit building and practical applications of where this knowledge is used in real life. Students will have already met some of these ideas in KS3 topic of electricity, but this unit further extends this learning in ideas about current, potential difference and resistance and then how this applies to our homes. This includes: • Structure of an atom • Circuit diagrams • Series and parallel circuits		

types and properties and how they interact with different mediums and the effect that this has on what we see. This unit includes: • Waves • Wave diagrams • Wave speed • Ripple tanks • Refraction Skills within this unit • Using formula to calculate speed • Using graphs to calculate speed • Variables in investigations • Practical techniques using ripple tanks. • Angle skills • Measuring angles of refraction •	• Isotopes • Electrons • Absorption and emission • Types of radiation • Background radiation • Measuring radiation • Atomic models over time • Radioactive decay • Half life • Nuclear equations • Dangers of radiation Skills within this unit include. • Calculating half-life and the implications this has of using radiation. • Measuring radiation • Evaluating models based on evidence. • Evaluating the advantages and disadvantages of different types of radiation P7 – Energy doing work. Within energy doing work, we take another look at some of the concepts that we met in P3 and looking at real life application of these energy stores and transfers. Energy stores • Energy transfers • Work done. • Changes in energy • Gravitational potential energy • Kinetic energy • Efficiency • Power • Efficiency Skills within this unit • Using formula • Rearranging formulas • Converting units • Analysing data to make household decisions	• Potential difference • Charge • Current • Resistance • Resistance graphs • Thermistors and LDRs • Resistors • Energy transferred. • Power • AC, DC • Domestic electricity • Plugs • Power ratings Skills within this unit • Building circuits from diagrams • Testing circuits • Taking readings from circuits • Calculating variables from measurements using equations • Reliability of results
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Year 11 Curriculum implementation

This is our final year of physics, and we look at electromagnetic induction and how this relates to the national rid. We also look at the particle model and how this relates to the real world before looking at plastic and elastic distortion.

Skills within this unit mainly focus on consolidating Physics knowledge from the 5 years and making sure that both practical and mathematical skills are truly embedded.

1	2	END POINT TEST & THERAPY	3	4	END POINT TEST & THERAPY	5	6
P10 – Magnetism and the motor effect We again build and extend on our Ks3 knowledge of magnets and then extend this to how this relates to current and magnetic fields. This unit then explores how electromagnets and motors work and their uses in everyday life. This includes: • Permanent magnets • Magnetic fields • Earth's magnetic field • Current and magnetic fields • Electromagnets • The motor effect Skills within this unit			P12 – The particle model Having covered the idea of particles extensively in Chemistry, this topic look specifically into the energy that these particles have and then how these principles apply to real life examples. This includes: • Kinetic theory • Density • States of matter • Specific heat capacity • Specific latent heat • Thermal energy for changing state • Thermal insulation • Gas pressure				

• Deducing the direction and shape of magnetic fields • deducing the size and direction of current • Making electromagnets P11 – Electromagnetic induction This unit builds and consolidates the knowledge about electricity and magnetism and how we use both of these concepts in our national grid. This unit includes very practical applications of how the national grid works and the effect that this science has on our safety. This includes: • Transformers • National grid • Step up and step-down transformers. Skills within this unit • Using formula • Converting units • Risk assessing scientific principles. •	• Absolute zero Skills within this unit • Calculations and equations • Variables • Errors in investigations • How to calculate insulation values. P13 – Forces and matter This is our last time visit the key topic of forces in Physics, when we look at how springs work and the relationship between force and extension. • Springs and elastic properties • Elastic and inelastic distortion • Spring constant • Work done in a stretching spring. Skills within this unit: • Measuring accurately • Drawing graphs • Lines of best fit • Using equations		
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